*The University of Mississippi School of Law*

The National Center for Remote Sensing, Air, and Space Law

Informational resources on the legal aspects of human activities using aerospace technologies

# Space Law: Selected Documents 2009

## Volume 1: National Space Law Documents

Compiled by P.J. Blount

P.J. Blount, editor

Joanne Irene Gabrynowicz, editor

A supplement to the Journal of Space Law

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## National Center for Remote Sensing, Air, and Space Law

Founded in 1999, the National Center for Remote Sensing, Air, and Space Law is a reliable source for creating, gathering, and disseminating objective and timely remote sensing, space, and aviation legal research and materials. The Center serves the public good and the aerospace industry by addressing and conducting education and outreach activities related to the legal aspects of aerospace technologies to human activities.

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Dedicated to

S. Neil Hosenball
(1925-2009)

Dr. Hosenball served as NASA's General Counsel from 1975-1985. He participated in the drafting of the UN treaties on the peaceful uses of outer space and played a key role in negotiating the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies.

"Law must precede man into space."
- Andrew G. Haley, *Space Age Presents Immediate Legal Problems,* 1 PROCEEDINGS OF THE FIRST COLLOQUIUM ON THE LAW OF OUTER SPACE 5 (1959)

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# Space Law: Selected Documents 2009

## Volume I: National Space Law Documents

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**Selected Space Law Documents: 2009**

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**Foreword**

**by**

**Joanne Irene Gabrynowicz**

This compilation of space law documents for the year 2009 was gathered primarily from postings placed on the aerospace law blog, *Res Communis* from 1 January through 31 December 2009. *Res Communis* is hosted by the National Center for Remote Sensing, Air, and Space Law (Center) at the University of Mississippi School of Law. The postings are supplemented with materials from other sources that were published within 2009, but which were not published on *Res Communis*.

The blog's name, *Res Communis*, is taken from the Latin legal term *that means, in part, "things common to all; that is, those things that are used and enjoyed by everyone." Res Communis* is also a fundamental principle that provides a major part of the foundation of the international space law regime. The name was chosen because of its specific relevance to space law and to express the Center's intent that the blog provide the aerospace law community with a reliable, timely source of legal materials.

The annual compilation is a special supplement to the Journal of Space Law, the world's oldest law review dedicated to space law. The Journal of Space Law, beginning with the first volume, is available on line at the Center's website, http://www.spacelaw.olemiss.edu/index2.html, and through HeinOnLine, http://heinonline.org/.

This year's compilation is in two volumes: national space law documents and international documents. This demonstrates that the body of space law is growing in size and complexity. As these volumes go to press, important changes are occurring in the U.S. space program and a number of other national programs that will also impact a number of international cooperative projects. On the private side of space activities, both investments and activities are expanding. It can be expected that space law will continue to change for the practitioner, academic, and government lawyer. The reader can find updated material on an on-going basis at http://rescommunis.wordpress.com/.

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**Opinion of the Advisory Committee on concentrations given at its 148th meeting on 23 March 2007 concerning a draft decision relating to Case COMP/M.4403 — Thales/Finmeccanica/Alcatel Alenia Space/Telespazio**

(2009/C 34/03)

1. The Advisory Committee agrees with the Commission that the notified operation constitutes a concentration within the meaning of Article 3(1)(b) of the EC Merger Regulation and that it can be deemed to have a Community dimension pursuant to Article 1(2) of that Regulation.

2. The Advisory Committee agrees with the Commission that the relevant product markets can be characterised as follows:

   (a) ground segment:

   — launchers,

   — space transportation and infrastructure, and

   — satellites;

   (b) space segment:

   — launchers,

   — space transportation and infrastructure, and

   — satellites:

     — satellite prime contracting for institutional satellites,

     — satellite prime contracting for military satellites,

     — satellite prime contracting for commercial telecommunications satellites, and

     — satellite subsystems and equipment for commercial telecommunications satellites:

       — Travelling Wave Tubes (TWTs),

       — Electronic Power Conditioners (EPCs), and

       — Travelling Wave Tube Amplifiers (TWTAs) (which includes Linearised TWTAs (LTWTAs), Channel Amplifier TWTAs (CTWTAs), and Linerarised Channel Amplifier TWTAs (LCTWTAs)).

3. The Advisory Committee agrees with the Commission that the geographic scope of the relevant product markets is:

   — worldwide for commercial telecommunications satellites and satellite subsystems,

   — European or national for European institutional satellites and satellite subsystems, and

   — national (where a national supplier exists) or worldwide for military satellites and satellite subsystems.

4. The Advisory Committee agrees with the Commission's view (and subsequent approach to the analysis) that the issue raised by the proposed concentration is whether or not the merger will give the new entity:

   — the ability and incentive to engage in input foreclosure in identified markets, and

   — whether such a course of action would significantly impede effective competition downstream.

5. The Advisory Committee agrees with the Commission that the proposed concentration will not significantly impede effective competition on the market for **TWTAs**.

6. The Advisory Committee agrees with the Commission that the proposed concentration will not significantly impede effective competition on the **market for satellite prime contracting for commercial telecommunications satellites**.

7. The Advisory Committee agrees with the Commission that the notified concentration must be declared compatible with the common market and the functioning of the EEA Agreement pursuant to Article 8(1) of the EC Merger Regulation.

8. The Advisory Committee asks the Commission to take into account all the other points raised during the discussion.

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**Final Report [1] of the Hearing Officer in Case COMP/M.4403 — Thales/Finmeccanica/ AAS & Telespazio**

(2009/C 34/04)

On 6 October 2006, the Commission received notification of a proposed concentration by which the undertakings Thales S.A. (*Thales*) and Finmeccanica Società per Azioni (*Finmeccanica*) acquire, within the meaning of Article 3(1)(b) of Council Regulation (EEC) No 4064/89 (the 'Merger Regulation'), joint control of the undertakings Alcatel Alenia Space SAS (*AAS*) and Telespazio Holding srl (*Telespazio*) by way of purchase of shares in two existing joint ventures to which additional assets are contributed.

After a preliminary examination of the notification, the Commission concluded that the notified transaction falls within the scope of the Merger Regulation and raised serious doubts as to its compatibility with the common market. It therefore decided, on 28 November 2006, to initiate proceedings under Article 6(1)(c) of the Merger Regulation.

The parties had then access to the key documents of the file, in application of the Best Practices for merger case, through a non-confidential summary of the responses of third parties to the requests for information in first phase, which was provided to them on 7, 8 and 11 December 2006.

Following an in-depth market investigation, the Commission services considered that the serious doubts had been removed and that the proposed transaction would not significantly impede effective competition in the common market or a substantial part of it and that it hence should be declared compatible with the common market and the functioning of the EEA agreement. Accordingly, no Statement of Objections was sent to the parties.

No queries or submission have been made to me by the parties or any other third party. The case does not call for any particular comments as regards the right to be heard.

Brussels, 26 March 2007.

Serge DURANDE

(1) Pursuant to Articles 15 and 16 of Commission Decision 2001/462/EC, ECSC of 23 May 2001 on the terms of reference of Hearing Officers in certain competition proceedings (OJ L 162, 19.6.2001, p. 21).

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# Summary of Commission Decision

## of 4 April 2007

## declaring a concentration to be compatible with the common market and the EEA Agreement

## (Case COMP/M.4403 — Thales/Finmeccanica/Alcatel Alenia Space & Telespazio)

**(Only the English version is authentic)**

(2009/C 34/05)

*On 4 April 2007, the Commission adopted a Decision in a merger case under Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings, and in particular Article 8(1) of that Regulation. A non-confidential version of the full decision can be found in the authentic language of the case and in the working languages of the Commission on the website of the Directorate-General for Competition, at the following address:*

*http://ec.europa.eu/comm/competition/index_en.html*

### I. THE PARTIES

(1) Thales is a French company jointly-controlled by the French State (through TSA) and Alcatel, which is active in the development and integration of critical information systems for the industries of defence, aeronautics and transport and for civil security.

(2) Finmeccanica is an Italian diversified engineering group, solely controlled by the Italian State, which is active in aerospace, defence systems, energy, communications, transportation and automation.

(3) AAS is a French company jointly-controlled by Alcatel and Finmeccanica, which is active in the design and manufacture of ground and space systems, including satellites and satellite subsystems. Telespazio is an Italian company jointly-controlled by Alcatel and Finmeccanica, which provides services and end-user applications using or related to satellites-based solutions and products.

### II. THE OPERATION

(4) Through the proposed operation, Thales will acquire Alcatel's shareholdings in AAS and Telespazio ([1]). Post-merger, Thales and Finmeccanica will jointly control AAS and Telespazio, including the space activities contributed by Thales and Finmeccanica to these two joint ventures, within the meaning of Article 3(1)(b) of the Merger Regulation. The transaction thus constitutes a concentration within the meaning of the Merger Regulation.

([1]) In 2005, Alcatel and Finmeccanica merged their activities related to space systems through the setting up of two joint ventures, AAS and Telespazio. Alcatel and Finmeccanica respectively held 67 % and 33 % of AAS capital and 33 % and 67 % of Telespazio's capital. The creation of the two joint ventures was cleared by the Commission (See Commission decision of 28 April 2005 in Case COMP/M.3680 — Alcatel/Finmeccanica/Alcatel Alenia Space & Telespazio).

### III. THE RELEVANT PRODUCT MARKETS

(5) In previous cases in the space sector, the Commission has identified two main segments, the space segment and the ground segment, which can each be further divided into (i) launchers; (ii) space transportation and space infrastructure; and (iii) satellites.

(6) The present case concerns more particularly the markets of commercial telecommunications satellites, and the specific satellites subsystems for telecommunications satellites.

#### A. Commercial telecommunications satellites

(7) The Commission has previously distinguished between satellites used for military applications, for commercial applications and for institutional applications. The market investigation has confirmed that commercial, institutional and military satellites belong to distinct relevant product markets.

(8) Commercial satellites are used in the field of telecommunications (fixed telephony, mobile telephony, internet, etc.) and television broadcasting and are purchased by private satellite operators through competitive tendering.

#### B. Travelling Wave Tubes ('TWTs')

(9) TWTs are electronic components used to amplify microwave (radio-frequency) signals received by the satellite before the signals are retransmitted to the earth. There are several TWTs per satellite (generally 40-50, up to 60 TWTs). TWTs are available in different frequencies that determine the radio frequency of the satellite (e.g. C-band, Ka-band, Ku-band, L-band). It should be noted that TWTs of different frequencies are often loaded on the same satellite.

(10) On the demand side, the market investigation has indicated that there is no or very low substitutability between TWTs of different frequencies. Demand for a TWT of a specific frequency is determined not only by the satellite's specific mission (TWTs of different frequency bands serve different end applications) but also by frequency coordination and orbital allocation issues. On the supply side, the market investigation has shown that (i) the underlying technology is the same for all TWT frequencies; (ii) manufacturing equipment, production line, testing equipment and qualified personnel are common to the different frequencies; and (iii) the two existing TWT suppliers (TED, a wholly-owned subsidiary of Thales, and L3) have both the technical expertise to produce TWTs of all frequency bands and output power. The Commission therefore concludes that there is a single product market for the supply of TWTs, but with different segments based on the frequency bands and power output of the TWTs.

### C. **Electronic Power Conditioners ('EPCs')**

(11) EPCs provide the power supply for the TWTs. EPCs can be single, providing the energy necessary for one TWT, or dual, providing the energy necessary for two TWTs. On the demand side, the choice of the EPC does not depend on the frequency band of the TWT but on the input voltage and output power of the TWT, and the satellite platform bus. On the supply side, the market investigation has confirmed that technology is similar for all EPCs. The Commission therefore concludes that there is a single market for the supply of EPCs.

### D. **Travelling Wave Tube Amplifiers ('TWTAs')**

(12) TWTs and EPCs are integrated to form TWTAs. This electronic device is the main transmitter on a satellite, used to amplify the microwave signal before it is broadcasted back to earth. Linearisers ('LINs'), channel amplifiers ('CAMPs'), and linearised channel amplifiers ('LCAMPs') are fitted to the vast majority of TWTAs in order to improve the linearity and compression of the microwave signal. The Commission's investigation has confirmed that TWTAs and further integrated TWTAs to which a lineariser and/or a channel amplifier are added (TWTA+s) belong to a single product market ([1]).

## IV. **THE RELEVANT GEOGRAPHIC MARKETS**

(13) In line with the Commission's approach in previous cases, the markets for commercial telecommunications satellites and satellite subsystems such as TWTs, EPCs and TWTAs are considered to have a worldwide geographic dimension as sourcing takes place on a worldwide basis. However, the Commission takes into account in its competitive assessment the existence of various segments where the respective subsystem suppliers and prime contractors face different constraints due the US Export Administration Regulations ('EAR') and US International Traffic in Arms Regulations ('ITAR') which exclude US suppliers from competitions to supply satellites and satellite subsystems to operators in some black-listed countries.

## V. **ASSESSMENT**

(14) The proposed concentration give rise to a vertical relationship between the TWTs produced by TED, a wholly-owned subsidiary of Thales, and markets downstream of TWTs at two levels: (i) TWTAs; and (ii) commercial telecommunications satellites. The Commission's in-depth investigation examined whether Thales, as the new parent company of AAS, would be likely to foreclose TED's and AAS' downstream rivals on these two markets ([2]).

(15) In Phase I, the Commission identified serious competition concerns and took the view that the behavioural remedies offered by the parties were not sufficiently clear-cut to entirely remove these concerns. The Commission however recognized that the case at hand is a complex vertical case and already indicated in its decision to open an in-depth investigation that it needed to thoroughly examine the constraints on the ability and the incentive of the new entity to foreclose its downstream rivals.

(16) It should be noted as a preliminary remark that the vertical integration brought about by the merger is only partial (as Thales will only have a 67 % shareholding in AAS) and indirect (since TED and AAS will be sister companies, and will remain separate legal entities with a different shareholding structure and different and independent decision-making bodies).

### A. **Market structure**

#### 1. **Commercial telecommunications satellites**

(17) There are six main suppliers on the market for commercial telecommunications satellites: Boeing Space Systems ('Boeing') ([20-25 %]* market share over 2001-2005), Lockheed Martin Commercial Space Systems ('Lockheed Martin') ([20-25 %]*), Alcatel Alenia Space ('AAS') ([15-20 %]*), Space Systems Loral ('Loral') ([10-15 %]*),

([1]) For the purposes of the present document, TWTAs and the further-integrated TWT-based subsystems CTWTA, LTWTA, LCTWTA are altogether referred to as 'TWTAs' for ease of reference. Where it is necessary to distinguish TWTAs from the further integrated TWTAs (LTWTAs, CTWTAs, LCTWTAs), the reference 'TWTA+ subsystems' is used.

([2]) There are some horizontal overlaps and vertical relationships between the activities of Thales and AAS in the ground segment but none of them give raise to any competition concerns.

EADS Astrium ('Astrium') ([5-10 %]*), and Orbital Sciences Corporation ('Orbital') ([0-5 %]*). Japanese prime manufacturers (Melco and Mitsubishi) are significantly smaller. New players are emerging in India (ISRO), China (CAST), Russia (NPO PM and Russian Satellite Communications Company ('RSCC')), and Israel (IAI).

(18) Given the massive investments needed in R & D, the industry is characterised by a certain degree of specialisation and concentration. This aspect is particularly accentuated in Europe, where space companies have developed particular expertises as equipment manufacturers, payload suppliers and solution providers.

(19) Satellite operators are the final customers for satellites. Luxembourg-based SES GLOBAL is the largest operator. Intelsat (USA), Eutelsat (France), PanAmSat (USA), JSAT (Japan), Telesat (Canada) and Hispasat follow in order of declining importance.

(20) The markets for satellites and for satellite subsystems are bidding markets. When ordering a new telecommunications satellite, a satellite operator will generally request bids from several satellite prime contractors. Before submitting their bid for the prime contracting of the satellite to the satellite operator and in order to be able to do so, satellite prime contractors request bids for the most important equipment beforehand.

(21) Specifically with regard to TWT(A)s ([1]), satellite manufacturers request bids (i) either separately for TWTs, EPCs and other components; or (ii) for a TWTA. In case the satellite manufacturer opts for an integrated TWTA, the TWTA integrator that is invited to bid will in turn request an offer for a TWT from the TWT supplier (either TED or L3). The TWTA integrator that has won the bid will then assemble and integrate the TWT with the EPC, and test the obtained TWTA and provide it to the satellite prime contractor within the schedule for integration on the satellite itself. In case the satellite manufacturer opts for separately procuring the TWT and EPC (including services for assembly, integration and testing ('AIT')), he will issue separate requests for TWTs and the other components. The integration of the TWT with the EPC into a TWTA may be carried out by the satellite manufacturer itself — in case that manufacturer has internal EPC production ([2]) — or by a third party TWTA integrator such as Tesat or L3. In the latter case, the satellite prime contractor will procure the TWT and will have it delivered at the TWTA integrator's facility for AIT with the TWTA integrator's own EPC. In such case, the TWTA manufacturer will sell an EPC+AIT, and invoice its margin on these components/services. The TWTA is then provided to the satellite prime contractor within the schedule for integration on the satellite itself.

(22) It is important to stress that market demand has evolved to integrated products. For around 70 % of recent satellite orders, prime contractors now request and purchase TWTAs or more integrated products rather than issuing separate quotations for TWTs and EPCs. The market investigation has shown that the procurement of integrated TWTAs brings significant benefits to prime contractors (notably, cost savings and simplification in the procurement process, shifting of the liability for performance of the overall TWTA+ subsystem to the TWTA subcontractor). It appears that currently only AAS — and to a much lesser extent Loral — continue to procure separately TWTs and EPCs+AIT.

2. **TWTs**

(23) There are only two suppliers of TWTs worldwide: TED and the US company L3 Communications Electron Technologies, Inc ETI ('L3'). TED produced, on average over three years, approximately [70-80 %]* of the TWTs and L3 the remaining [20-30 %]*. However, L3's share of TWT production has increased to more than [30-40 %]* in 2006.

(24) The Commission's investigation has shown that L3 is a credible competitor of TED for the most common commercial frequency bands, in particular C-band and Ku-band, where L3's TWTs are currently more competitive than TED's TWTs (21 % and 34 % of the market respectively). L3 does not currently have qualified TWTs with sufficient flight heritage for the commercial market for L-band (7 % of the market), high power Ku-band (12 %), and Ka-band (10 %). L3 has, however, the competence and expertise to develop and manufacture TWTs in all frequency bands and has already qualified a 32 GHz Ka-band TWT for institutional applications. Despite the fact that L3 has slightly less flight heritage than TED, most satellite prime contractors consider L3 as a credible alternative for TWT frequencies where it has a product offering.

([1]) Comparable procurement processes apply in the case of the selection of the EPC, the linearizer and channel amplifier functions.

([2]) Some satellite prime contractors, such as Lockheed Martin, have in-house production capabilities for EPCs and LCAMPs and in-house integration capabilities.

### 3. **EPCs**

(25) There are two main suppliers of EPCs worldwide, Tesat (a subsidiary of EADS/Astrium), and L3. Other space companies have the capability to manufacture EPCs for in-house applications but have not been active on the merchant market, such as Lockheed Martin or ETCA, a subsidiary of AAS.

(26) Both L3 and Tesat have large production capacities, a broad product range, including dual EPCs, an extensive flight heritage and an established position on the merchant market. By contrast, ETCA has a much more limited production capacity, only produces single EPCs and integrated most of its EPCs to supply its parent company AAS. The major satellite prime contractors (other than AAS) only deal with Tesat and L3 for EPCs and are not familiar with ETCA's EPC products.

(27) The Commission has investigated in-depth ETCA's EPC capabilities as it is essential for the competitive assessment. The Commission' investigation has shown that: (i) ETCA has a modern and competitive medium power single EPC, which however still lacks sufficient flight heritage; (ii) ETCA has an older generation high power single EPC; (iii) ETCA could qualify a competitive dual EPC in [2009-2012]*, which could have acquired flight-heritage by [2012-2015]*; and (iv) ETCA could qualify a competitive high power EPC in [2009-2012]*, which could have acquired flight-heritage by [2012-2015]*.

### 4. **TWTAs**

(28) Due to their strong position at the level of EPCs, L3 and Tesat are the two leading integrators of EPCs globally. They are the only two integrators with significant assembly and testing facilities, an installed base of TWTAs on satellites with extensive flight heritage and a significant presence on the merchant market. ETCA and TED have limited TWTA integration activities, ETCA having essentially supplied its parent company AAS for institutional satellites.

## B. **Impact of the merger on the TWTA market**

(29) The Commission has investigated whether the new entity would have the ability and incentive to discriminate in the supply of TWTs to rival TWTA integrators so as to favour its downstream activities on the TWTA market, and, if so, whether this would have a significant detrimental effect on effective competition on the TWTA market. The Commission's in-depth investigation has revealed that the new entity's ability and incentive to foreclose rival integrators would be seriously constrained for several reasons.

(30) First, in order to foreclose Tesat on the TWTA market, the new entity needs to have access to EPCs to integrate with its TWTs. The Commission's in-depth investigation has revealed that (i) AAS' subsidiary, ETCA, only has a limited range of EPCs; and (ii) ETCA is also constrained by its limited EPC and AIT production capacity. Secondly, prime contractors and satellite operators purchase conservatively and have strong preferences for the EPCs and TWTAs of Tesat and L3. Thirdly, the market investigation has revealed that margins are considerably lower at the TWTA level which is characterised by more competitive pressure than at the TWT level. Fourthly, since it will acquire a 67 % shareholding in AAS, Thales will only have 67 % of the additional margins it makes on TWTAs (which would be integrated by AAS' subsidiary ETCA) whereas it benefits from the full margins for TWTs.

(31) In light of these constraints, the likelihood of the new entity engaging in input foreclosure requires a detailed analysis that takes into account (i) the various input components of TWTAs, and (ii) the prime contractor and its potential preferences. On the basis of such an assessment market segment by market segment, the Commission has established that foreclosure would be likely only for a limited market segment, that are ITAR-restricted and where ETCA could meet AAS' EPC demand, and that account for [0-5 %]* of the TWTA market. The Commission has also concluded that foreclosure is possible, but not to a degree such as to consider that it would be likely, in the market segment where the new entity is active (single EPC) and does not face currently a competitive constraint from L3's TWTs (high power Ku-band, L-band and Ka-band). These market segments altogether represent [10-15 %]* of the TWTA market. The Commission has also determined that there is no possibility for foreclosure on the market segments where there is (i) dual EPC demand; (ii) a competitive constraint from L3's TWTs or (iii) a strong preference of prime contractors for either L3 or Tesat. This altogether represents the vast majority of the TWTA market (i.e. more than [80-85 %]*).

(32) Based on this assessment, it is estimated that an input foreclosure strategy by the new entity could allow it to capture [0-5 %]* of the TWTA market in the short term (in particular ITAR-restricted markets segments). For [10-15 %]* of the TWTA market, a market entry of the new entity can also be considered as possible although the new entity would need to demonstrate that it is a reliable TWTA supplier capable of meeting satellite manufacturers' requirements, which would in turn require significant investments. By contrast, foreclosure on the bulk of the TWTA market does not appear likely and could only start if the new entity obtains an EPC product range that is comparable to Tesat and L3 (i.e. as of [2012-2015]* in the best case scenario).

(33) In any event, entry of the new entity on these segments of the TWTA market in the near future — which was up to now divided between Tesat and L3 — would as such increase the number of credible competitors on the market from 2 to 3, thereby increasing competition.

(34) The Commission therefore concludes that the concentration does not lead to a significant impediment to competition on the TWTA market.

C. **Impact of the merger on commercial telecommunications satellites market**

(35) The Commission has investigated whether the new entity would have the ability and incentive to discriminate in the supply of TWTs to rival prime contractors in order to gain an advantage in competitions for commercial telecommunications satellites and, if so, whether this would have a significant detrimental effect on effective competition on the market for commercial telecommunications satellites.

(36) The Commission first notes that the ability and incentive of the new entity to engage in input foreclosure at the prime contracting level is necessarily linked to the market situation at the intermediate level of TWTAs, since most prime contractors — except AAS — are increasingly purchasing TWTAs (in particular TWTA+s). As explained above, foreclosure at the TWTA level is however unlikely. This, in itself, strongly suggests that an input foreclosure strategy relating to the supply of TWTs directly to prime contractors could not be effective.

(37) Secondly, the transaction will in fact place Thales/AAS in a similar position on the satellite prime contracting market as that of Astrium/Tesat (i.e. as a supplier of TWTAs present at the prime contracting level) prior to the transaction. However, there have been no allegations that Astrium engaged in an input foreclosure strategy for TWTAs (through its control of Tesat) so as to gain advantages in prime competitions. This confirms that there is no incentive for such strategy, especially in a space industry characterized by complex interdependences, and that this strategy is unlikely post-merger.

(38) The Commission has nonetheless assessed the ability and incentive of the new entity to foreclose rival prime contractors post-merger, assuming that such input foreclosure could be carried out through direct supply of TWTs and thus independent of the success of an input foreclosure strategy at the TWTA level.

(39) The Commission has however identified a number of serious constraints faced by the new entity if it were to engage in input foreclosure. First, as regards the ability of AAS to be independent for its EPC needs, the Commission's investigation has shown that (i) ETCA does not have dual EPCs, which account for around half of the market, and it is not expected to have qualified such EPCs with sufficient flight heritage before [2012-2015]*; (ii) ETCA does not have competitive (in terms of performance and costs) high power single EPCs and is not expected to have qualified such EPCs before[2012-2015]*; (iii) ETCA is not yet considered by prime contractors as a competitive supplier of EPCs, and (iv) L3 does not have an incentive to supply EPCs to AAS if it can sell integrated TWTAs. As regards the ability of the new entity to engage in a TWT input foreclosure, the Commission's investigation has shown that (i) L3 is a reliable and competitive TWT supplier for the frequency ranges where it has a qualified product and that (ii) an input foreclosure strategy risks leading to loss of significant TWT sales for TED if prime contractors turn to L3 in reaction. As regards the incentives, the Commission found that TED's sales of TWTs are profitable due to the current strong position of TED while it is far from certain that a TWT foreclosure strategy would allow the new entity to be decisively more competitive than all its rival prime contractors.

(40) As for the TWTA level, the Commission has carried out its assessment at the prime contracting level on the basis of the various market segments and differences in competitive conditions in order to consider all the different foreclosure

scenarios. On the basis of such assessment market segment by market segment, the Commission has concluded that the new entity is likely to have both the ability and the incentive to foreclose rival prime contractors only in market segments accounting for around [10-15 %]* of the overall market. For the remainder of the market, it is unlikely that the new entity would have both the ability and the incentive to foreclose.

(41) In view of the above, even if foreclosure were to occur in some market segments, the new entity's foreclosure strategy would not have a significant impact on competition for commercial satellites. In particular, that foreclosure strategy is not likely to affect rival prime contractors' ability to compete with AAS for most satellite programmes.

## VI. CONCLUSION

(42) The Commission takes the view that, on the basis of the evidence available, it is not likely that the merged entity would have the ability and incentive to foreclose its competitors at any level of the supply chain and that the proposed transaction would, as a result, significantly impede effective competition. The Commission therefore declares that the proposed merger is compatible with the common market and the functioning of the EEA Agreement.

Texts adopted

| Tuesday, 3 February 2009 - Strasbourg | | Provisional edition |
|---|---|---|
| NTDTV Television broadcasts to China via Eutelsat | P6_TA-PROV(2009)0041 | P6_DCL(2008)0086 |

Declaration of the European Parliament on restoring NTDTV Television broadcasts to China via Eutelsat

The European Parliament ,

– having regard to the Charter of Fundamental Rights of the European Union, signed and proclaimed on 7 December 2000, which defends the freedom and pluralism of the media,

– having regard to Rule 116 of its Rules of Procedure,

A. whereas the European Union is based on and defined by its adherence to the principles of freedom, democracy and respect for human rights, fundamental freedoms and the rule of law,

B. whereas freedom of speech, particularly that of the media, including the Internet, is heavily restricted in China,

C. whereas NTDTV is a non-profit-making television broadcaster and is the only independent Chinese-language television station to broadcast into China since 2004,

D. whereas Eutelsat suspended NTDTV's broadcasts into China as of 16 June 2008, a few weeks before the Olympic Games, citing technical reasons, and provided no other explanation,

1. Urges Eutelsat to resume NTDTV transmission to China without delay and to provide reasons for its suspension;

2. Calls on the Commission and Member States to take the necessary action to help restore NTDTV's broadcasts to China and to support access to uncensored information for millions of Chinese citizens;

3. Instructs its President to forward this declaration, together with the names of the signatories, to the Council, the Commission and the Member States.

List of signatories

Vittorio Agnoletto, Vincenzo Aita, Gabriele Albertini, Jim Allister, Alexander Alvaro, Jan Andersson, Georgs Andrejevs, Laima Liucija Andrikienė, Emmanouil Angelakas, Roberta Angelilli, Rapisardo Antinucci, Elspeth Attwooll, Marie-Hélène Aubert, Jean-Pierre Audy, Margrete Auken, Liam Aylward, Pilar Ayuso, Maria Badia i Cutchet, Mariela Velichkova Baeva, Paolo Bartolozzi, Domenico Antonio Basile, Alessandro Battilocchio, Katerina Batzeli, Edit Bauer, Jean Marie Beaupuy, Christopher Beazley, Zsolt László Becsey, Glenn Bedingfield, Angelika Beer, Bastiaan Belder, Ivo Belet, Irena Belohorská, Jean-Luc Bennahmias, Giovanni Berlinguer, Thijs Berman, Johannes Blokland, Godfrey Bloom, Sebastian Valentin Bodu, Herbert Bösch, Guy Bono, Mario Borghezio, Erminio Enzo Boso, Costas Botopoulos, Catherine Boursier, John Bowis, Sharon Bowles, Iles Braghetto, Mihael Brejc, Frieda Brepoels, Hiltrud Breyer, Kathalijne Maria Buitenweg, Nicodim Bulzesc, Colm Burke, Philip Bushill-Matthews, Simon Busuttil, Jerzy Buzek, Maddalena Calia, Martin Callanan, Mogens Camre, Luis Manuel Capoulas Santos, Marco Cappato, Marie-Arlette Carlotti, Giorgio Carollo, David Casa, Paulo Casaca, Pilar del Castillo Vera, Jean-Marie Cavada, Călin Cătălin Chiriță, Zdzisław Kazimierz Chmielewski, Ole Christensen, Philip Claeys, Luigi Cocilovo, Carlos Coelho, Richard Corbett, Dorette Corbey, Thierry Cornillet, Michael Cramer, Jan Cremers, Gabriela Crețu, Brian Crowley, Magor Imre Csibi, Marek Aleksander Czarnecki, Ryszard Czarnecki, Dragoş Florin David, Chris Davies, Antonio De Blasio, Arūnas Degutis, Jean-Luc Dehaene, Panayiotis Demetriou, Jean-Paul Denanot, Gérard Deprez, Marielle De Sarnez, Marie-Hélène Descamps, Albert Deß, Agustín Díaz de Mera García Consuegra, Jolanta Dičkutė, Gintaras Didžiokas, Koenraad Dillen, Giorgos Dimitrakopoulos, Beniamino Donnici, Bert Doorn, Den Dover, Mojca Drčar Murko, Petr Duchoň, Bárbara Dührkop Dührkop, Andrew Duff, Árpád Duka-Zólyomi, Christian Ehler, Lena Ek, Saïd El Khadraoui, James Elles, Maria da Assunção Esteves, Harald Ettl, Jill Evans, Robert Evans, Göran Färm, Hynek Fajmon, Richard Falbr, Carlo Fatuzzo, Markus Ferber, Emanuel Jardim Fernandes, Francesco Ferrari, Anne Ferreira, Elisa Ferreira, Petru Filip, Roberto Fiore, Hélène Flautre, Karl-Heinz Florenz, Alessandro Foglietta, Hanna Foltyn-Kubicka, Brigitte Fouré, Carmen Fraga Estévez, Juan Fraile Cantón, Monica Frassoni, Duarte Freitas, Ingo Friedrich, Daniel Petru Funeriu, Urszula Gacek, Milan Gaľa, Gerardo Galeote, José Manuel García-Margallo y Marfil, Iratxe García Pérez, Elisabetta Gardini, Giuseppe Gargani, Salvador Garriga Polledo, Jas Gawronski, Eugenijus Gentvilas, Georgios Georgiou, Lidia Joanna Geringer de Oedenberg, Claire Gibault, Lutz Goepel, Bruno Gollnisch, Ana Maria Gomes, Donata Gottardi, Genowefa Grabowska, Vasco Graça Moura, Luis de Grandes Pascual, Nathalie Griesbeck, Lissy Gröner, Elly de Groen-Kouwenhoven, Mathieu Grosch, Françoise Grossetête, Ignasi Guardans Cambó, Umberto Guidoni, Cristina Gutiérrez-Cortines, Fiona Hall, David Hammerstein, Małgorzata Handzlik, Malcolm Harbour, Satu Hassi, Christopher Heaton-Harris, Anna Hedh, Roger Helmer, Erna Hennicot-Schoepges, Jeanine Hennis-Plasschaert, Esther Herranz García, Luis Herrero-Tejedor, Jim Higgins, Jens Holm, Mary Honeyball, Milan Horáček, Ján Hudacký, Ian Hudghton, Stephen Hughes, Alain Hutchinson, Jana Hybášková, Sophia in 't Veld, Mikel Irujo Amezaga, Marie Anne Isler Béguin, Ville Itälä, Carlos José Iturgaiz Angulo, Caroline Jackson, Lily Jacobs, Anneli Jäätteenmäki, Stanisław Jałowiecki, Mieczysław Edmund Janowski, Lívia Járóka, Georg Jarzembowski, Elisabeth Jeggle, Rumiana Jeleva, Anne E. Jensen, Pierre Jonckheer, Romana Jordan Cizelj, Madeleine Jouye de Grandmaison, Aurelio Juri, Jelko Kacin, Filip Kaczmarek, Gisela Kallenbach, Syed Kamall, Othmar Karas, Piia-Noora Kauppi, Metin Kazak, Tunne Kelam, Glenys Kinnock, Wolf Klinz, Dieter-Lebrecht Koch, Silvana Koch-Mehrin, Eija-Riitta Korhola, Miloš Koterec, Sergej Kozlík, Guntars Krasts, Rodi Kratsa-Tsagaropoulou, Ģirts Valdis Kristovskis, Urszula Krupa, Wiesław Stefan Kuc, Helmut Kuhne, Sepp Kusstatscher, Zbigniew Krzysztof Kuźmiuk, Joost Lagendijk, André Laignel, Jean Lambert, Alexander Graf Lambsdorff, Vytautas Landsbergis, Carl Lang, Esther De Lange, Raymond Langendries, Anne

Laperrouze, Kurt Joachim Lauk, Vincenzo Lavarra, Henrik Lax, Johannes Lebech, Bernard Lehideux, Klaus-Heiner Lehne, Lasse Lehtinen, Jörg Leichtfried, Jo Leinen, Jean-Marie Le Pen, Marine Le Pen, Fernand Le Rachinel, Katalin Lévai, Janusz Lewandowski, Marcin Libicki, Marie-Noëlle Lienemann, Peter Liese, Kartika Tamara Liotard, Alain Lipietz, Pia Elda Locatelli, Eleonora Lo Curto, Antonio López-Istúriz White, Andrea Losco, Patrick Louis, Caroline Lucas, Astrid Lulling, Florencio Luque Aguilar, Elizabeth Lynne, Marusya Ivanova Lyubcheva, Jules Maaten, Linda McAvan, Arlene McCarthy, Mary Lou McDonald, Mairead McGuinness, Edward McMillan-Scott, Eugenijus Maldeikis, Ramona Nicole Mănescu, Vladimír Maňka, Erika Mann, Thomas Mann, Marian-Jean Marinescu, Catiuscia Marini, Sérgio Marques, David Martin, Hans-Peter Martin, Jan Tadeusz Masiel, Véronique Mathieu, Marios Matsakis, Maria Matsouka, Jaime Mayor Oreja, Erik Meijer, Íñigo Méndez de Vigo, Rosa Miguélez Ramos, Marianne Mikko, Francisco José Millán Mon, Gay Mitchell, Claude Moraes, Eluned Morgan, Luisa Morgantini, Philippe Morillon, Roberto Musacchio, Cristiana Muscardini, Sebastiano (Nello) Musumeci, Riitta Myller, Pasqualina Napoletano, Juan Andrés Naranjo Escobar, Michael Henry Nattrass, Catherine Neris, Bill Newton Dunn, Annemie Neyts-Uyttebroeck, James Nicholson, null Nicholson of Winterbourne, Rareş-Lucian Niculescu, Angelika Niebler, Lambert van Nistelrooij, Ljudmila Novak, Cem Özdemir, Péter Olajos, Jan Olbrycht, Seán Ó Neachtain, Gérard Onesta, Janusz Onyszkiewicz, Dumitru Oprea, Josu Ortuondo Larrea, Miroslav Ouzký, Siiri Oviir, Reino Paasilinna, Justas Vincas Paleckis, Marie Panayotopoulos-Cassiotou, Marco Pannella, Pier Antonio Panzeri, Georgios Papastamkos, Neil Parish, Alojz Peterle, Maria Petre, Markus Pieper, Sirpa Pietikäinen, Józef Pinior, Mirosław Mariusz Piotrowski, Umberto Pirilli, Paweł Bartłomiej Piskorski, Gianni Pittella, Francisca Pleguezuelos Aguilar, Zita Pleštinská, Anni Podimata, Zdzisław Zbigniew Podkański, Bernard Poignant, José Javier Pomés Ruiz, Nicolae Vlad Popa, Miguel Portas, Horst Posdorf, Bernd Posselt, Christa Prets, Pierre Pribetich, Jacek Protasiewicz, John Purvis, Luís Queiró, Karin Resetarits, Herbert Reul, José Ribeiro e Castro, Frédérique Ries, Karin Riis-Jørgensen, Giovanni Rivera, Maria Robsahm, Ulrike Rodust, Bogusław Rogalski, Zuzana Roithová, Luca Romagnoli, Raül Romeva i Rueda, Dariusz Rosati, Wojciech Roszkowski, Dagmar Roth-Behrendt, Paul Rübig, Leopold Józef Rutowicz, Eoin Ryan, Guido Sacconi, Aloyzas Sakalas, Katrin Saks, José Ignacio Salafranca Sánchez-Neyra, Antolín Sánchez Presedo, Manuel António dos Santos, Salvador Domingo Sanz Palacio, Jacek Saryusz-Wolski, Toomas Savi, Lydia Schenardi, Agnes Schierhuber, Carl Schlyter, Frithjof Schmidt, Olle Schmidt, Pál Schmitt, György Schöpflin, Inger Segelström, Czesław Adam Siekierski, Eva-Riitta Siitonen, José Albino Silva Peneda, Kathy Sinnott, Marek Siwiec, Peter Skinner, Alyn Smith, Csaba Sógor, Renate Sommer, Søren Bo Søndergaard, Bogusław Sonik, María Sornosa Martínez, Jean Spautz, Francesco Enrico Speroni, Bart Staes, Grażyna Staniszewska, Peter Šťastný, Gabriele Stauner, Petya Stavreva, Dirk Sterckx, Catherine Stihler, Margie Sudre, David Sumberg, Gianluca Susta, Eva-Britt Svensson, Hannes Swoboda, István Szent-Iványi, Konrad Szymański, Hannu Takkula, Charles Tannock, Andres Tarand, Salvatore Tatarella, Britta Thomsen, Marianne Thyssen, Gary Titley, Patrizia Toia, László Tőkés, Ewa Tomaszewska, Witold Tomczak, Antonios Trakatellis, Helga Trüpel, Claude Turmes, Evangelia Tzampazi, Thomas Ulmer, Vladimir Urutchev, Inese Vaidere, Nikolaos Vakalis, Adina-Ioana Vălean, Frank Vanhecke, Johan Van Hecke, Anne Van Lancker, Daniel Varela Suanzes-Carpegna, Ioannis Varvitsiotis, Ari Vatanen, Yannick Vaugrenard, Armando Veneto, Riccardo Ventre, Donato Tommaso Veraldi, Marcello Vernola, Alejo Vidal-Quadras, Cornelis

Visser, Oldřich Vlasák, Dominique Vlasto, Graham Watson, Henri Weber, Manfred Weber, Renate Weber, Anja Weisgerber, Åsa Westlund, John Whittaker, Andrzej Wielowieyski, Jan Marinus Wiersma, Anders Wijkman, Glenis Willmott, Iuliu Winkler, Lars Wohlin, Janusz Wojciechowski, Corien Wortmann-Kool, Jan Zahradil, Zbigniew Zaleski, Andrzej Tomasz Zapałowski, Stefano Zappalà, Tatjana Ždanoka, Dushana Zdravkova, Vladimír Železný, Roberts Zīle, Jaroslav Zvěřina, Tadeusz Zwiefka

# COMMISSION DECISION

## of 20 April 2009

## establishing an expert group on the security of the European GNSS systems

**(Text with EEA relevance)**

(2009/334/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Whereas:

(1) Regulation (EC) No 683/2008 of the European Parliament and of the Council of 9 July 2008 on the further implementation of the European satellite navigation programmes (EGNOS and Galileo) [1] has significantly changed the system of governance and financing of these two programmes.

(2) Article 13(1) of Regulation (EC) No 683/2008 lays down that the Commission shall manage all questions relating to the security of the systems, duly taking into account the need for oversight and integration of security requirements in the overall programmes. Under paragraph 2 of that Article, the Commission shall adopt implementing measures laying down the main technical requirements for controlling the access to, and handling of, technologies that provide security to the systems. Meanwhile, paragraph 3 lays down that the Commission shall ensure that the necessary steps are taken to comply with the measures referred to in paragraph 2 and that any further requirements related to the security of the systems are met, taking full account of expert advice.

(3) Moreover, Article 23 of Regulation (EC) No 683/2008 repeals, with effect from 25 July 2009, Article 7 of Council Regulation (EC) No 876/2002 of 21 May 2002 setting up the Galileo Joint Undertaking [2]. The said Article 7 establishes a Security Board to deal with security matters regarding the Galileo system.

(4) In order to fulfil the mission assigned to it by the aforementioned provisions of Article 13 of Regulation (EC) No 683/2008 and, with effect from 25 July 2009, to carry out the tasks entrusted until then to the Security Board established by Article 7 of Regulation (EC) No 876/2002, the Commission needs the assistance of experts from the Member States.

(5) Moreover, when Regulation (EC) No 683/2008 was adopted, the Commission made a statement in which it expressed its intention to create an expert group composed of representatives from the Member States, in order to implement the aforementioned provisions of Article 13(1) of the Regulation and to examine matters related to the security of the systems.

(6) This statement specifies that the Commission will ensure that the expert group shall be composed of one representative of each Member State and one representative from the Commission, be chaired by the representative of the Commission and adopt its rules of procedures that foresee, inter alia, the adoption of opinions by consensus and a provision for the experts to raise any relevant issue related to the security of the systems.

(7) In the statement, the Commission also undertook, in exercising its responsibilities, to take full account of the opinions of this expert group and to consult it, inter alia, before defining the main requirements for the security of the systems as set out in Article 13 of Regulation (EC) No 683/2008.

(8) Also in the statement, the Commission considered, on the one hand, that representatives of the European GNSS Supervisory Authority, the European Space Agency as well as the SG/HR should be involved as observers in the work of the expert group under the conditions laid down in its rules of procedure and, on the other hand, that agreements concluded by the European Community may provide for the participation of representatives of third countries in the work of the expert group under conditions laid down in its rules of procedure.

[1] OJ L 196, 24.7.2008, p. 1.
[2] OJ L 138, 28.5.2002, p. 1.

(9) It is thus appropriate to establish an expert group, called the 'Security Board for the European GNSS Systems', the establishment, mission, composition and operation of which are in line with the content of the aforementioned Commission statement and also comply with the horizontal rules set out in the framework for Commission expert groups established in Commission Decision C(2005) 2817.

(10) Moreover, provision must be made for the possible participation of third countries in the work of the expert group. In particular, given that Norway and Switzerland, which are members of the European Space Agency, participate in the European GNSS programmes and are closely involved in the security issues linked thereto, it is important to allow them to be involved in the work of the expert group for a temporary period of three years, which may be extended in the context of an agreement to be reached between the European Community and both of these third countries,

HAS DECIDED AS FOLLOWS:

*Article 1*

**The Security Board for the European GNSS Systems**

An expert group on the security of the European GNSS systems, called the Security Board for the European GNSS Systems (hereinafter referred to as the Security Board) is hereby established.

*Article 2*

**Mission**

The Security Board shall assist the Commission in implementing the provisions of Article 13(1) of Regulation (EC) No 683/2008 and in examining matters concerning the security of the European GNSS systems. The Commission shall consult it prior to defining the main requirements, provided for in Article 13(2), concerning the security of the systems and it shall provide ongoing support to the Commission as regards the implementation of the provisions of Article 13(3).

*Article 3*

**Consultation**

The Commission shall regularly consult the Security Board and take its opinions fully into account.

*Article 4*

**Composition**

1. The Security Board shall be composed of one representative of each Member State, selected from among the recognised experts in the field of safety and security, and a representative of the Commission.

2. Representatives of the European GNSS Supervisory Authority, the European Space Agency and the SG/HR may be involved as observers in the work of the Security Board under the conditions laid down in its rules of procedure.

3. Agreements concluded by the European Community may make provision for representatives of third countries to participate in the work of the Security Board, including as full members thereof.

4. With effect from the entry into force of this Decision, representatives of Norway and Switzerland may be temporarily involved as observers in the work of the Security Board under the conditions laid down in its rules of procedure. This is conditional upon Norway and Switzerland each providing prior confirmation of their intention to apply, on their territory, all the necessary security measures to ensure an appropriate degree of protection of the infrastructure, services and technologies of the European GNSS programmes and systems, particularly as regards export controls. The duration of this temporary participation must be sufficient to allow an agreement as referred to in paragraph 3 to be concluded and may not, in any event, exceed three years.

5. The participation of a third country in the work of the Security Board may be reduced or suspended if it appears that the actions taken by that country do not make it possible to ensure the degree of protection required as regards security or to comply with the security rules laid down for the European GNSS programmes.

6. The chairperson of the Security Board may invite other experts to participate in the work of the Security Board on occasion, under the conditions laid down in its rules of procedure. The reasons justifying the presence of such experts must be notified in advance by the chairperson to the members of the Security Board.

7. The representatives nominated by a country or organisation shall remain in their position until they are replaced or their mandate ends. The Commission may refuse the expert nominated by a country or organisation when this nomination does not seem appropriate, particularly in the event of a conflict of interest. In such a case, the Commission shall quickly inform the country or organisation, which shall then nominate another expert.

*Article 5*

**Operation**

1. The Security Board shall be chaired by a representative of the Commission.

2. In agreement with the Commission, sub-committees may be set up to examine specific matters on the basis of a mandate established by the Security Board. They shall be disbanded as soon as their mandates are fulfilled.

3. The Security Board and its sub-committees shall normally meet on Commission premises in accordance with the procedures and schedule established by the Commission. The meeting locations shall be secured in a manner appropriate to the nature of the work. The secretariat shall be provided by the Commission. Other Commission officials concerned may take part in the meetings.

4. The Security Board shall adopt its rules of procedure on the basis of the standard rules of procedure adopted by the Commission [1]. The rules of procedure shall specify, inter alia, that the Security Board shall adopt its opinions or reports by consensus as far as possible and that each member may raise any relevant issue linked to the security of the European GNSS systems.

5. The participants in meetings of the Security Board and its sub-committees must strictly comply with the Commission's safety and security rules, particularly as regards classified documents.

*Article 6*

**Meeting expenses**

1. The travel and accommodation expenses incurred by the members, experts and observers in connection with the Security Board's activities shall be reimbursed by the Commission in accordance with the Commission rules in force. There shall be no remuneration for the tasks performed.

2. Meeting expenses shall be reimbursed within the limits of the appropriations allocated to the departments concerned under the annual procedure for allocating resources.

*Article 7*

**Entry into force**

This Decision shall enter into force on the day of its adoption by the Commission. It shall be published in the *Official Journal of the European Union*.

Done at Brussels, 20 April 2009.

*For the Commission*

Antonio TAJANI

*Vice-President*

(1) Annex III to document SEC(2005) 1004 of 27.7.2005.

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COUNCIL OF
THE EUROPEAN UNION

EN

# Council Resolution "Space Council" Orientations

***2945th COMPETITIVENESS (INTERNAL MARKET, INDUSTRY and RESEARCH) Council meeting Brussels, 29 May 2009***

The Council adopted the following resolution [1]:

« THE 'SPACE COUNCIL'

EMPHASISING the orientations and resolutions adopted at past meetings of the 'Space Council', in particular the Resolution on the European Space Policy of 22 May 2007[2] establishing a political framework for space in Europe and the Resolution "Taking forward the European Space Policy" of 26 September 2008[3] setting out new priority areas for the further implementation and development of the European Space Policy, the results of the ESA Council at ministerial level of 25-26 November 2008 and the EU Competitiveness Council Conclusions "Towards a GMES Programme" of 2 December 2008[4];

RECOGNISING the progress made in the implementation of these Resolutions, in particular in the framework of the Structured Dialogue the increased coordination of space, security and defence related activities between key actors of the European Space Policy, including the identification of critical space technologies for European non-dependence; the acceptance of the Multinational Space-based Imaging System (MUSIS) as a new European Defence Agency (EDA) ad hoc category B programme; and, on Space Situational Awareness (SSA), the adoption of the ESA Preparatory Programme, while recalling that the EU will take, in liaison with ESA and their respective Member States, an active role to set-up progressively a European capability for SSA and an appropriate governance structure;

1 The resolution is also approved by the European Space Agency council of ministers.
2 Doc. 10037/07
3 Doc. 13569/08
4 Doc. 16722/08

**P R E S S**

EMPHASISING the potential of space to impact on innovation in the economy, as well as on economic recovery, and the need for further orientations to the Commission and ESA in particular on the short- and long-term progress of the Global Monitoring for Environment and Security (GMES) initiative:

## I) On the contribution of space to innovation and competitiveness in the context of the European Plan for Innovation and the European Economic Recovery Plan

EMPHASISES the Conclusions on the European Council of 11-12 December 2008, notably its support to the European Economic Recovery Plan (EERP) and its call for the launching of a European Plan for Innovation, which should also include space technology and services derived from it, as one of the main technologies of the future[5];

CONSIDERS that, in view of the acknowledged contribution of space to the overall competitiveness and innovation potential of the European economy, space activities and their applications should receive full consideration in the use of funds allocated to economic recovery;

EMPHASISES the need to mobilise existing innovation support mechanisms at European, national and regional level, and consider new support instruments to ensure cross-fertilisation of knowledge, innovation and ideas between space and non-space sectors, and between space industry and leading research organisations and universities;

EMPHASISES the need to:

- identify innovation-boosting measures for the space sector in the framework of the European Plan for Innovation and in coordination, as appropriate, with national plans;
- encourage more prominent presence of the European space industry in trans-sectoral innovation clusters and networks;
- define adequate conditions for the development of downstream services based on EGNOS, Galileo and GMES, taking full benefit of an integrated approach that combines satellite navigation, communications and Earth observation technologies with ground-based assets;
- consider including space applications among any further selection of new lead markets under the Commission's Lead Market Initiative, in the light of the review of that initiative[6]; and
- analyse and measure the innovative impact of space technologies on other economic sectors in an effort to provide solid analytical input to the preparation of future European programmes;

Further UNDERLINES the potential of space to develop enabling technologies and promote future economic growth in Europe. In particular:

5 Doc. 17271/08 - point 18, page 8
6 Doc. 5121/08

- HIGHLIGHTS the potential of satellite communications technologies to bring broadband to European citizens and enterprises, ensuring a better access to modern ICT particularly in rural and remote areas[7], in the context of the European broadband strategy called for by the European Council of 19-20 March; CALLS on the Commission, ESA and the EU and ESA Member States to consider integrating satellite technologies in future broadband projects with a view to support the implementation of the EERP, while respecting the principles of open competition, technology neutrality, and open and neutral internet architecture; and further RECOGNISES the need to explore innovative approaches and architectures for the provision of global satellite communications services in response to institutional demand in support of European programmes and policies, including transport, energy[8] and security;

- STRESSES that space can provide a significant contribution to the 'Factories of the Future'[9] initiative, as well to other strategic priorities of the EERP.

## II) On GMES Initial Operations

REAFFIRMS the importance of the rapid implementation of GMES services and [TAKES NOTE of the Commission's proposal to the EU Council and the European Parliament for a Regulation on GMES Initial Operations Programme[10]], which aims at achieving a significant step towards a GMES Programme ensuring the sustainable long-term operation of GMES services, meeting the requirements of national and European users, while pursuing the development of a detailed data access and dissemination policy for these services[11];

STRESSES the need, in this context, to give funding priority to the operations of the GMES Space Component;

UNDERLINES the need to ensure that GMES services are supplied on a competitive basis, when relevant, and that appropriate SME involvement is ensured in their provision;

STRESSES the need for a coherent and complementary approach for funding schemes of GMES services and the observation data and infrastructure implemented through the Space Theme of the Seventh Framework Programme for research, technological development and demonstration activities[12], the proposed Regulation on a GMES Initial Operations Programme,[13] the ESA GMES Space Component Programme and activities implemented at Member State level.

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7 Doc. 7201/09

8 Doc. 7566/09

9 Designed to enable European industry to adapt to global competitive pressures by improving the technological base of EU manufacturing across a broad range of sectors (http://ec.europa.eu/research/press/2009/pdf/ppp-fact-sheet_en.pdf)

10 Ref. to the Commission doc to be added and square brackets to be removed after publication

11 As detailed in the Council conclusions on Global Monitoring for Environment and Security (GMES): "Towards a GMES Programme" (Doc. 16722/08)

12 2006/971/EC:"Council Decision of 19 December 2006 concerning the Specific Programme Cooperation implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)", OJ L 400/86 30.12.2006

13 Reference to the Commission proposal to be added when published

## III) On the long-term arrangements for the GMES Space Component (GSC)

RECALLS the need to define, at national and European levels, a sustainable funding approach for the GMES Space Component based on an assessment of the overall financing needs for this infrastructure, taking into account the three successive stages: R&D stage to be funded from R&D appropriations, transition stage with mixed R&D and operational funding, and an operational stage with dedicated funding for operations involving the users; EMPHASISES that some GMES Space Component elements are entering into the operational stage and WELCOMES that, with the adoption of a Regulation on the GMES Initial Operations Programme, operational funding would be introduced into GMES;

RECOGNISES the need to identify and ensure funding for the remaining elements of the initial GSC build-up and INVITES the Commission and ESA to elaborate in consultation with the EU and ESA Member States a funding strategy for these elements, without prejudging the next EU Multi-annual Financial Framework;

Concerning observations related to operational oceanography and atmospheric composition monitoring, respecting the overall coordination role of ESA for the GMES Space Component, INVITES the Commission and ESA to lead a dialogue with EU and ESA Member States and with EUMETSAT and its Member States to explore options for the role of EUMETSAT to coordinate the user requirements for space observations;

Concerning observations related to land monitoring, emergency response and security, INVITES the Commission and ESA to explore options for the long-term operation of relevant missions including procurement of data, by starting dialogues, based on terms of reference to be determined following close consultation of EU and ESA Member States, with those Member States which own infrastructure, in order to discuss programmatic, governance and financial aspects;

UNDERLINES the importance of the Commission and ESA defining the data policy for, and the ownership of, the Sentinel missions consistent with the INSPIRE directive[14] and the provisions of the ESA GMES Space Component Programme Declaration approved at the ESA Ministerial Council 2008;

TAKES NOTE of the preliminary analysis carried out by ESA, notably the GMES Space Component Long-term Scenario[15], as a basis for the estimations of the GMES Space Component evolution and costs, INVITES ESA to consolidate this analysis through further consultation with EUMETSAT and Member States owning infrastructure by the end of 2009, and REAFFIRMS the need for the EU to establish swiftly a long-term budget strategy, within the framework of the definition of the next EU Multi-annual Financial Framework.

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[14] Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

[15] ESA/C(2009)36

## IV) On space exploration

REAFFIRMS the need to assess the possibilities offered by European Union policies to embed space exploration in a wider political perspective and, recognising that space exploration has the potential to provide a major impact on innovation, LOOKS FORWARD to the Commission's proposed High-Level Political Conference on Space Exploration, on the basis previously agreed in the Space Council, as a first step towards the elaboration in due time of a fully-fledged political vision on "Europe and Exploration" encompassing a long-term strategy/roadmap and an international cooperation scheme.

## V) On adequate instruments and funding schemes

RECALLS the need to develop adequate EU instruments and funding schemes taking into account the specificities of the space sector (in particular, the relatively small size of its market and its dependence on public funding/programmes), the need to strengthen the space industry's competitiveness and the necessity of a balanced involvement of capacities in Europe, and examining the modalities for the full association of all ESA Member States;

WELCOMES in this context the Commission's initiative to conduct in-depth studies on these issues, on which it is consulting ESA and the results of which will provide much needed input to accelerate work in this domain, within the framework of the definition of the next EU Multi-annual Financial Framework and NOTES the invitation of the ESA Council at Ministerial level[16] to its Director General to start reflections with the European Commission and Member States, with a view to making a common analysis of the current rules for joint ESA-EU programmes. »

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16 ESA/C-M/CCVI/Res. 4 (Final) 25.11.2009

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EUROOPA KONTROLLIKODA
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EUROPEAN COURT OF AUDITORS
COUR DES COMPTES EUROPÉENNE
CÚIRT INIÚCHÓIRÍ NA HEORPA
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(pursuant to Article 248(4), second subparagraph, EC)

# The management of the **Galileo** programme's development and validation phase

together with the Commission's replies

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## ACRONYMS

| | |
|---|---|
| ARTES | Advanced Research in Telecommunications Systems |
| CNES | Centre National d'Etudes Spatiales |
| CS | Commercial Service |
| EC | European Communities |
| EGNOS | European Geostationary Navigation Overlay Service |
| EOIG | EGNOS Operator and Infrastructure Group |
| ESA | European Space Agency |
| FP6 | Sixth Framework Programme of the European Community for research, technological development and demonstration activities, contributing to the creation of the European Research Area and to innovation (2002 to 2006) |
| GCC | Galileo Control Centre |
| GCS | Ground Control Segment |
| GDP | Gross Domestic Product |
| GIOVE | Galileo In-Orbit Validation Element |
| GJU | Galileo Joint Undertaking |
| GMS | Ground Mission Segment |
| GNSS | Global Navigation Satellite System |
| GPS | Global Positioning System |
| GSA | European GNSS Supervisory Authority |
| GSTB | Galileo System Test Bed |

| | |
|---|---|
| HoT | Heads of Terms |
| INTOSAI | International Organisation of Supreme Audit Institutions |
| IOV | In-Orbit-Validation |
| JTI | Joint Technology Initiative |
| NRSCC | National Remote Sensing Centre of China |
| OS | Open Service |
| PB-Nav | Programme Board on Satellite Navigation |
| PFI | Private finance initiative |
| PPP | Public-private partnership |
| PRS | Public Regulated Service |
| PwC | PricewaterhouseCoopers |
| RTD | Research and Technological Development |
| SAR | Search and Rescue |
| SESAR | Single European Sky ATM Research |
| SoL | Safety of Life |
| TEN-T | Trans-European Transport Network |

## EXECUTIVE SUMMARY

I. The EGNOS and Galileo programmes were initiated in the mid 1990s with the aim of establishing a European Global Navigation Satellite System (GNSS). EGNOS is a regional satellite based augmentation system for Europe that improves the signals coming from existing satellite navigation systems such as GPS. Galileo is currently under development as Europe's Global Satellite Navigation System.

II. In order to manage the development and validation phase of the Galileo programme, the European Commission and the European Space Agency (ESA) set up a dedicated structure, the Galileo Joint Undertaking (GJU), which operated from September 2003 until the end of 2006. In 2007, the activities of the GJU were transferred to the GNSS Supervisory Authority, a Community Agency.

III. The Galileo programme was the first of its kind in several respects: it was the first close collaboration between the ESA and the Commission on such a large space programme, the first industrial programme to be managed at European level and the first time the Commission was to participate in a public-private partnership.

IV. Negotiations with the private sector on a concession agreement stalled in early 2007 and the Parliament and the Council decided to redirect the programme in autumn 2007. Technological development has been set back five years. As at the end of 2008, no operational satellites have been launched and cost estimates for the development and validation phase have almost doubled from 1,1 to 2,1 billion euro. The Court's audit of the development and validation phase of the Galileo programme examined:

(i) which factors accounted for the failure of the concession process;

(ii) which factors accounted for the reported delays and cost overruns of technological development;

(iii) to what extent spending on research and development activities has benefited the Galileo programme;

(iv) how well the GJU had integrated EGNOS into Galileo;

(v) whether the Galileo programme was adequately governed.

V. The Court concluded that management of the development and validation phase was inadequate. The Galileo programme experienced problems at different levels:

(i) The GJU was not a strong programme manager nor was any other body assigned this role. The GJU did not achieve most of its objectives – owing, however, to factors that were largely outside the GJU's control.

(ii) The programme lacked a strong strategic sponsor and supervisor: the Commission did not proactively direct the programme, leaving it without a helmsman.

(iii) Owing to their different programme expectations, Member States intervened in the interest of their national industries and held up decisions. The compromises made led to implementation problems, delays and, in the end, to cost overruns.

VI. The PPP was inadequately prepared and conceived. As a result, the GJU was required to negotiate a PPP which was unrealistic.

VII. The GJU's task of supervising the technological development activities was seriously constrained by governance issues, an incomplete budget, delays and the industrial organisation of the development and validation phase.

VIII. Discontinuities, the inappropriateness of the Sixth Framework Programme (FP6) for funding market development activities, the absence of a comprehensive market development approach and delays account for the limited usefulness of Galileo RTD results.

IX. The integration of EGNOS into Galileo was only partially successful because the GJU's mandate was not clear, the decision to include EGNOS in the concession negotiations held up the achievement of the EGNOS programme, the EGNOS institutional framework was not clear and the GJU devoted little effort to market development for EGNOS.

X. The programme’s governance was inadequate. The division of roles between the entities involved in the development and validation phase of the programme (EU and ESA Member States, Commission, GJU and ESA) was not clearly defined. The Commission did not provide adequate leadership in developing and managing Galileo.

XI. If the mid-2007 redirection of the EGNOS and Galileo programmes is to succeed, the Commission must considerably strengthen its management of the programmes. This report includes a number of recommendations aimed at supporting the Commission in this task.

XII. Finally, should the EU resolve to engage in other large infrastructure programmes, the Commission must ensure it has access to the appropriate management tools.

## INTRODUCTION

1. This audit report is about the European Union's involvement in satellite navigation in the period 2003-2006.

2. The European Union's satellite navigation strategy consists of two programmes: EGNOS[1] and Galileo.

(a) EGNOS is a regional system for Europe that monitors and corrects the signals emitted by existing satellite navigation systems[2] by improving their accuracy and assessing their reliability.

(b) Galileo is currently under construction as Europe's Global Navigation Satellite System (GNSS). It is the European counterpart of the American GPS and a joint initiative of the European Commission and the European Space Agency (ESA) (see ***Annex I***).

## THE HISTORY OF GALILEO

### *Early days (before 1999)*

3. The history of Galileo began in 1994, with the European Commission's proposal to engage Europe in satellite navigation[3]. Based on this proposal, in December 1994 the Council of the European Union invited the Commission to initiate the necessary activities[4].

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1 European Geostationary Navigation Overlay Service.

2 GPS (Global Positioning System), a GNSS developed and operated by the United States Department of Defense; GLONASS, a GNSS developed by the former Soviet Union and now operated for the government of the Russian Federation by its Space Forces.

3 COM(94) 248 – Satellite navigation services: a European approach.

4 Resolution of the Council of the European Union of 19 December 1994 on the European contribution to the development of a Global Navigation Satellite System (GNSS).

4. The Commission's initial strategy for the development of a GNSS comprised two stages. The first (GNSS-1) was to develop a complement to the existing GPS and GLONASS systems. This stage, known as EGNOS, consists of three transponders on geostationary satellites and a network of ground stations covering all of Europe which are used to improve the accuracy of GPS and GLONASS (see footnote 2) and to assess the reliability of their signals.

5. EGNOS was first implemented in 1994 as an ESA programme with financing from several sources (ESA Member States, the European Commission, Eurocontrol and a number of national civil aviation operators and other organisations[5]). It was initially intended as a demonstrator, but gradually it was decided to convert it into a pre-operational and then an operational programme (see also ***Annex II***).

6. The second stage (GNSS-2) was to implement a global civil satellite navigation system, known as Galileo. This will ultimately consist of 30 satellites at a fixed altitude of approximately 23 000 km, as well as a network of ground stations, and will offer five levels of services (see Box 1).

**Box 1 – The five Galileo services**

The Open Service (OS) will be free of user charges and will provide competitive position and timing performance relative to other GNSS systems.

Safety of Life (SoL) will deliver enhanced performance (including an integrity function, i.e. a timely warning of reduced accuracy) and certification and will be offered with a service guarantee to the critical transport community, e.g. aviation and maritime.

The Commercial Service (CS) will provide access to two additional (encrypted) signals, to allow for a higher data throughput rate and enable users to improve accuracy.

[5] Grouped into the EGNOS Operator and Infrastructure Group (EOIG).

The Public Regulated Service (PRS) will provide position and timing to specific users requiring a high continuity of service (e.g. emergency services, security forces and the military), with controlled access.

Finally, Galileo will contribute, through its Search And Rescue (SAR) service to the International Satellite System for Search and Rescue (Cospas-Sarsat). Galileo satellites will be able to pick up signals from emergency beacons carried on ships, planes or persons and send them back to national rescue centers, enabling the latter to pinpoint the location of an accident.

7. There were three motives underlying the creation of Galileo:

(a) political (Galileo is a declaration of an independent European GNSS capability);

(b) economic (Galileo was seen as commercially viable and was justified by predictions of substantial economic and social benefits);

(c) technological (Galileo was to become the most sophisticated navigation system available).

8. The Galileo programme was divided at the outset into four phases (see ***Table 1***):

(a) technical definition;

(b) development and validation;

(c) deployment;

(d) commercial operation.

***Definition (1999 – 2002)***

9. The Galileo programme got underway in 1999, when the Council gave the go-ahead for the definition phase[6]. During this phase, both the Commission and the ESA undertook technical studies, pre-developments and feasibility studies. Funding from the European Community budget was mainly allocated via the Fourth and Fifth Framework Programmes for Research and Development[7]. ESA funding was allocated through its GalileoSat programme.

10. In November 2000[8], the Commission presented the European Parliament and the Council with the results of the definition phase. These contained concrete proposals on the definition of the system, its economic and financial aspects and its management structure. The timetable for the next phases of the Galileo programme was established as follows (see also ***Table 1***):

(a) the development and validation phase would run from 2001 to 2005;

(b) the deployment phase would run from 2006 to 2007;

(c) the commercial operation phase would start in 2008.

The communication planned for EGNOS to become operational in 2003.

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[6] Council Resolution of 19 July 1999 on the involvement of Europe in a new generation of satellite navigation services - Galileo-Definition phase.

[7] Decision No 1110/94/EC of the European Parliament and of the Council of 26 April 1994 concerning the fourth framework programme of the European Community activities in the field of research and technological development and demonstration (1994 to 1998) (OJ L 126, 18.5.1994, p. 1); Decision No 182/1999/EC of the European Parliament and of the Council of 22 December 1998 concerning the fifth framework programme of the European Community for research, technological development and demonstration activities (1998 to 2002) (OJ L 26, 1.2.1999, p. 1).

[8] COM(2000) 750 of 22 November 2000 – Commission communication to the European Parliament and the Council – On Galileo.

**Table 1 – Phases of the Galileo programme as foreseen in November 2000**

| Phases and main objectives | Initial timing | Governance structure[1] |
|---|---|---|
| *Definition phase*<br>Technical activities<br>– Technical studies<br>– Technology pre-developments<br>Other activities<br>– Preparation of governance structures for the next phase<br>– Legal and business development feasibility studies<br>– International agreements | 1999-2000 | European Commission and the ESA separately plus coordination via PMB (Programme Management Board),<br>GPO (Galileo Programme Office) and GISS (Galileo Interim Support Structure) |
| *Development and validation phase*<br>Technical activities<br>– Detailed definition of space, ground and user segments<br>– Development and construction of prototype satellites and minimal ground segment<br>– "In-orbit" validation of the system<br>Other activities<br>– Research grants (FP6)<br>– Development business plan<br>– Concession negotiations<br>– EGNOS integration<br>– International agreements | 2001-2005 | European Commission and the ESA through GJU |
| *Deployment phase*<br>Technical activities<br>– Satellite assembly and launch<br>– Installation of complete ground segment<br>Other activities<br>– Business development | 2006-2007 | European GNSS Supervisory Authority (GSA) + concession holder |
| *Commercial operation phase*<br>Technical activities<br>– Satellite renewal<br>– Operation of the centers<br>– Maintenance<br>Other activities<br>– Commercial activities | 2008+ | European GNSS Supervisory Authority (GSA) + concession holder |

[1] The amendments to the Galileo management structure proposed by recent (2007) Commission communications and Council resolutions are not reflected in this table.

11. The Commission stated in the same communication that "cost/benefit studies show Galileo to be cost-effective and sufficiently attractive to obviate the need for any further public funding in the form of subsidies from 2007." The Galileo system was to cost a total of 3,3 billion euro (see ***Table 2*** for a detailed

breakdown). The Commission considered the PPP to be “an essential factor for the success of the Galileo programme”. The communication also highlighted the urgency of taking a political decision to continue the programme at the Nice European Council in December 2000.

12. As requested by the Council of the European Union in its Resolution of 5 April 2001, the Commission had several studies made of a business plan for Galileo. These studies recommended a ‘concession’-model of PPP[9]. The Council confirmed the choice of a concession to fund the deployment and operational phases of the Galileo programme and agreed in March 2002 "to work to secure a cost-share of at most 1/3 for the Community budget and at least 2/3 for the private sector" for the deployment phase.

***Development and validation under the GJU (2003-2006)***

**Purpose**

13. From a technical point of view, the development and validation phase consisted of the *technological development* of part of the system – an initial core satellite constellation of two experimental and four operational satellites, the associated ground segment and test user segments, making validation possible through in-orbit and ground-based tests (also called In-Orbit Validation or IOV). The ESA was responsible for implementing these technological development activities through its GalileoSat programme.

14. In parallel with technological development, the Commission focused, during the development and validation phase, on other activities aiming at bridging the gap between the system and its future users in order to prepare for the successive phases of the programme, through business development and mobilisation of funds. Early development of user segments was seen as the

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[9] A DBFO (design-build-finance-operate) type of PPP where the private party recovers costs from user charges or availability payments.

key to subsequent use of the Galileo system if direct revenue was to be generated. Therefore, the Commission targeted private-sector involvement through a PPP. Additionally, the focus was on funding RTD activities through the Sixth Framework Programme for Research (FP6)[10] in order to support both technological development and business development and on using EGNOS as a precursor programme to prepare the market for Galileo. EGNOS will deliver regional services similar to three of the five future Galileo services – OS, SoL and SAR (see Box 1).

**The Galileo Joint Undertaking – the management vehicle for the development and validation phase**

15. The development and validation phase was to be managed by the GJU, a dedicated structure set up by the Commission and the ESA after approval by the Council of the European Union and the ESA Council. The former Council's decision to proceed in full with development and validation was not taken until March 2002[11], 15 months later than expected. This delay was caused by lengthy negotiations among the EU Member States concerning the use of the system for military purposes and private-sector funding and participation in the programme. The ESA Council's official go-ahead for development and validation was further delayed until May 2003. This was caused by lengthy discussions among the ESA Member States on their industrial participation in the programme. The GJU was set up by EC regulation in May 2002[12] [13], its

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[10] Decision No 1513/2002/EC of the European Parliament and of the Council of 27 June 2002 concerning the sixth framework programme of the European Community for research, technological development and demonstration activities, contributing to the creation of the European Research Area and to innovation (2002 to 2006) (OJ L 232, 29.8.2002, p. 1).

[11] Preliminary approval for some activities was given in April 2001.

[12] Council Regulation (EC) No 876/2002 of 21 May 2002 setting up the Galileo Joint Undertaking (OJ L 138, 28.5.2002, p. 1).

Foundation Act was signed in June 2003 and it became operational in September 2003.

16. The main reason for setting up the GJU was the need for a coordination platform between the ESA and the Commission. There were several other reasons[14], such as the need to run the programme through a single entity and the capacity to attract private funds for development and validation. However, although the private sector indicated its readiness to contribute up to 200 million euro to the development and validation phase[15] by signing a Memorandum of Understanding, this intention never materialised.

17. As established by its Statutes, the GJU was to:

(a) supervise all Galileo programme activities planned for the development and validation phase;

(b) make any necessary adjustments in the light of developments occurring during the development and validation phase;

(c) prepare for the deployment and operational phases.

18. The GJU's main tasks, as established by its Statutes, were:

(a) management of a tendering procedure resulting in the conclusion of a concession agreement;

(b) supervision of the ESA's technological development activities;

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[13] Article 171 of the EC Treaty: "The Community may set up joint undertakings or any other structure necessary for the efficient execution of Community research, technological development and demonstration programmes."

[14] Regulation (EC) No. 876/2002; European Council conclusions of March 2001; COM(2001) 336 of 20 June 2001 – Proposal for a Council Regulation on the establishment of the Galileo Joint Undertaking.

[15] Whereas 13 of Regulation (EC) No 876/2002.

(c) initiation and management of research activities;

(d) integration of EGNOS into Galileo.

19. At the start, the GJU consisted only of its two founding members, the ESA and the Commission. The National Remote Sensing Centre of China (NRSCC) joined the GJU in October 2004, to be followed in September 2005 by the Israeli company MATIMOP (see also ***Annex III***). The GJU's governance structure is presented in ***Figure 2***.

**Funding**

20. During the development and validation phase, EU funds (from TEN-T[16] and FP6) were channeled through the GJU while the ESA co-financed Galileo through its GalileoSat and ARTES programmes (***Figure 1***). From 1999 to 2007, the funds allocated to Galileo came to 1,94 billion euro.

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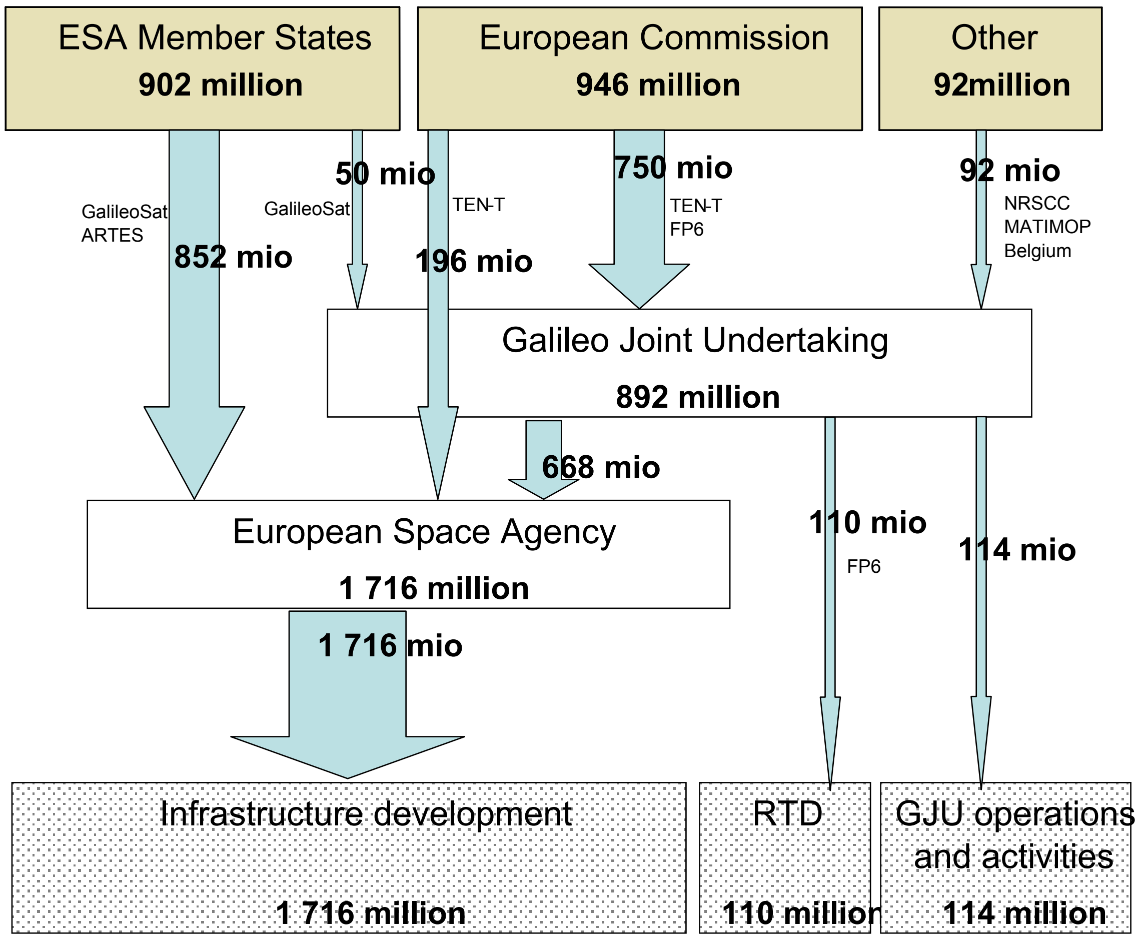
[16] Council Regulation (EC) No 2236/95 of 18 September 1995 laying down general rules for the granting of Community financial aid in the field of trans-European networks (OJ L 228, 23.9.1995, p. 1); Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network (OJ L 228, 9.9.1996, p. 1), as amended by Decision No 1346/2001/EC (OJ L 185, 6.7.2001, p. 1).

**Figure 1** – Galileo development and validation phase – Financing flow (1999-2007)[1]




[1] The Chinese and Israeli contributions consisted of a contribution to the GJU's base capital (5 million and 4 million euro respectively) and a contribution to be used to finance the activities of their own national industries (through contracts with the ESA). The latter was not mobilised in full.

*Source*: ECA estimate.

## Progress

21. In October 2004, the Commission sent a communication on the programme's progress to the Parliament and the Council[17]. This communication prepared the ground for a Transport Council meeting in

[17] COM(2004) 636 final Communication from the Commission to the European Parliament and the Council – Moving to the deployment and operational phases of the European satellite radio-navigation programme.

December 2004, at which it was decided to move to the programme's deployment phase. The Commission did not present an updated timetable. At that point the technological development had accumulated a delay of about three years.

22. The communication stated that the GJU had "successfully completed the procedure for selecting the future concession holder". However, the concession selection phase had just been extended until the end of January 2005. In February 2005, moreover, the GJU did not select a preferred bidder between two candidate consortia[18]. Instead, the tenderers proposed to join into a merged consortium, to which the GJU agreed in June 2005, and made a joint bid.

23. Between July and December 2005, both the concession negotiations and technological development activities were blocked owing to intervention by some Member States. Disagreement between Member States focused on the composition of the merged consortium which was to bid for the concession contract and the location of the system's activity centers, ground infrastructure and headquarters. Through mediation[19], an agreement was reached in December 2005. Negotiations with the merged consortium actually started in January 2006.

24. On 28 December 2005, the first experimental satellite, called GIOVE-A, was successfully launched, thus securing access to the Galileo frequencies allocated by the International Telecommunications Union.

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[18] The Eurely and iNavsat consortia. A third pre-selected consortium led by Eutelsat withdrew from the selection phase in summer 2004.

[19] In October 2005, the Vice President of the European Commission appointed a former European Commissioner as mediator – Press release IP/05/1345.

25. In June 2006[20], the Commission released an updated timetable for Galileo[21]. The development and validation phase would now run until early 2009, and deployment would take place in 2009 and 2010 (a three-year shift with regard to the initial timetable). This communication also expanded the budget for the development and validation phase to 1,5 billion euro (400 million euro more than the initial budget). On the concession negotiations, the Commission said: “It has become clear that a concession solution is best suited to the specific features of the programme. […] By the end of 2006, the estimated costs and income and the public sector contribution will have been finalised. In addition, the financial plan will be confirmed and the main terms of the contract will be fixed.”

26. In November 2006, the negotiators from the GJU and the merged consortium initialed the Galileo PPP Heads of Terms (HoT) v.1, the first draft of a non-contractually binding statement. This document was the GJU’s nearest approach to a concession agreement.

***Development and validation post-GJU (since 2006)***

27. At the end of 2006, the GJU considered that it had “successfully concluded the main tasks”[22]. The GJU was wound up at the end of December 2006[23] and

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[20] COM(2006) 272 of 7 June 2006 – Communication from the Commission to the European Parliament and the Council – Taking stock of the Galileo programme.

[21] The first time the Commission released this schedule was in the “note to editors” of Press release IP/05/1345 dd. 25 October 2005.

[22] GJU press release of 30 November 2006 – Next step in the Galileo Program; Handover of the management from the Galileo Joint Undertaking to the European GNSS Supervisory Authority.

[23] Council Regulation (EC) No 1942/2006 of 12 December 2006 amending Regulation (EC) No 1321/2004 on the establishment of structures for the management of the European satellite radio-navigation programmes (OJ L 367, 22.12.2006, p. 18); Council Regulation (EC) No 1943/2006 of 12 December 2006 amending Regulation (EC) No 876/2002 setting up the Galileo Joint Undertaking (OJ L 367, 22.12.2006, p. 21).

its activities were transferred to the European GNSS Supervisory Authority (GSA), which had been set up in July 2004 to manage the public-interest aspects of the European GNSS programmes and to act as the regulatory authority for the programmes during the Galileo deployment and operational phases[24]. This activity transfer resulted in a change in the GSA's role, which was not foreseen at its creation.

28. The concession negotiations with the merged consortium stalled in early 2007. In a communication of May 2007[25], the European Commission acknowledged that EGNOS and Galileo had accumulated substantial delays (five years with regard to the initial timetable) and cost overruns. In 2007, the Council of the European Union[26] decided to redirect the programme: the system would now be deployed by 2013 with full funding from the Community budget (see ***Table 2***), and with the ESA in the role of delegated procurement agent. On this basis, the European Parliament and the Council adopted a regulation on the further implementation of the GNSS programmes[27]. On 1 July 2008 the Commission published a call for expressions of interest for the purchase of infrastructure for the Galileo system, under six headings (system support, ground mission segment, ground control segment, space segment (satellites), launch services and operations). After pre-selection of suitable candidates, preliminary proposals were received at the end of 2008. The competitive dialogue process is expected to be finalised in the course of 2009.

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[24] Council Regulation (EC) No 1321/2004 of 12 July 2004 on the establishment of structures for the management of the European satellite radio-navigation programmes (OJ L 246, 20.7.2004, p. 1).

[25] Communication from the Commission to the European Parliament and the Council – Galileo at a cross-road: the implementation of the European GNSS programmes, SEC(2007) 624, 16 May 2007.

[26] Council resolutions and conclusions of 6-8 June, 1-2 October and 29-30 November 2007.

**<u>Table 2</u> – Galileo cost estimates**

| | **Original cost estimate in million euro (COM(2000) 750)** | **Updated cost estimate in million euro (COM(2007) 261 and ESA documents)** |
|---|---|---|
| Definition phase | 80 | 80 |
| Development and validation phase | 1 100 | 2 100 |
| Deployment | 2 150 | 3 400 |
| **Total** | **3 330** ***(of which 1 800 million to be borne by the public sector)***[1] | **5 580** ***(all to be borne by the public sector)***[2] |

1 Annual operating costs, including constellation replacement, were estimated at 220 million euro.

2 Availability payments (fixed part) for operating cost, maintenance and replenishment debt interest until 2030 are estimated at 5 300 million euro.

29. In its communication of May 2007 the Commission analysed the failure of the concession negotiations in considerable detail. This document aimed to clear the way for redirecting the programme. In that light, it provides a non-exhaustive view of some of the reasons for failure. It addresses the fact that the Commission's assumptions on timing, budget and transfer of market risk and design risk "may have been optimistic". The communication also addresses issues such as public governance, private sector governance and the fact that Member States' national interests had prevailed over the programme's long-term strategic aims. However, it does not address issues such as the preparation of the PPP (including time and expertise) and reporting, factors that are elaborated futher in this report.

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27 Regulation (EC) No 683/2008 of the European Parliament and of the Council of 9 July 2008 on the further implementation of the European satellite navigation programmes (EGNOS and Galileo) (OJ L 196, 24.7.2008, p. 1).

## AUDIT SCOPE AND APPROACH

30. The Court carried out an audit of the management of the Galileo development and validation phase by examining:

(a) which factors accounted for the failure of the concession process;

(b) which factors accounted for the reported delays and cost overruns of technological development;

(c) to what extent spending on research and development activities has benefited the Galileo programme;

(d) how well the GJU had integrated EGNOS into Galileo;

(e) whether the Galileo programme was adequately governed.

31. The audit addressed the period during which the GJU managed the development and validation phase (September 2003 – December 2006), focusing in particular on its mandate, the process of setting it up and the management of its tasks. Audit work was performed during 2007 and 2008. The Court followed the programme's development, including its redirection, up to the end of 2008.

32. The Court gathered audit evidence through file reviews and interviews at the GJU, the Commission and the ESA, and through interviews with other Galileo stakeholders such as representatives of Member States, the GSA (GNSS Supervisory Authority), beneficiaries of research projects, European space industry representatives, companies bidding for the concession, and consultants contracted by the GJU.

33. In order to assess the quality of the GJU's management of research and development activities, the Court conducted a survey of 482 beneficiaries of one or more research projects funded under the "Aeronautics and space" thematic priority of FP6.

## OBSERVATIONS

34. The following audit findings cover the different tasks of the GJU during the development and validation phase (paragraphs 35 to 65) as well as issues related to public-sector governance (paragraphs 66 to 74). Each section describes in detail the GJU's objectives and uses them as a benchmark for its results. Next, the Court assesses the reasons why the GJU did not achieve most of its objectives. Where relevant, experience of existing programmes, projects or organisations has been used as a benchmark. In other cases generally accepted project management principles were used. In particular for paragraphs 35 to 42, the Court has also used a set of audit criteria derived from best practice in establishing PPPs[28] (see ***Annex IV*** for a detailed overview of this analysis).

***Concession negotiations failed***

**Objective**

35. The GJU's most important task was to negotiate a PPP under which the private sector would invest, in partnership with the European Commission, in the creation and use of the Galileo infrastructure. It was initially foreseen that a concession holder (the private companies concerned) would be designated before the end of 2004, that the GJU would conclude the negotiations in 2005 and that the GSA would award a concession contract by the end of 2005.

**Results**

36. As planned, the GJU launched the concession process in steps (pre-selection, selection, negotiation). It issued an initial set of tender documents in

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[28] INTOSAI Guidelines on Best Practice for the Audit of Public/Private Finance and Concessions (revised) – November 2007.

April 2004, after which it organised a competitive dialogue procedure and provided bidders with a draft concession contract and evaluation criteria.

37. The GJU was unable to select a preferred bidder, either in October 2004, or after the selection phase was extended, in February 2005. Negotiations did not start until January 2006, after the bidders had merged into one consortium.

38. The deadline for awarding the concession contract was postponed twice, from December 2005 to December 2006, and then to December 2007. Early in 2007, the Commission and the GSA decided to cancel the negotiations.

**Reasons for failure**

39. The PPP was inadequately prepared and conceived. As a result, the GJU was required to negotiate a PPP which was unrealistic.

<u>Preparation</u>

40. There is considerable experience of PPP projects in Member States and third countries. Experience indicates that best practice includes the following elements.

(a) Proper preparation: the public sector should clearly define project requirements, assess private-sector capabilities, evaluate potential benefits, examine alternative ways of meeting its needs, investigate the appropriate risk allocation, consider affordability and likely value for money, and outline a business case. The choice of a particular type of PPP should be preceded by an appropriate risk assessment.

(b) Sufficient time: the experience of other organisations[29] suggests that defining a robust PPP approach and public-sector positions takes more than a year, even with PPP projects that are less complex than Galileo.

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[29] PPP/PFI practices in the UK.

(c) Appropriate management resources: managing a PPP project requires a dedicated team with appropriate skills, assembled in good time.

(d) Maintaining effective competition.

(e) Regular review of an ongoing PPP project to ensure that it continues to offer value for money.

41. A number of these best practices were not observed by the Commission during the preparatory phase of the Galileo PPP[30]:

(a) Proper preparation: Despite the fact that it had several studies carried out, the Commission did not investigate traditional public procurement and a public sector comparator was never constructed[31]. In addition, the Commission did not investigate in advance how risk might realistically be allocated between the public and private sectors; at what stage in the project or in respect of which part of Galileo's activities a PPP might be most likely to succeed; or the relative benefits of different PPP models[32]. The Commission proposed, and the Council adopted, a PPP for the deployment and operational phases of Galileo in order to obtain a political consensus. Having examined the case for public and private sector investment through several studies, the Commission chose a 'concession' for the PPP (see paragraph 12). The Commission's documentation defined the characteristics of a concession, but with arguments based on general statements rather than on reasoning specific to Galileo, and an

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[30] A detailed overview of the criteria used for auditing the public sector's management of the Galileo concession process, together with a summary of the assessment for each criterion is given in ***Annex IV***.

[31] A public sector comparator is an estimate of what the project would cost if traditional procurement methods were used. This is used to help determine whether private finance offers better value for money than traditional procurement.

[32] Only the Joint Venture model and the concession model were investigated.

ambitious timetable was proposed for procurement. Although several of the risks and difficulties that would have to be overcome were identified at the preparatory stage[33], the Commission did not clearly assess how these might affect the feasibility of the deal or how the public sector might tackle them effectively.

(b) Sufficient time: Given the ambitious timetable, according to which it was to report to the Transport Council in December 2004, the Commission did not allow the GJU sufficient time[34] to define a concession approach. Several bidders also expressed concern that insufficient time was available to prepare a credible business plan during the competitive dialogue procedure. As a consequence, the GJU's initial tender documentation did not set specific objectives. In particular, it failed to address most difficulties inherent in the concession model. This resulted in industry bids containing no firm pricing or commitments, and which were qualified with conditions and caveats to such an extent that they were an insufficient basis for comparison and evaluation. For the same reason, the GJU had no robust evaluation criteria for a comparative evaluation of incoming bids. The first clear statement of the public-sector position on a number of issues important to Galileo was the "Heads of Terms" agreed with the bidders at the end of 2006.

(c) Appropriate management resources: the GJU was a new organisation, with a novel legal set-up, a newly-assembled team, a new chief and no past experience in concession negotiations. External advisors were not

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33 Several constraints for a PPP were highlighted, such as revenue uncertainty (market risk), technological risks, interdependencies between development and deployment phases (design risk), and industrial concentration in the space manufacturing sector.

34 The GJU issued a first set of tender documentation less than eight months after becoming operational.

called upon until September 2004 (i.e. after the issue of tender documentation and the initial stage of competitive dialogue).

(d) Maintaining competition: from autumn 2004 onwards, there were two competing industrial consortia. They proposed in May 2005 to join forces to present a single bid. The GJU agreed to the merger on certain conditions[35] and in the hope of achieving greater value for money. In the absence of a public sector comparator, any competitive element in the procedure was lost.

(e) Regular review: the public sector should regularly review an ongoing PPP project to ensure that it continues to offer value for money. Although the GJU's reports evaluating the concession identified several risks and problems[36], its reporting on the programme's progress was unduly positive. In its regular official statements it never questioned the feasibility of the concession but merely postponed the deadline for awarding the contract each year for a further twelve months. As a consequence, those Member States, which relied on the GJU did not have sufficient information on which to request corrective action (see also paragraph 74(f)).

<u>The PPP model chosen</u>

42. The choice of a PPP in the form of a concession was proposed by the Commission and decided upon by the Council as a political consensus between Member States. This PPP concession, based on a cost share of at most 1/3 public and at least 2/3 private contributions which the GJU was

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35 Compliance with EU legislation on public markets and competition, a rigid time frame, substantial bid improvements with respect to the previous individual offers and a commitment by the merged consortium to a common and adequate legal structure.

36 Evaluation reports of October 2004, February 2005 and June 2005.

required to negotiate, differed substantially, in several respects, from any other PPP then in existence[37]:

(a) Galileo has a high level of technological risk. It comprises a constellation of 30 medium earth orbit satellites with new components (such as a new type of atomic clocks) so far untested in space.

(b) Revenue generation is difficult to predict as GPS open signals are freely available. An exploitation model still has to be defined.

(c) The Galileo concession was to start after rather than before system design and partial infrastructure development by the public sector. While close to the DBFO (design – build – finance – operate) concession type, the Galileo PPP differed significantly in that a private concession holder was expected to commit itself to building, financing and operating a new system that had been conceived and handed over by the public sector (Box 2).

**Box 2 – The major risks of the concession**

The three main factors impeding the concession negotiations were the transfer from the public to the private sector of market risk, design risk and the third-party liability regime.

To transfer market risk, there was a need for confidence that market revenue could be obtained in accordance with an agreed baseline market development scenario. However, market uncertainty, the prospect of revenue being far in the future and the anticipated major role of the public sector in market development made it difficult to transfer this risk to the private sector.

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[37] Traditional PPP infrastructure projects relate for instance to tunnels and roads. The most comparable PPP, Paradigm / Skynet (UK defence telecommunications system), is however different from Galileo in many ways: it has a lower technological risk, the UK Ministry of Defence represents a secure baseline revenue source, an existing track record of operations is available and the project is piloted by a single sponsor with PPP experience (UK Ministry of Defence).

To transfer design risk, there was a need for assurance that the design (prepared by the ESA during the development and validation phase) had no inherent problems that might result in a faulty or underperforming system (for which the concession holder would be responsible during operation). It was difficult to transfer this risk, not only because of the technical complexity of the Galileo design and the outputs expected of the concession holder during the operational phase, but also because of the division of duties between, on the one hand, design and development (the ESA) and, on the other hand, deployment, operation and maintenance (concession holder).

The third-party liability regime concerns extra-contractual liabilities towards potential victims of Galileo failures, for which no specific legal or insurance model is available.

***Technological development activities delayed and over budget***

**Objective**

43. The second of the GJU's four main tasks was to supervise the ESA's technological development activities so as to ensure that sufficient satellites and ground segment installations were constructed and made operational to demonstrate the capability and reliability of the system, all within the planned time and budget (see paragraph 13).

**Results**

44. By December 2006, only one experimental satellite (GIOVE-A) was operational and had successfully secured frequency filings for Galileo with the International Telecommunications Union. The second experimental satellite (GIOVE-B) was launched in April 2008, 30 months later than originally planned. The current schedule[38] has the development and validation phase terminating in 2010 – five years late. According to the cost estimates produced by the ESA

[38] Regulation (EC) No 683/2008.

in July 2008[39], development and validation will cost 1 billion euro more than the initial budget of 1,1 billion euro (see ***Table 3***).

**Table 3 – Comparison of the 2001 and 2008 budget estimates for the development and validation phase (in million euro – 2001 prices)**

| Activity | Initial budget estimate | July 2008 budget estimate |
|---|---:|---:|
| Galileo System Test Bed (GSTB-V2) | 85 | 173 |
| Launchers | 90 | 224 |
| In-Orbit-Validation (IOV) | 747 | 1 253 |
| ESA cost | 110 | 303 |
| Other | 68 | 151 |
| **Total** | **1 100** | **2 104** |

*Source*: ESA.

### Reasons for delays and cost overruns

45. The GJU's task of supervising technological development activities was seriously constrained by governance issues, an incomplete budget, delays and the industrial organisation of the development and validation phase.

46. The GJU was given the task of supervising technological development, but this task was not further defined. In practice, ESA worked without supervision from the GJU but in accordance with its own rules and procedures. The GJU's supervisory role *vis-à-vis* the ESA was at odds with its governance structure. It is further treated as a governance issue in paragraphs 66 to 74.

47. The *Galileo budget* for development and validation, as presented to the Council[40], was *incomplete*. It did not contain any explicit contingency budget or reserve[41]. It was lower, at 1,1 billion euro, than the cost estimates resulting

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[39] The estimates were earlier updated in February 2005 and May 2007.

[40] COM(2000) 750 of 22 November 2000.

[41] On ESA's participation in the development and validation phase (which is half of the total budget) a *de facto* contingency allowance of 20 % applies: if the cumulative cost overrun is lower than 20 % of the programme's financial envelope, no participating Member State is allowed to withdraw from the programme.

from the definition phase. Moreover, no allowance was made for the Commission's 50 million euro financial contribution to the GJU, and security requirements (120 million euro) were not factored in[42]. The overall resource requirements and costs of a project should be established at the planning stage, including, where needed, change and contingency budgets. The experience of other organisations suggests that space programmes typically need a contingency budget of between 10 % and 40 %, depending on programme complexity, the degree of innovation and the number of unknowns.

48. The development and validation phase did not start until May 2003, *29 months later than planned* (see paragraph 15). According to ESA calculations, confirmed by the GJU, some 142 million euro in extra costs can be attributed to this delay[43].

49. The *industrial organisation* of the development and validation phase, characterised by a specific set up based on an ad hoc prime contractor, *led to delays and cost overruns*. A competitive environment is expected to be beneficial for achieving results on time and within budget. In 2000, a joint venture of leading European space companies was created[44] to act as industrial prime to develop and deliver the Galileo infrastructure. In an oligopolistic environment such as the European space industry, the creation of

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[42] Security requirements were considered too late in the programme: in 2004 the Galileo Security Board announced additional requirements worth an estimated 120 million euro in extra costs. The resulting 1 000 change requests had far-reaching consequences on the technical baseline and thus on ongoing development activities.

[43] This sum comprises: (a) 41 million euro to develop a second test satellite in order to mitigate the risk entailed in securing frequency filings before June 2006, there being too great a risk with only one satellite; (b) 15 million euro for additional payload developments; (c) 40 million euro in extra costs incurred by ESA for the major change in schedule; (d) 46 million euro in extra labour costs for industry due to changing economic conditions.

[44] The location and functions of the headquarters, the company's management structure and the allocation of work packages to the various subcontractors were the subject of an agreement between different governments.

the joint venture further reduced competition. The ESA had no choice but to place several contracts with this joint venture between July 2001 and December 2004. Several of the contracts suffered from significant delays and cost overruns. According to ESA reports, these problems were to be attributed to problematic management, non-clarity of reporting and decision lines and the fact that the selection of subcontractors was driven by “self-imposed industrial distribution constraints rather than cost and schedule efficiency”. As a consequence of serious problems in the implementation of the main contract of the development and validation phase, the ESA decided in December 2007 to modify substantially the IOV *industrial organisation* and contractual framework. The ESA took over the tasks and responsibilities of the overall prime contractor. This reorganisation will mean that additional costs[45] are incurred during the development and validation phase. According to ESA estimates, this will include 350 million euro for the revised industrial framework and 194 million euro for ESA costs[46].

50. The *stalling of the concession negotiations* in the second half of 2005 (see paragraph 23) also affected technological development: the programme was delayed by four and a half months, and extra costs of 103 million euro can be attributed to this delay and to the implementation of the 5 December 2005 agreement[47].

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[45] Including termination of the IOV contract.

[46] Extension of IOV coverage until 2010 and preparation of procurement responsibilities for full operational capability (FOC).

[47] The partners in the merged consortium agreed to establish two identical Galileo Control Centres (GCC) composed of a GMS (Ground Mission Segment) and a GCS (Ground Control Segment), but to cross-implement the GCC through the Germany-based GMS and the Italy-based GCS, rather than having one operational and one back-up GCC. It was also agreed to set up a third GMS in cold back-up mode and a third GCS.

*Limited usefulness of RTD activities*

**Objective**

51. The GJU's third task[48] was to initiate and manage the necessary research activities to support achievement of the key tasks and objectives of the Galileo development and validation phase (i.e. technological development and early development of user segments – see also paragraphs 13 and 14).

**Results**

52. Between September 2003 and December 2006 the GJU selected, negotiated and monitored a total of 70 research projects worth 110 million euro and financed from FP6 through several calls for proposals. Activities focused on user segment development, which consisted in fostering innovative services and applications of appropriate technology (receivers, local components), and on market development in different user communities. RTD activities also included some technological development of the Galileo system and EGNOS demonstration activities.

53. The audit showed[49] that the GJU was generally perceived as an efficient structure for implementing the Galileo area of the FP6 work programme[50]. The research projects raised interest and awareness in the user communities and have succeeded in bringing different organisations and stakeholders together. However, the ultimate use of the RTD activities for the Galileo programme is

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[48] The Commission gave this mandate to the GJU in its FP6 work programme of 9 December 2002 (thematic priority 1.4: "Aeronautics and space"). It was translated into three annual Specific Support Action (FP6) contracts with the GJU.

[49] Especially through the survey and interviews of FP6 participants.

[50] The survey results reveal a positive overall view of the GJU management, especially in the following areas: tender documentation (statements of work), contract management, monitoring and reviews. The areas considered to need improvement included: the policy of intellectual property rights and the dissemination and use of results.

limited. The GJU did not sufficiently exploit the project results to formulate a coherent set of user-validated requirements that could serve the ESA as the basis for the Galileo system specification. A high number of projects consisted in a detailed analysis of the regulatory efforts required both at EU and Member State level to foster GNSS applications in a large number of economic and social sectors. No follow-up was given to the results of these projects.

**Reasons for limited usefulness**

54. Discontinuities, the inappropriateness of FP6 for funding market development activities, the absence of a comprehensive market-development approach and delays account for the limited usefulness of Galileo RTD results.

55. When the Commission proposed winding up the GJU, it intended to ensure programme *continuity* by making a smooth transfer of activities to the GSA[51]. However, transferring the task of monitoring more than 50 projects from the GJU to the GSA led to delays and caused problems in terms of project support, project follow-up, and the dissemination of project results[52].

56. The instrument for granting FP subsidies is inappropriate for funding market development activities. FP6 grants (following a call for proposals) essentially follow a bottom-up approach with no centralised exploitation of results. Ideally, the FP6 activities should have been supported by consolidating their results in a *comprehensive top-down market development approach* at the level of the GJU/GSA (see also EGNOS – paragraph 65). Without such a pro-active approach, it is difficult to ensure projects' continued utility for the Galileo programme once they have been completed.

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[51] COM(2006) 261 – Proposal for a Council Regulation amending Regulation (EC) No 1321/2004 on the establishment of structures for the management of the European satellite radio-navigation programmes, 2 June 2006.

[52] 75 % of the 482 survey participants reported a negative impact on their project(s).

57. The survey results also confirmed that the *cumulative programme delays* (in technological development, EGNOS operations and the concession negotiations) adversely affected both the execution of FP6 projects (for instance through the unavailability of the EGNOS signal) and the future exploitation of project results (due to their impact on GNSS business and research development opportunities).

***EGNOS integration only partially successful***

**Objective**

58. As Galileo's precursor, EGNOS has a crucial role in the early development of user segments (see also paragraph 14). The GJU's fourth task was to "oversee the optimal integration of EGNOS into Galileo" (see footnote12). EGNOS and Galileo being two fully independent systems (see ***Annex II*** for a detailed comparison of EGNOS and Galileo), integration does not relate to the technical sharing of infrastructure but to the following:

(a) Integration into the Galileo governance and management structures was considered necessary in order to handle issues such as the conclusion of an agreement among the owners of EGNOS[53], the integration of EGNOS and Galileo financing[54] and the timing for appointing an EGNOS economic operator.

(b) At market level, the purpose of integration was to prepare the way for the market introduction of Galileo, using EGNOS as a precursor system, since it will deliver regional services similar to three of the five future Galileo services.

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[53] Also called the EGNOS framework agreement.

[54] This objective arose because of the financing problems facing EGNOS in January 2006.

## Results

59. On the political front, EGNOS and Galileo have been integrated into a single European GNSS policy. Similarly, from a financial point of view, Commission funding for EGNOS has been incorporated into Galileo funding.

60. However, EGNOS has suffered from delays, and the main challenges of the programme, such as market development, certification and the role of the different stakeholders, are still unresolved:

(a) Since October 2004 a framework agreement on the ownership and future exploitation of EGNOS has been under negotiation. As of September 2008, there was still no such agreement. The EGNOS OS signal has technically been available since July 2006, but without an economic operator it cannot be declared operational[55].

(b) The GJU's market penetration plan was never implemented and a certifiable version of EGNOS is not expected until March 2009, at least two years later than expected[56].

## Reasons for limited success

61. The GJU's success in attaining its fourth objective was hampered by a number of factors:

(a) the GJU's role and mandate *vis-à-vis* EGNOS was not clear;

(b) the decision to integrate EGNOS into Galileo was detrimental for EGNOS;

(c) the EGNOS institutional framework is very complex;

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55 Due to liability issues and uncertainty about the future of EGNOS financing and governance.

56 In the absence of clear milestones and planning for EGNOS, this is only a conservative estimate.

(d) the GJU devoted too little effort to market development activities.

62. The GJU's *role and mandate vis-à-vis EGNOS was not clear*. The GJU Statutes stated only that the GJU would "oversee the optimal integration of EGNOS in Galileo". According to the Tripartite Agreement[57], ESA was responsible, through its ARTES-9 programme, for the technical development and operation of EGNOS. But these legal texts do not make clear who was the overall EGNOS programme manager. In the *absence of a programme manager*, EGNOS clearly lacked a long-term strategic vision[58], which led to uncertainty, delays and cost overruns (***Annex II***).

63. Even though the decision to *integrate EGNOS into the concession negotiations* secured continued Community funding, it at the same time held up the achievement of the EGNOS programme because:

(a) delays in the concession negotiations put back the EGNOS technological development deadlines; and

(b) all activity in connection with the appointment of an economic operator for EGNOS was stopped because this was the responsibility of the Galileo concession holder.

In addition, the need to conclude a framework agreement for EGNOS made the concession negotiations more complex.

64. The EGNOS *institutional framework is very complex.* The various financial stakeholders in EGNOS all have different priorities. As the owner of EGNOS

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[57] Agreement between the European Community, the European Space Agency and the European Organisation for the Safety of Air Navigation on a European contribution to the development of a global navigation satellite system (GNSS), signed in 1998 (OJ L 194, 10.7.1998, p. 16).

[58] For instance: long-term financial commitment, stable technical baseline, clear path towards future governance, prioritisation of objectives w.r.t. EGNOS extension outside Europe, clear vision on complementarity of EGNOS and Galileo.

assets for the duration of the ARTES-9 programme, the ESA acts on behalf of the countries with a financial stake in that programme. Any transfer of ownership is conditional on their consent[59]. The Commission has no ownership rights to EGNOS, but through the GSA, according to Regulation (EC) No 1321/2004, it should become the owner of EGNOS assets. The absence of a clear mandate for the GJU as EGNOS programme manager resulted in doubts as to whether the GJU was empowered to negotiate a framework agreement for EGNOS.

65. In addition, the GJU's attention was dominated by institutional, financial and international cooperation issues and *limited time and resources were devoted to the early development of a set of service enablers* for EGNOS: the GJU did not exploit FP6 market development results in a centralised way (paragraph 56) and did not implement the EGNOS market penetration plan.

***Inadequate public-sector governance***

66. The following sections focus on the division of roles and on how the Commission fulfilled its role as the key promoter of the Galileo programme.

**Unclear division of roles**

67. The division of roles between the entities involved in the development and validation phase of the programme (EU and ESA Member States, Commission, GJU and ESA) was not clearly defined.

68. The GJU's ability to manage the programme effectively was constrained by:

(a) Its governance structure (***Figure 2***).

The GJU Statutes gave it a supervisory role vis-à-vis the technological development work to be done by the ESA. However, the ESA was both a

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[59] According to the bilateral agreements between ESA and eight national air traffic (management) service providers and other agencies.

founding member of the GJU (and thus represented on the Executive Committee and the Administrative Board) and a 'contractor' (recipient of funding and responsible for implementation under the ESA/GJU agreement). Thus, in practice, the GJU was not in a position to supervise the ESA effectively due to this conflict of interest for the ESA within the GJU.

(b) Its temporary nature.

Closing down the GJU before the end of the development and validation phase undermined its authority[60].

69. The ESA/GJU agreement on implementing technological development activities in the development and validation phase (negotiated by the Commission before the GJU became operational[61]) was not specific enough (a better model would be the ESA-EUMETSAT agreements[62] [63]). This resulted

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[60] The Commission acknowledged in its communication of May 2007 that "the timing of the hand-over of activities from the GJU to the GSA on 1 January 2007 has proven to be suboptimal (…). The GSA was still in the process of being built up and its relationships with the Commission and ESA not settled."

[61] Later formally adopted by the GJU Administrative Board and signed by the Executive Director.

[62] EUMETSAT (the European Organisation for the Exploitation of Meteorological Satellites) is an intergovernmental organisation, formed to service a total of 21 Member and nine Cooperating States.

[63] The ESA is responsible for the development of the space segment of EUMETSAT programmes, and EUMETSAT is responsible for the overall system. The ESA-EUMETSAT agreements are more elaborate on aspects such as:

- financial liability, its breakdown into industrial price and ESA costs, and procedures to ensure that limits of financial liability are respected;
- the use of a management margin and approval procedures;
- the establishment of clear communication lines;
- clear procedures for dealing with change notices that are not covered by the work initially envisaged;
- ownership of physical and intellectual property.

in a lack of clarity regarding the rules governing the placing of contracts[64], transfer of ownership, reporting and implementation[65]. The agreement did not clarify the roles of the different actors. In the spirit of the framework agreement between the ESA and the European Community[66], these roles should have been complementary: the ESA as the competent technical body, the Commission addressing the political dimension and the GJU addressing user requirements and certification.

70. The ESA was both involved in programme management (through the GJU) and responsible for the day-to-day management of the technological development activities of both Galileo and EGNOS.

71. The unclear division of roles resulted in unclear lines of accountability. Many decisions relating to Galileo were affected by the fact that no one actor (Commission, GJU, ESA, Member States) assumed full responsibility: the decision in favour of separate development and deployment phases, the choice of a PPP, acceptance of the bidders' merger proposal, the ESA/GJU agreement, incomplete budgeting, delays to EGNOS technological development and the IOV industrial organisation.

72. Management of the programme was also made more difficult by interventions by Member States in the management of individual programme components (paragraphs 23 and 49).

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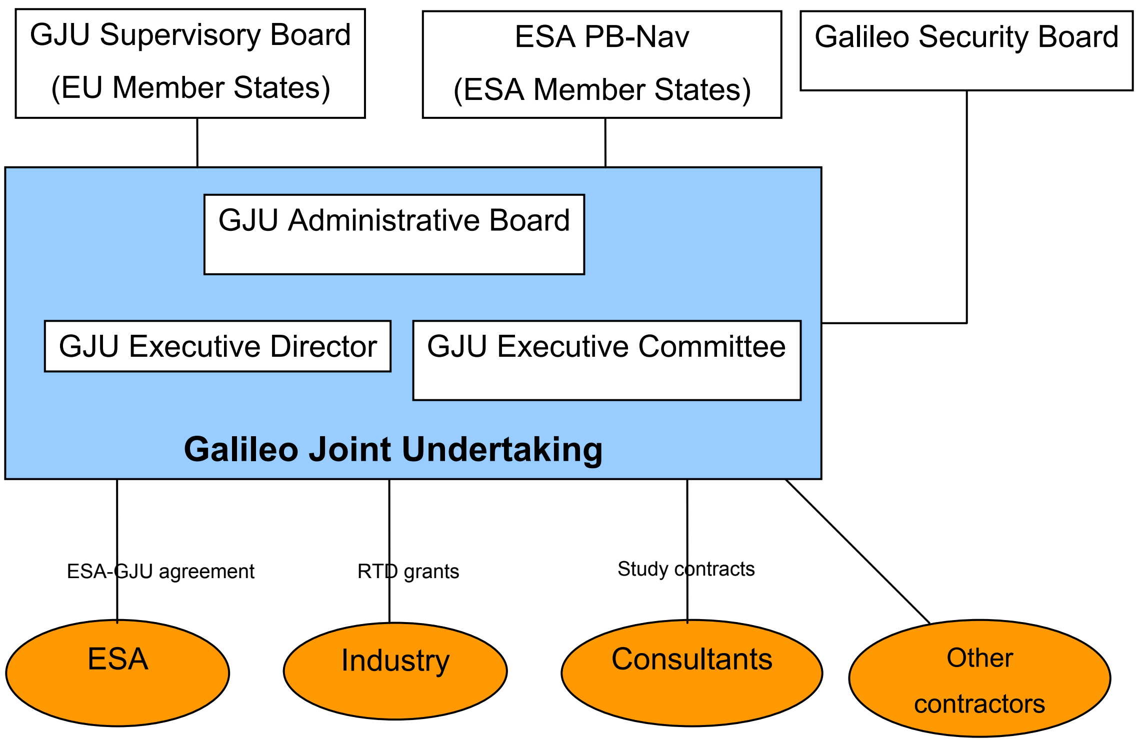
64 ESA applies the "fair-returns" principle as part of its industrial policy. In other words, a country paying a contribution to ESA will receive, within a certain margin, industry contracts of a value equivalent to that contribution. In theory, this principle applies to only 50 % of the budget for development and validation. In practice, it is not possible to apply such rules to 50 % of an activity that is managed as being one and indivisible.

65 For example, on the implementation and financing of certain change notices, such as authentication, data exchange, high precision positioning service and the 5 December agreement.

66 Framework Agreement between the European Community and the European Space Agency (OJ L 261, 6.8.2004, p. 64).

**Figure 2** – Governance structure of the GJU




The GJU was governed by an Executive Director, four Boards and an Executive Committee. All issues on the agenda of the Administrative Board were prepared at Executive Committee meetings and were first discussed at the level of the EU Member States by the Supervisory board and at the level of the ESA Member States at the PB-Nav (Programme Board on Satellite Navigation). The ESA and the Commission had an equal number of votes on the Administrative Board, which required a consensus for all decisions.

### The programme lacked a strong strategic sponsor and supervisor

73. Between 1999 and 2004, the Commission actively played its role of initiating the programme and getting it started. Delays and cost overruns became apparent in the course of 2005, but no significant corrective action was taken until March 2007.

74. Throughout the programme, the Commission, as the programme's key promoter, did not observe a number of management principles, such as:

(a) Setting clear, realistic and acceptable objectives: the programme has multiple objectives, which resulted in a diverse range of stakeholder expectations. In addition to its political, economic and technological motives (paragraph 7), Member States have seen Galileo as a means of consolidating the European space industry. For some Member States, the possible military or defence use of the system has been an equally important objective. The Commission did not prioritise the programme's objectives.

(b) Defining appropriate strategies and instruments to pursue them: the Commission has not pursued a long-term strategic vision for the EGNOS and Galileo programmes[67] but has focused on short-term goals and decisions. This is illustrated by:

(i) the absence of a roadmap for EGNOS and Galileo. Issues relating to, for instance, the future exploitation model for Galileo and EGNOS, the implementation of system priorities (e.g. which service to implement first) or the development of non-civil aviation markets for EGNOS still had to be resolved at the end of 2008;

(ii) the problems encountered in negotiating a framework agreement for EGNOS. As part of European satellite navigation policy, the Commission proposed uniting the EGNOS and Galileo programmes under a single umbrella: the European satellite navigation programmes. However, this was done without the prior agreement of the other EGNOS stakeholders (paragraphs 5 and 64) and with little thought for the complexity of the institutional framework. The GJU

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[67] Such as the complementarity of the two programmes, models for the future exploitation of EGNOS and Galileo or the implementation of system priorities.

(and later the GSA) was charged with negotiating such an agreement, but at the end of 2008 no progress had been made. As a result, technical issues (managed by the ESA) apart, no entity was empowered to take key decisions concerning EGNOS and to direct the programme;

(iii) the Commission's preoccupation with navigating the programme from one Council meeting to the next (see for example paragraphs 21 and 22 on the Commission's communication of 6 October 2004).

(c) Setting up a future (permanent) organisation: between July 1999 and December 2006 the Commission charged six different temporary structures with providing technical support for Galileo programme management or with the actual management task. The GJU was the fifth such initiative. As a flexible and dedicated organisation with an entrepreneurial mindset, it could have been an effective programme manager. However, its position was undermined by its temporary nature[68], its governance structure (***Figure 2***) and its lack of expertise.

(d) Securing the appropriate skills to perform all programme components managed and supervised by the public sector: when setting up the GJU, the Commission did not pay sufficient attention to the fact that it was a new organisation and that it had insufficient experience and expertise to perform its tasks (see also paragraph 41(c)).

(e) Providing for risk management: at the programme's outset, the Commission did not adequately address the risks related to the Galileo concession (e.g. market risk, design risk and technological risk) (see also paragraph 41(a) and Box 2) and thus launched the concession process without the necessary preparation.

(f) Taking timely decisions on all programme features: the Commission did not sufficiently critically review or monitor the GJU's progress reports. Commission communications consistently echoed the positive tone of official GJU statements. As a consequence, the Commission did not request or take significant corrective action until March 2007, even though the concession deadline was postponed annually for a further twelve months.

## CONCLUSIONS AND RECOMMENDATIONS

75. The management of the development and validation phase was inadequate. The Galileo programme experienced problems at different levels:

(a) The GJU was not a strong programme manager nor was any other body assigned this role. It did not meet most of its objectives – owing, however, to factors that were largely outside the GJU's control.

(b) The programme lacked a strong strategic sponsor and supervisor: the Commission did not proactively direct the programme, leaving it without a helmsman. The programme's management suffered a number of shortcomings: an absence of realistic objectives, an appropriate strategy and skills; insufficient preparatory work; and the long reaction time before the taking of corrective action.

(c) Owing to their different expectations for the programme, Member States intervened in the interest of their national industries causing decisions to be held up. The resulting compromises led to implementation problems, delays and, in the end, to cost overruns.

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[68] Even before the GJU became operational, the Commission published a proposal for a Council Regulation setting up the GSA as its successor (COM(2003) 471 final of 31 July 2003).

*Which factors accounted for the failure of the concession process?*

76. The PPP was inadequatelyprepared and conceived. As a result, the GJU was required to negotiate a PPP which was unrealistic (paragraphs 35 to 42).

*Which factors accounted for the reported delays and cost overruns of technological development?*

77. The GJU's task of supervising technological development activities was seriously constrained by governance issues, an incomplete budget, delays and the industrial organisation of the development and validation phase (paragraphs 43 to 50).

*To what extent has spending on research and development activities benefited the Galileo programme?*

78. The RTD results were of limited usefulness because of discontinuities, the inappropriateness of FP6 for funding market development activities, the absence of a comprehensive market development approach and delays (paragraphs 51 to 57).

*How well has the GJU integrated EGNOS into Galileo?*

79. The integration of EGNOS into Galileo was only partially successful because the GJU's mandate was not clear, the decision to include EGNOS in the concession negotiations held up the achievement of the EGNOS programme, the EGNOS institutional framework was not clear and the GJU devoted little effort to market development for EGNOS (paragraphs 58 to 65).

*Was the Galileo programme adequately governed?*

80. The programme's governance was inadequate. The division of roles between the entities involved in the development and validation phase of the programme (EU and ESA Member States, Commission, GJU and ESA) was

not clearly defined. The Commission did not provide adequate leadership in developing and managing Galileo (paragraphs 66 to 74).

*Lessons for the future*

81. The Galileo programme organisation has changed markedly since 2007. But many of the lessons learned from the GJU are of relevance both to the continuing Galileo programme and to further possible joint undertakings and industrial programmes.

82. The Commission has proposed itself as *programme manager,* a challenging role for which it has little experience. While this may be an expedient solution for the short term, the Commission should consider whether this would be the most appropriate long term arrangement. The Court has the following recommendations.

***Recommendation 1***

To gain authority as a programme manager, the Commission should adapt its resources and its legal and financial instruments to the specificities of the development and management of an industrial programme:

(a) the quantity and expertise of its human resources should be commensurate with its task as programme manager;

(b) an appropriate EU-ESA cooperation framework should be established;

(c) the Commission should ensure it has the financial instruments to fund infrastructure (other than via grants) and to commit itself to bearing the yearly operating and replenishment costs of this infrastructure over a long time horizon;

(d) programme governance should be such as to enable the programme manager to perform its tasks coherently (define expectations, grant powers and verify performance).

83. Galileo needs a clear direction to be successful. Decisions on its future cannot be taken by the Commission alone but clear leadership is paramount.

***Recommendation 2***

The Commission should urgently clarify the programme's political objectives and translate them into *strategic and operational objectives* that will provide Galileo with a solid roadmap from now until beyond full deployment. For example:

(a) How should Galileo be positioned as a commercial system? Is it required to break even financially or will it require continuing public-sector support? Is it about maximising revenue generation, or maximising macroeconomic benefits and serving the whole Galileo value chain through services and goods generated by its applications?

(b) How will EGNOS and Galileo relate to each other once Galileo is fully operational? Will they exist side by side thus ensuring useful redundancy in service provision, or will EGNOS be dismantled?

84. The failure of the concession negotiations does not imply that there is no basis for a Galileo concession in the future. But any future attempts to involve private finance need to be based on a more realistic assessment of what is marketable and if the case for a PPP really exists. It should be noted that successful exploitation models exist for other international satellite projects, such as Inmarsat, Intelsat, Eutelsat or Eumetsat.

***Recommendation 3***

The Commission should take sufficient time to prepare the commercial operation phase, drawing on best practice in the Member States, considering various models for private-sector initiative and taking account of experience in comparable sectors.

85. Depending on the decision of how Galileo should be positioned as a commercial system (see recommendation 2), the European Union will either have to engage in fostering early market development of Galileo/EGNOS revenues (for generating direct revenues to offset against costs) or accept to fund Galileo's total potential costs (potentially 10 billion euro over the coming 20 years). In the former case, an appropriate framework for users should be created.

***Recommendation 4***

The Commission should ensure that the following issues are addressed:

(a) analysis, consolidation and validation of relevant and stable user requirements;

(b) development of enabling actions (such as the necessary legal and regulatory framework);

(c) promotion of EGNOS as a showcase for Galileo, by certifying EGNOS' SoL service and making the EGNOS and Galileo exploitation models compatible;

(d) development of a clear and compatible pricing policy or revenue model for Galileo and EGNOS services, and a third-party liability policy.

86. The Commission has since created other joint undertakings (SESAR, ITER and several Joint Technology Initiatives (JTIs)). Experience of Galileo suggests that the approach to these new ventures should be well planned and realistic.

| ***Recommendation 5*** |
|---|
| For any *future joint undertakings and industrial programmes* in which the E U resolves to engage, the Commission should:<br><br>(a) ensure that there are clear and compelling reasons for creating a joint undertaking;<br><br>(b) ensure that all realistic options on private-sector cooperation have been properly considered;<br><br>(c) endeavour to establish a governance structure that does not impede proper programme management by the joint undertaking. |

This report was adopted by the Court of Auditors in Luxembourg at its meeting of 14 May 2009.

*For the Court of Auditors*

Vítor Manuel da Silva Caldeira

*President*

***ANNEX I***

## THE EUROPEAN SPACE AGENCY

The ESA is an intergovernmental organisation, created in its current form in 1975 from the merger of two existing agencies, ELDO (European Launcher Development Organisation) and ESRO (European Space Research Organisation). The ESA has 18 Member States: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. The national bodies responsible for space in these countries sit on the ESA's ruling Council.

The ESA's purpose is to provide for and to promote, for exclusively peaceful purposes, cooperation among European States in space research and technology and their space applications, with a view to their being used for scientific purposes and for operational space applications systems.

The ESA's activities fall into two categories – 'mandatory' and 'optional'. Programmes carried out under the General Budget and the Science Programme budget are 'mandatory'; they include the Agency's basic activities (studies on future projects, technology research, shared technical investments, information systems and training programmes). All Member States contribute to these programmes on a scale based on their GDP. The other programmes, known as 'optional', involve a reduced number of Member States which are free to decide on their level of participation. Both ARTES-9 and GalileoSat are optional programmes. The ESA's budget spending for 2006 amounted to almost 3 billion euro.

The ESA and the European Community are mutually independent organisations. They have different Member States and are governed by different rules and procedures. The ESA is not bound by EU regulations.

A Framework Agreement between the ESA and the European Community (in force since May 2004) formalises cooperation between the two institutions. The European Space Policy, signed in May 2007, unifies the ESA's approach with those of the individual EU Member States and creates, for the first time, a common political framework for space activities in Europe.

***ANNEX II***

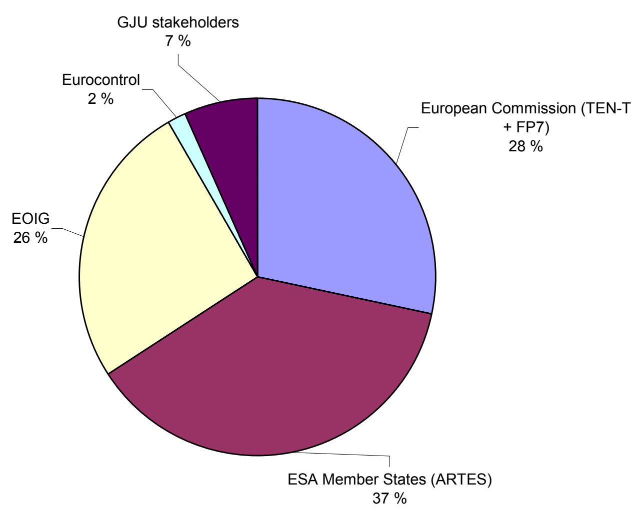
## EGNOS FACTS, FIGURES AND ILLUSTRATIVE EXAMPLES

### Comparison between EGNOS and Galileo

| | EGNOS | Galileo |
|---|---|---|
| Link with other GNSSs | Augments the GPS and GLONASS signals | Fully independent from other GNSSs |
| Services | 3: OS, SoL, SAR | 5: OS, CS, PRS, SoL, SAR |
| Coverage | Regional (Europe) | Global |
| Space segment | 3 transponders on geostationary (GEO) satellites orbiting at 36 000 km | 30 medium earth orbit (MEO) satellites orbiting at 23 000 km |
| Ground segment | 4 MCCs (Mission Control Centres)<br>34 RIMS (Ranging and Integrity Monitoring Stations)<br>6 NLES (Navigation Land Earth Stations) | 3 GCCs (Galileo Control Centres)<br>20 GSSs (Galileo Sensor Stations)<br>5 S-band up-link stations<br>10 C-band up-link stations |
| Financed by | ESA, European Commission, Eurocontrol, EOIG, GJU stakeholders | ESA, European Commission, China, Israel |

### EGNOS funding sources

**EGNOS funding sources (total 630 million euro, 2001 prices)**
**Funds allocated between 1995 and 2007**




*Source*: ECA estimate.

**EGNOS lacked a long-term vision**

The EGNOS objectives were gradually adapted during the programme's transformation from a demonstrator to a fully fledged operational programme. It suffered from the absence of a long-term strategy and political commitment. Some examples:

(a) EGNOS grants from the European Commission were paid in annual tranches and systematically arrived late. Contributions from ESA Member States were also late. Some programme activities were therefore delayed, giving rise to uncertainty about the programme's deployment planning.

(b) Mid-term, changing requirements, evolving standards and new ideas on the certification of the system caused delays and extra costs.

(c) As of September 2008, there was still no roadmap for EGNOS.

(d) Although the EGNOS OS signal became available in July 2006, as of September 2008 the system had still not been declared operational due to issues of third party liability, uncertainty about the programme's future in terms of financing and governance and the Commission's reluctance to accept the system technically.

(e) Despite the ESA's and the GJU's efforts to demonstrate the capabilities of EGNOS overseas (e.g. in Africa, China and South America), there is no real strategy to support EGNOS outside Europe.

(f) In the GJU's organisational structure EGNOS was assigned to the technical division rather than treated as a fully-fledged, cross-sectoral programme. Until 2006 the GJU did not receive the financial means from the Commission to devote to specific EGNOS-related studies.

***ANNEX III***

## INTERNATIONAL COOPERATION ON GALILEO

The EU has entered into several international agreements related to Galileo.

Cooperation agreements have been signed with the United States (2004) and with Russia (2006) in order to ensure interoperability and compatibility between Galileo and existing GNSSs such as GPS and GLONASS.

Cooperation agreements with China (2003) and Israel (2004), respectively, brought GJU membership of the NRSCC and MATIMOP.

General cooperation agreements have been signed with Ukraine (2005), India (2005), Morocco (2005), and South Korea (2006) but have never led to a concrete participation or GJU membership.

The purpose of all these agreements was to minimise the technological and political risks, promote and reinforce industrial and political know-how, stimulate the provision of system applications, offer third-country market penetration, promote Galileo as international standard and prepare the ground for the installation of terrestrial-segment components in different regions of the world.

Relations with the Chinese and Israeli undertakings were damaged when the GJU was wound up and problems arose with transferring the relevant agreements to the GSA. Discussions on cooperation with further other countries such as Brazil, Mexico, Chile, Canada, Argentina and Australia were also discontinued after the GJU was closed down.

***ANNEX IV***

# CRITERIA USED BY THE ECA TO ASSESS THE PUBLIC SECTOR'S MANAGEMENT OF THE GALILEO CONCESSION PROCESS, TOGETHER WITH A SUMMARY OF THE ASSESSMENT

| Criteria (based on INTOSAI Guidelines on Best Practice for the Audit of Public/Private Finance and Concessions) | Body responsible | Have criteria been met? | Summary of assessment |
|---|---|---|---|
| | | | |
| **A. Scoping the project** | | | |
| **A.1 Selection of the project** | | | |
| *How did the audited body prioritise potential projects? Did it implement them in that priority order?* | Commission (Council) | Not assessed<br>(political choice) | Galileo was a unique project and the decision to implement it was of a political nature. Following a Commission initiative launched in the early 1990s, the Council approved the Galileo programme and entrusted the European Commission with its management.<br>Subsequently, at the Commission's proposal, and in order to launch the development phase, the public-private partnership / concession was decided upon as a political consensus between Member States. It was envisaged that the management and financing of the subsequent phases would use this scenario. See successive Commission communications, Commission studies and Council conclusions from 1994 to 2003. |
| **A.2 Definition of project requirements** | | | |
| *Did the audited body state its requirements clearly from the start and express them in output terms making clear any particular constraints to which the private sector will be subject?* | Commission (Council) | Partly | As can be derived from the Commission's preparatory work and decisions taken by the Council, the European public sector stated its requirements in very broad terms. The proposed concession was supposed to cover the financing and management of deployment and operation - including replenishment - of the Galileo system. To that end, the concession holder would procure, launch, operate, exploit and maintain the system and its components during the concession period so as to deliver the five Galileo satellite services and to serve the subsequent development of downstream applications. Consideration was also given to including the management of EGNOS and the provision of EGNOS services in the contractual arrangements for the Galileo concession.<br>The Commission's preparatory work for the concession left a good deal of uncertainty on crucial issues, such as the underlying revenue model and the transition path between the development and deployment phases. While it identified briefly some of the constraints facing the private sector's participation in the project, it did not outline a public-sector strategy that could be proposed to the private sector.<br>The Commission's preparatory work thus failed to provide the private sector with clear requirements and constraints for the proposed Galileo concession. |

| A.3 Private-sector capabilities | | | |
|---|---|---|---|
| *Did the audited body make a preliminary assessment of the private sector's capabilities for delivering the requirements?* | Commission | Partly | The Commission's preparatory work concluded positively, if in broad terms, on the feasibility of a concession as opposed to the alternative joint venture model (which took the form of capital shares in the GJU). The private sector was judged reluctant to participate and invest in the latter owing to uncertainty about the expected financial returns and the potential for conflicts of interest in the development and validation phase.<br><br>It also concluded positively that the European private sector had the necessary capabilities to deliver the Galileo system and services through its established technical know-how and its proven experience in financing and managing large projects.<br><br>However, as stated in A.2, the project requirements were not sufficiently clear. Consequently, the assessment of the private sector's capabilities for delivering these requirements remained overly general.<br><br>The Commission was therefore not in a position to make a preliminary assessment of the private sector's capabilities. |
| **A.4 Evaluation of potential benefits** | | | |
| *Did the audited body make a preliminary evaluation of the benefits it sought?* | Commission (Council) | Partly | The rationale for implementing Galileo through a PPP included the following arguments (cf. Commission Communication of 10 February 1999): complementary finance, improved project design, overall value for money, better take-up of the service, central importance given to users' needs and better management of costs.<br><br>One study carried out at the Commission's behest produced a list of objectives: to achieve full operational capability as soon as possible, ideally by early 2008 in order to meet windows of opportunity in the GNSS market, to obtain a significant proportion of the deployment cost through private funding (with an indicative 2/3 share), to obtain value for money (by optimising the technical solution and system, optimising procurement competition and efficiency, achieving an appropriate degree of risk transfer and creating financial incentives for performance), to involve European industry so that it could benefit from the contracts to build the system and manufacture user equipment, to give the private sector responsibility for ensuring that system performance and specifications met the performance requirements of the market as well as the public sector, to optimise revenue generation from the market, to reduce the need for public expenditure and spread the public contribution over a longer period, and to optimise whole life costs by introducing private-sector efficiencies. The study recognised that a project with such a multitude of objectives would require trade-offs.<br><br>However, the Commission's preparatory work presented no trade-offs. What is more, these general objectives were not specific enough for the proposed Galileo concession. The Commission should have outlined a strategy stating, for instance: (i) the public sector's preferences for Galileo's commercial exploitation; (ii) the public sector's strategy for ensuring a practical transition path to resolve interdependencies between the development and deployment phases.<br><br>Such elements could have subsequently served as meaningful evaluation and selection criteria against which to judge the bids submitted during the competitive tender process. |
| **A.5 Wider policy objectives (incl. regulatory aspects)** | | | |
| *Did the audited body assess the impact any wider policy objectives might have on the project?* | Commission (Council) | Partly | The Galileo project is hemmed in by strategic considerations (e.g. the potential for military use). The Member States disagree among themselves on such issues. Nevertheless, approximately one third of Galileo's potential revenue is expected to come from the use of the PRS (public regulated service) by e.g. emergency services, security forces, the millitary.<br><br>The development of GNSS applications also depends heavily on regulatory measures to be introduced at both Member State and EU level. Again approximately one third of potential revenue was judged to depend on legislative support from the public sector, without which the private sector cannot anticipate revenue. However, the Commission did not present a plan to boost Galileo's chances of success by regulatory measures. |

| A.6 Selection of the most suitable form of partnership | | | |
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| *Did the audited body examine a range of alternative ways of meeting its needs, such as traditional public-sector procurement or privatisation, before choosing the public/private finance and concessions option?* | Commission (Council) | No | A traditional public procurement was not investigated as part of the Commission's preparatory work. The Commission limited itself to examining (i) the development of a business plan for the Galileo programme and (ii) the appropriate structure for a PPP. The Commission’s preparatory work proposed a PPP in the form of a concession model as opposed to a joint venture model.<br><br>Contrary to one of the recommendations of two studies executed by PricewaterhouseCoopers (November 2001 and January 2003), no public-sector comparator was subsequently built to provide a benchmark against which the overall benefit of private-sector bids for the PPP could be measured, with a view to improving the public sector’s negotiating position. |
| **A.7 Innovation** | | | |
| *Did the audited body identify the scope for innovation in advance in areas such as design and construction, operation and project financing?* | Commission | Partly | The Commission’s preparatory work recognised the need for innovation in the proposed Galileo concession, but did not precisely identify where or how innovation was possible.<br><br>The Commission did not conduct any further preparatory work. At the outset of the concession selection process, the tender documentation encouraged bidders to propose innovative solutions by authorising them to present variant bids.<br><br>However, the lack of clear requirements for the Galileo concession (see A.2) made it impossible for innovation to be considered up front during the selection process. |
| **A.8 Risk assessment** | | | |
| *Did the audited body investigate in advance the appropriate allocation of project risks between the public-sector and private-sector parties affected by the project?* | Commission | No | No examination of the risk allocation at the preparatory stage took place. This would have been possible if clear requirements had been established for the private sector. |
| **A.9 Affordability and likely value for money** | | | |
| *Before starting the procurement process, did the audited body consider the extent to which the project was likely to be affordable and offer value for money?* | Commission | No | Although risks and difficulties that would need to be overcome before establishing a concession with private partners were identified at the preparatory stage, there was no assessment of the extent to which these uncertainties might affect project feasibility. The potential benefits of the Galileo project were examined, but the arguments for and against the concession approach were not fully developed.<br><br>The affordability and likely value for money of the Galileo concession were not considered before starting the procurement process. |
| **A.10 Outline business case** | | | |
| *Did the audited body prepare a proper business case to support the decision  to begin the project’s procurement?* | Commission | Partly | At the Council’s request (Council Resolution of 5 April 2001), the Commission undertook some preparatory work to support the development of a business plan for the Galileo programme and investigate an appropriate model (business case) for the PPP.<br><br>Although this work made the case for public-sector support, citing the strong cost/benefit ratio, it did not clearly present the merits and drawbacks of using the concession model. |

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| **B. Project management** | | | |
| **B.1 Project team** | | | |
| *Did the audited body assess the skills it would need to deliver the project successfully? Where could the audited body obtain these, e.g. from in-house staff or external advisers? Did the audited body then assemble its project team in good time?* | Shared Commission - GJU | Partly | The GJU became operational in September 2003 when it took over existing staff from GISS. There were additional recruitments, but the GJU failed to recruit staff with prior direct experience of managing the process of setting up PPPs and concessions.<br><br>The GJU appointed external advisors only at a late point in time in the selection process (i.e. after the issue of tender documentation and the competitive dialogue). |
| **B.2 Market investigation** | | | |
| *Did the audited body investigate the market prior to beginning the formal procurement in order to establish that there were suppliers who were willing to tender for the project?* | Commission | Partly | On 22 February 2003, the Commission launched a call for expressions of interest (OJ C 43, 22.2.2003, p. 12) from undertakings for the "Galileo concession". This call aimed at constituting a database of interested companies and allowing them to prepare for the tender process. 85 companies expressed an interest and were registered in the database. Although an information day was organised for interested parties, no effort was made to assess their understanding and perception of the proposed concession requirements.<br><br>In general,the interest of potential suppliers existed for a Galileo project, but they needed more precise requirements before entering into a concession. |
| **B.3 Contractual matters** | | | |
| *Did the audited body identify the contractual issues that were likely to arise during the procurement and drew up a draft contract, setting out initial proposals on each issue?* | GJU | Partly | A draft contract was prepared during the selection phase and the competitive dialogue.<br><br>However, the draft contract was still very premature given the existence of numerous uncertainties, not the least of which was the lack of any preference for an applicable law. |
| **B.4 Tender strategy** | | | |
| *Did the audited body prepare a tendering strategy covering the number of tender rounds to be held, the number of bids to be invited at each tender stage, the body's approach to communicating with bidders and a realistic timetable for the tender process?* | Shared Commission - GJU | Partly | The Commission's preparatory work produced an indicative procurement plan for selection and negotiation by way of a call for expressions of interest, a call for concessions, a pre-selection phase and a selection phase. The contract award was envisaged within 14 months of the start of the process. Despite the delayed start of GJU operations, the Commission and the GJU initially kept to the plan of organising selection and negotiation over a short period in 2003 and 2004 (concession notice OJ 2003/S 200 - 179789).<br><br>However, this timetable was very ambitious. PPP/PFI practice in the United Kingdom suggests that it takes considerably longer (a period of 18 months is not exceptional) to define specific and coherent objectives even for an average, not particularly complex PPP project. Well-established ESA procurement practices also suggest that defining a robust approach in the European space industry landscape requires much more than a year, even for an experienced organisation. |

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| **B.5 Project timetable** | | | |
| *Did the audited body prepare a credible project timetable which identified milestones against which progress could be measured, and points within the process at which the body was to review the project's continued viability?* | Shared Commission - GJU | Partly | The initial overall timetable for the Galileo programme was communicated on several occasions between 2000 and 2004 (see ***Table 1***).<br>The timetable was, however, very general and did not contain intermediate milestones to be used for reviewing the programme's viability. Updates to the timetable were officially notified in 2006 and 2007.<br>Intermediate milestones relating to the concession process were postponed on several occasions, but with no comment on the project's continued feasibility. |
| **B.6 Cost and benefit comparison** | | | |
| *Did the audited body assess costs and benefits of the public/private finance option against an alternative procurement option?* | Shared Commission - GJU | No | The Commission's preparatory work included a cost/benefit analysis of the Galileo project, but there was no such analysis of its proposed concession approach against an alternative procurement option.<br>As indicated under A.6, studies by PricewaterhouseCoopers recommended the preparation of a robust public sector comparator. However, this recommendation was never taken up. |
| **B.7 Tender list** | | | |
| *Did the audited body succeed in creating a good tender list?* | Shared Commission - GJU | Partly | Pre-selected consortia (see also B.2) included a good range of European industrial capabilities to deliver the Galileo system.<br>However, operators and downstream industries were marginalised by space manufacturing companies. This situation was further exacerbated after one of the three pre-selected consortia decided to withdraw from the selection process during summer 2004. |
| **B.8 Specification of requirements** | | | |
| *Did the audited body set out a clear specification of the requirements?* | GJU | No | The GJU tender documentation served mainly to help bidders structure their proposals. However, while it gave general principles it did not reflect specific objectives, clear risk positions or preferred approaches endorsed by the GJU as public-sector representative. In particular, the tender documentation did not address design flaws and inherent difficulties of the proposed concession scheme. For instance, the GJU did not spell out its preferred option (or alternative options) for market development, but merely asked bidders to submit their proposed approaches. In addition, while the GJU asked bidders to describe their strategy on taking over the results from the IOV and with regard to the topic "third-party liability", it did not establish the applicable law of the concession contract, although this could have served bidders as a basis for their analysis. The only exception related to launch options, where the GJU clearly indicated its preference for Ariane 5 and Soyuz.<br>As a consequence, bidders did not have sufficient details on the position and preferences of the public sector, and they were left to their own judgment when submitting bids, with no guidance for their proposals and no opportunity to respond precisely to clear requirements. |
| **B.9 Maintaining competition** | | | |
| *Did the audited body succeed in maintaining competitive tension to contract award and manage the negotiations with the preferred bidder well?* | GJU | No | Inasmuch as it was unable to select a preferred bidder on two occasions and approved the merger, the GJU failed to maintain competitive tension. |

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| **B.10 Regular reviews** | | | |
| *During procurement, did the audited body regularly assess whether the project continued to offer value for money?* | Shared Commission - GJU | No | In its communications, the GJU regularly showed its firm commitment to reaching an agreement with the private sector, but it failed to assess feasibility and potential value for money (see also B.5). |
| **B.11 Budgets for project costs** | | | |
| *Did the audited body set and control realistic budgets for all project costs, including internal and external resources?* | Shared | Yes | The GJU relied on the approval of annual budgets for each of its tasks.<br>However, the Commission and the GJU did not estimate the level of expenditure by both the public and the private sectors for the entire selection and negotiation process. The private sector presented an estimate of 24,5 million euros in October 2005. |
| **B.12 Appointment of advisers** | | | |
| *Did the audited body appoint good quality external advisers after competition?* | Shared | Partly | The GJU selected experienced external advisors by competitive tender, but it appointed them at a late point in time in the selection process (i.e. after the issue of tender documentation and the competitive dialogue). |
| **B.13 Cost management** | | | |
| *How did the audited body monitor and manage its project costs, including internal and external resources?* | Shared | Partly | The GJU employed external advisors and consultants through framework contracts concluded following calls for tender. Costs were kept under control through the placement of individual work orders.<br>However, the GJU had no long-term policy regarding the costs of external advisors. |
| **C. Bids and contract** | | | |
| **C.1 Bidders' proposals** | | | |
| *Was a good range of solutions proposed by bidders?* | | Partly | The bids received by the GJU reflected the bidders’ expertise and experience as the European leaders in the industry.<br>However, as the public sector gave no precise specifications (see B.8), the bidders lacked guidance for their proposals and had no opportunity to respond precisely to clear requirements.<br>This problem was identified by one pre-selected bidder which accurately predicted the outcome of the concession process in spring 2004 (minute of a Competitive Dialogue meeting):<br>"The GJU's tender documentation contains many good instructions, and the decision to hold bilateral fortnightly meetings (i.e. through competitive dialogue meetings) is wise, but significant concerns remain. There is far too little time to analyse the GJU's requirements, plan the Galileo Operating Company business plan and present a bid by 1 September this year. Bids written in the time available will have to resort to guesswork on a grand scale. Verbal statements to bidders to do the best they can contradict the written instructions to create and present a legally binding offer. The GJU does not have the means to make a valid bid comparison based on public sector value. The GJU is not creating a public sector business plan with which it can make these comparisons, and cannot do so in the timescale of the competition. In particular, bid measurements will be inconsistent because of: (i) the need for bidders to heavily qualify their bids with conditions, conditions which will differ between the bids and which the GJU will not be able to evaluate; (ii) the GJU requiring bidders to create their own key output commitments, again which will differ between the bids and which the GJU will not be able to evaluate. As a consequence, bidders face a procurement risk quite out of order with the accepted principles of PPPs."<br>As predicted, the submitted bids did not contain firm pricing and commitments and the GJU was compelled to extend the selection |

| | | |
|---|---|---|
| | | phase. A technical note from a GJU advisor in December 2004 confirmed the above judgement:<br><br>"In a number of respects, the lack of developments in the bidders' proposals reflected the uncertainty about the GJU's requirements. As a consequence of this uncertainty, there were significant structural differences between the bids (making direct comparison difficult) and both bidders offered only indicative pricing." |
| **C.2 Bid assessment** | | |
| *Did the audited body carry out a broad-ranging assessment of the bids?* | Partly | The GJU assessed and marked the bids received in accordance with its pre-established general evaluation criteria (financial, technical, management).<br><br>However, in February 2005 the GJU ultimately gave the competing bids an equal overall assessment (see also C.1). |
| **C.3 Choice of bidder** | | |
| *Did the audited body assess the results of the evaluations so as to select the bid offering the best value?* | Partly | The GJU evaluated the bids by applying its formal tender evaluation criteria. However, it did not possess detailed and robust evaluation criteria reflecting precise requirements against which to judge and compare competing bids (see also A.4).<br><br>The GJU declared itself unable to select a preferred bidder on two occasions: in October 2004 and, after having extended the selection phase, February 2005. |
| **C.4 Changes during negotiations with successful bidder** | | |
| *Did the audited body minimise changes to the terms of the deal during the final negotiations with the successful bidder?* | No | After the approval of the merger and the submission of a joint bid, the GJU lost its ability to drive the negotiation process. It was unable to compel the merger conditions to be observed, and the negotiations suffered from the composition of the merged consortium and its inability to reach consensus (owing to the number of shareholders, their diverse interests, PPP experience, etc.). |

***ANNEX V***

## GLOSSARY OF TERMS USED IN THIS REPORT

| | |
|---|---|
| Availability payment | A periodic payment made to a concessionaire by a public authority for providing an available facility. |
| Business case | Information that describes the justification for setting up and continuing a project. It provides the reasons and answers the question "Why?" for the project. |
| Business plan | A formal statement of a set of business goals, the reasons why they are believed attainable, and the plan for reaching those goals. |
| Concession agreement | An agreement between public and private partners according to the latter the exclusive right to operate, maintain and carry out investment in a public utility. |
| Conflict of interest | Situation in which a certain person or organisation is acting in two capacities, the goals or interests of which are opposed. |
| Competitive tension | Situation in which competitors are forced to make their offers of goods/services/bids as attractive to the procuring organisation as possible so as not to lose their position to rival competitors, resulting in a better deal for the awarding authority. |
| Galileo User Segment | In contrast to the space segment and ground segment of the system, the user segment translates the signals into services for the final users. It consists of different types of user receivers. |
| Governance structures | The system of oversight in place to enable management to maintain control over the project, including the allocation of management responsibilities and the processes and |

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| | systems for reporting to management. |
| Public-private partnership | A government service or private business venture which is funded and operated through a partnership of government and one or more private sector companies. |
| Public sector comparator | An estimate of what the project would cost if traditional procurement methods were used. This is used to help determine whether private finance offers better value for money than traditional procurement. |
| Risk allocation | The agreement between the parties to a public / private finance deal or concession which defines which parties or party is responsible for bearing the financial or other consequences of that event occurring, minimising the chance that a particular adverse event should arise, and for mitigating the impact of that event. |
| Risk transfer | The passing of risk normally borne by the procuring organisation to the private sector service provider. |
| Tender process | The practice of advertising for, then receiving and evaluating offers or bids from different private sector companies to operate the services under the public private finance and concessions deal, with a view to achieving the greatest value for money. |
| Traditional procurement | A contract in which the customer simply pays the contractor for the provision of an asset as work in developing this asset progresses. Such assets are fully paid for on their completion. The maintenance of these assets are dealt with in separate contracts, while their operation remains the responsibility of the public sector. |

**Replies of the Commission to the special report of the Court of Auditors**

**"The management of the Galileo programme's development and validation phase"**

## EXECUTIVE SUMMARY

I. -V. Galileo and EGNOS are two path breaking programmes aiming at establishing a European Global Navigation Satellite System. The European Space Agency and the Commission started these two programmes as a joint initiative, and obtained from their respective Member States strong support for the programmes.

ESA took charge of the technological development and the Commission was responsible for policy making. Together they set up the Galileo Joint Undertaking as a coordination platform to oversee the implementation of the development and validation phase.

For the deployment and operations phase, on the Commission's proposal, the Council set up a regulatory agency (the GSA) to represent the interests of the public sector in the public private partnership (PPP).

Member States and the European Space Agency played a key role since its inception. After having experienced difficulties in finding private source financing, the integrated Galileo/Egnos programme became in 2008 an EU programme fully financed from the EU budget. From that point in time, the Commission has taken on the role of programme manager. With the new set-up responsibilities have been clarified and the Commission today considers that it is on the right track towards achieving its objectives. The Commission acknowledges that there were delays and cost overruns, but given the innovative nature and the technical sophistication of the pre-project the Commission considers the Court's evaluation of the management of the development and validation phase overly negative. With the benefit of hindsight, it appears that more could have been done to address some of the encountered problems at an earlier stage.

V.

(i) The GJU was set up to act as an interface between ESA, responsible for carrying out the technological development activities (IOV or in-orbit validation phase), and the European Commission in charge of the policy aspects.

(ii) The Commission constantly supervised the programme, without interfering with ESA's responsibility, especially as regards technical and industrial matters. The Commission stepped in whenever needed to avert blockages and propose adaptations of the programme.

VI. The choice of the PPP was a political decision taken by the Council. The Commission received a clear political mandate to prepare a PPP, within a limited timeframe, and prepared it on the basis of information available at the time in this very specific and innovative sector. The industry came up with serious and realistic proposals in reply to the call for a PPP Concession.

VIII. Through the GJU and then GSA, the Commission has used FP6 funds to fund technological development activities, and application-related RTD. These RTD projects, and especially application-related RTD are to bear fruits in the medium/long run (2009-2015) and exploitation of such work is to be included in the forthcoming "GNSS Application Action Plan".

IX. The Commission proposal to integrate EGNOS into Galileo effectively saved the EGNOS programme, and ensured availability of the funding necessary to continue this project. The Commission maintained this integrated approach both during and after the concession negotiation.

X. The statement of the Court does not fully take into account the reality of the environment at that time. The programme involved a large number of public sector stakeholders (EU and ESA member states, ESA, third countries, Commission) with different institutional roles and responsibilities, and the Commission worked actively to find the tools to properly take on board these stakeholders. The Commission achieved real progress in the field of international cooperation. The creation of the GJU and of the GSA, as well as the proposals to redirect the programme that culminated in the adoption of Regulation 683/2008, are illustrations of the leadership exercised by the Commission with due regard to the respective roles of the stakeholders.

XI. The Commission has received a clear mandate to take over the programme management of the deployment phase, and as a consequence has started to adapt its management capacity, both in house and with the support of qualified external advisors.

XII. The lessons learned through Galileo are shared with Member States and other stakeholders to improve the management of large infrastructure programmes.

## INTRODUCTION

2. The European Space Agency and the Commission started EGNOS and Galileo as a joint initiative, and obtained from their respective Member States strong support for the programmes.

ESA took charge of the technological development and the Commission was responsible for policy making. Together they set up the Galileo Joint Undertaking as a coordination platform to oversee the implementation of the development and validation phase.

For the deployment and operations phase, on the Commission’s proposal, the Council set up a regulatory agency (the GSA) to represent the interests of the public sector in the public private partnership (PPP).

## THE HISTORY OF GALILEO

15. For the implementation of the development phase of the Galileo Programme the GJU was created to ensure the unity of the administration and the financial control of the project for the research, development and demonstration phase of the Galileo programme, and to this end mobilize the funds assigned to that programme (Article 1 of Regulation (EC) No. 876/2002). The technical responsibility of this phase was entrusted to ESA in the framework of its GalileoSat programme. The approval of the GalileoSat programme by ESA member states

triggered the start of the industrial activities. The Galileo Joint Undertaking was the coordination platform between ESA and the Commission for the development and validation phase.

17. -18. In accordance with Article 2 of the GJU Statutes the main tasks are:

1) oversee the integration of EGNOS into Galileo as well as the implementation of the Galileo development and validation phase;

2) launch through ESA the industrial activities of the development phase;

3) prepare, in cooperation with the Commission and ESA, the deployment and operational phases by managing the tendering procedure resulting in the conclusion of a concession agreement;

4) supervise the carrying out of all programme activities.

21. The purpose given by the March 2004 transport Council to the Commission’s communication of October 2004 was not to report on the progress of the development and validation phase, but on the start of the deployment and operational phases.

The delay in the technological development (IOV or in-orbit validation phase) at that time was considered not incompatible with the start of the activities for the deployment phase of the programme in 2006.

22. Information available at the time was supporting the idea that expecting a favourable outcome of the procurement process was not unreasonable. The Communication indicated that the procedure so far was successful and requested the Council's confirmation in order:

– to enable the Joint Undertaking to complete the negotiation of the concession contract due to be signed in the course of 2005, and

– to enable private-sector stakeholders to confirm their bids and financial commitments.

23. The Commission, fulfilling the political responsibility assigned to it, created the conditions for agreement between Member States by asking former Commissioner Van Miert to mediate. The Commission managed to unblock concession negotiation and that part of the development and validation phase activities that had been stalled by disagreements among Member States between July and December 2005.

26. Over 2006, and more particularly in the second half of 2006, with the strong support of the Commission and the European Investment Bank, the GJU narrowed down the differences with the Merged consortium to the few substantial issues that were remaining intractable. The result of these negotiations, together with the negotiating team, and the other activities of the GJU, were transferred to the GSA at the end of 2006.

27. At the end of 2005, the Commission prepared the grounds for the deployment phase by initiating the steps to ensure the handover from the GJU, created for the Development Phase, to the GSA, created for managing public sector interests in the PPP scheme for the Deployment and operations phase.

Two assumptions were driving these actions from Commission: 1) that Concession negotiation could be completed by end 2006, something that the status of negotiations after the merging of the consortia was giving some credibility to, and 2) that the delays now apparent on the IOV phase meant that the IOV phase would outlive GJU.

28. In a parallel development, over 2006 and 2007, ESA continued to experience serious difficulties in its management of both EGNOS and Galileo. On EGNOS the difficulties were mostly technical. On Galileo the industrial set up and its management by ESA was experiencing substantial delays and cost overruns. ESA embarked in a major reshuffling of the contractual relationships it had created for the GalileoSat programme.

Faced with these difficulties and the stalling of the Concession process, the Commission proposed to Council and Parliament to redirect the programme, fund the deployment phase from the Community budget, act as programme manager and use ESA as procurement agent for the deployment phase. Regulation 683/2008 on the further implementation of the GNSS programmes was adopted on 9 July 2008.

29. The scope of the communication of May 2007 was not to describe in details the reasons of the failure of the concession negotiations, but rather to take stock of the results of the negotiations and propose a way forward.

## AUDIT SCOPE AND APPROACH

31. In the period audited by the Court (September 2003-December 2006), the GJU was established to ensure the unity of the administration and the financial control of the project for the research, development and demonstration phase of the Galileo programme, and to mobilize the funds assigned to that programme.

## OBSERVATIONS

39. The PPP's conception was based on studies and reports elaborated in the course of the Galileo definition phase, which had shown the viability of delivering the Galileo deployment, operation and commercial exploitation under a PPP structure entailing private financing. The choice of the PPP has been encouraged and finally endorsed by the Council. The preparation of the PPP was constrained by the limited time available. The industry came up with serious and realistic proposals in reply to the call for a PPP Concession.

41. As shown by the studies available to the Commission, best practices in the PPP domain were definitely taken into account. Nevertheless these best practices have been developed with established industries and services (motorways, hospitals, power plants…), where risks are already relatively well identified and cost comparators easy to build based upon existing cost data. This was and still is far from being the case for the Galileo deployment, operation and commercial exploitation.

(a) The unprecedented nature of the Galileo Project made it extremely difficult to apply PPP best practices, such as developing a reliable public sector comparator for lack of data.

The material difference in scope between the IOV and FOC (full operational capability) made it impossible to apply the data coming from the IOV to develop such a comparator.

The studies commissioned by the Commission and the GJU clearly indicated the risks at stake for the deployment, operation and commercial exploitation of the infrastructure proposed and assessed their efficient allocation as achievable under a PPP/concession scheme.

(b) In view of the time pressure, and the difficulty to find enough precedents to build upon, the Commission and GJU opted for a competitive dialogue process for the procurement, in order to enable for a gradual fine tuning of the tender specifications.

The Competitive dialogue procedure exists to handle complex cases such as the Galileo PPP given its technical, financial and legal set up.

The unknown elements characterizing the Galileo PPP were indeed supposed to be tackled through this procedure by interactions with extremely serious and dedicated bidders.

The procedure was extended in time so as to allow the candidates precisely to put forward refined and more credible business plan and financial models.

The extension of the dialogue process and the interactions between the GJU and the candidates, even after their merger, produced important results, which were incorporated in the Heads of Terms.

(c) The GJU staff encompassed professionals having accrued specific experience in the space domain and projects, having specific management experiences in relation to public sector infrastructure projects and project financing. There was no "knowledge gap" when compared to industry teams.

Experienced advisors were involved in the conception phase of the Programme (see in particular the inception study). As from the start of the active phase of the competitive dialogue, experienced advisors (Price Waterhouse Coopers, Lovell's,…) and European Investment Bank senior staff were assisting the GJU in negotiations either before or after the merging of the candidates and in the context of the merger process itself.

(d) The merger of the two offers was not encouraged nor supported neither by the GJU nor by the Commission. To mitigate the effects on the process described by the Court (essentially loss of competition), the Commission imposed conditions on the Merger approval.

After careful scrutiny of the joint proposal, the GJU, with the assistance of highly qualified advisors, assessed that the joined proposal delivered better value for money with respect to the individual bids.

(e) The Member States did not have to rely on GJU's official reporting only since they were represented at the Supervisory Board of the GJU which was debriefed extensively on the progress of the negotiations and regularly updated on the progress of the programme.

They were also represented in specific working groups, notably the PPP Expert meeting, to follow more closely the negotiation process and were given full visibility over the difficulties faced during negotiation, precisely on matters related to the concession.

Though complex, the negotiations were structured and conducted in a serious and professional manner by the two parties, and offered not sufficient ground for the GJU to question the feasibility of the concession. GJU reports were targeting a broader public than Member States, and as such had to keep certain commercial information confidential.

42. The PPP model proposed by the Commission differed from other PPP models then in existence. The very specific nature of the activities and risks at stake meant that other existing projects could not be taken as a reference for the Galileo Project for what regards the sharing of risks and financing between public and private sector.

(a) The technological complexity of the Galileo Project is a fact well understood by all the stakeholders involved and especially by the private sector.

(b) Inception studies clearly indicated that revenue generation was difficult to predict, but did not consider it as a show stopper for the delivery of the PPP scheme.

Availability payments by the public sector were considered a suitable instrument to ensure financial viability.

The Heads of Terms included a possible availability payment structure upon which a high level agreement was achieved with the private sector.

(c) The fact that the design has been developed under the responsibility of the public sector through the development phase was known to the private sector and was highlighted as an element of complexity for the relevant risk allocation within the concession scheme.

Nevertheless reports by experts in the field never outlined this as a major blocking point for the viability of the concession scheme.

It is to be recalled that the industry having developed the design during the development phase was largely represented in the candidates for the concession contract.

**Box 2**

Market risk, design risk and to a lesser extent third party liability risks were the more contentious areas during negotiations.

Nevertheless progress was achieved in the course thereof at least for what concern liability risk and market risk allocation.

Moreover it is probable that failure of the concession negotiation can also be attributed to other factors, for instance industry's realization of more advantageous financing options.

The difficulty to transfer market risk was identified and acknowledged, and as a consequence Heads of Terms were clearly pointing to a possible agreement where the risk transfer would be minimal at a first stage, with mechanisms for a gradual increase in the degree of market risk transfer during the course of the contract.

The transfer of design risk has been the most controversial issue of the PPP negotiation.

The IOV phase originally conceived to reduce design risks was perceived by the private sector as a major constraint to the undertaking thereof.

The attitude of industry to refuse any undertaking of design risk on the basis of lack of visibility, involvement and validation capabilities of the IOV phase has been strongly challenged during negotiation given that the potential concession holder was composed mainly of the same industrial actors who had a visibility on their own performance at the design stage.

The founding elements for a third party liability mitigation structure were agreed at Head of Terms level.

43. The GJU was instructed by its regulation to "charge to [ESA] the carrying-out of activities required during the development phase with regard to the space and the earth segment associated with the system".

These activities were carried out by ESA in the framework of the GalileoSat programme, jointly funded by ESA member states on a voluntary basis and the European Communities.

45. ESA was responsible for carrying out the GalileoSat programme and reported to GJU on its actions. GJU supervision as stated in Art 2 paragraph 4, was limited to ensuring that all phases of the programme dovetailed correctly, and was not conceived as a replacement of ESA technical expertise.

47. The Galileo Budget for development and validation was established based on studies commissioned by the Commission and was accepted by ESA in the GalileoSat declaration.

The GalileoSat declaration foresaw a standard ESA 20% flexibility on its contribution, creating a de facto 10% contingency on the total budget, which proved insufficient due to the programme complexity.

48. Late start of the GalileoSat programme by ESA Member States resulted in upstart delays and increased costs, which were never recovered.

49. The procurement of the IOV phase was performed by ESA following its own procurement system.

ESA chose in favour of an industrial organization led by a single prime contractor, but still ensuring, at least on the part of the programme funded by ESA Member States, a geographical return to subcontractors.

Galileo was the first and only GNSS programme actually opened for European space industry participation. As a result, the prime contractor chosen was likely to enjoy a definitive competitive advantage for future competitions (primarily for the deployment phase). This had major repercussions for the industrial policy furthered by ESA.

As a consequence of this and of the actions of several interested member states, the prime contractor eventually elected was a joint venture of antagonistic companies, which never managed to work efficiently together.

Faced with increased costs and delays, ESA finally decided to opt in December 2007, for a different industrial organization and contractual framework, whereby it would take direct prime responsibilities and contract out directly to subcontractors the different work packages.

53. Research activities funded by the FP6 were focused on all the main user sectors, addressing research on applications and other aspects (standardisation, legal and service provision aspects, market…) that will enable the future use of Galileo. The research projects

in the various user sectors have generally included development, tests and demonstration activities.

Exploitation of such work is to be included in the forthcoming "GNSS Application Action Plan".

The definition of the services, which were the basis for the system specifications, had been performed earlier, with FP5 funds.

54. The aim of the FP is to foster the development of technologies and services, although leaving the market actors freedom to choose in which domain such developments shall take place. This approach has demonstrated its validity in the sense that several companies, notably SMEs, have acquired knowledge and experience which has positioned them as leaders on the market, such as Ifen and Septentrio for dual Galileo/GPS receptors, Polestar for indoor positioning solutions and Telesys for location based services.

As in any research activity, the outcome of projects is not guaranteed, and depends on several factors which are beyond the remit of the Commission. The use of the results on the commercial market has to remain a decision to be taken by the project consortia themselves.

55. The follow up of the projects by GSA was ensured mostly by personnel having previously worked for GJU on these projects. The GSA fostered the dissemination of project results by setting up an internet based database of project results, organizing two successful "Growing Galileo" events taking stock of these results, and publishing a compendium of such results.

A number of FP6 projects have experienced delays, but a project by project analysis points to various causes not necessarily linked to the transfer.

56. The activities funded with FP6 include the development of new applications, evaluation of related market potential, investigation of possible business models, and research on business plans suitable for their commercialization. Experience of market development and technological innovation shows that most of market innovations are created by the market, and not by a top down approach. This is especially true in non mature markets such as this one, where the GJU/GSA would have had difficulties in devising comprehensive development strategies.

57. The delays on the Galileo/EGNOS programme may explain part of the delays in some FP6 projects.

60. EGNOS has suffered from delays that are mainly due to technological issues not in the control of the Commission, which imply development delays.

(a) The conclusion of the EGNOS agreement proved to be very difficult due to intrinsic difficulties proper to the relationship between the different parties involved in EGNOS. Finally the agreement was finalized by the end of 2008 and signed on 31 March 2009. Moreover, the ESA's programme for EGNOS (ARTES9) under which EGNOS is currently operated, is ending on 31 March 2009 time when the system should be compliant with the technical specifications needed for its exploitation by an economic operator.

(b) In March 2009 the system will effectively be certifiable, and it is planned to certify the operator by 2010 in accordance with Single European Sky regulation.

61.

(b) The integration of EGNOS into Galileo though affirmed as an objective at political level has always been the source of problems from a contractual standpoint.

For this reason the candidates for the concession contract were required to address the EGNOS integration into Galileo as an optional scenario.

The bids received were clearly showing the benefits of integrating the two systems, and the negotiations of the concession contract after the merger of the two candidates were carried out on an integrated scenario.

(c) The EGNOS institutional framework is complex due to historical reasons on how the programme was set up.

(d) The GJU has commissioned the preparation of several business plans for EGNOS and studies on the possible commercialization of its services which outlined a fairly limited potential in terms of EGNOS revenue generation capabilities.

Discussions held with the aviation sector have shown the difficulty of establishing a revenue generation mechanism for the EGNOS signal itself which is open and accessible to any user for free.

In this respect it is to be underlined that from a technical standpoint EGNOS OS and SoL are not different in terms of accessibility by users. They only differ from a certification standpoint.

These assumptions justified the GJU attitude not to invest in market development activities for EGNOS.

62. The EGNOS programme was run as an ESA programme (ARTES 9) principally funded by ESA member states and EOIG. Funding from the EU was limited.

Delays and cost overruns have been experienced in the framework of the ARTES 9 programme for various technical reasons.

63.

(a) Independently from the concession process, EGNOS faced a series of technological issues, under the control of neither the Commission nor GJU, which also resulted in programmatic delays.

(b) It is very difficult to appoint an operator for an infrastructure which is not completed from a technical standpoint. Moreover it would have been impossible for the Commission to entrust an operator without having rights on the assets to be operated.

The appointment of an EGNOS economic operator is now under finalization under the responsibility of the European Commission.

The need to conclude a framework agreement had a limited impact on the concession negotiations.

64. The GJU received a clear mandate to integrate EGNOS into Galileo which made it necessary to negotiate a Framework Agreement with the various EGNOS stakeholders, to clear the path for the ultimate transfer of ownership of EGNOS.

The Framework agreement negotiations led by GJU were ultimately not successful due to the complex institutional framework recognized by the Court itself, but have served as a sound basis for the current finalized agreement with the Commission.

65. Due to the delays experienced by the programme, the GJU did not implement the EGNOS market penetration plan.

67. The allocation of tasks between the parties during the development phase was inspired by the principle of cooperation between the parties in order to create a joint platform for the development of the programme.

This approach has been readdressed for the purposes of the deployment phase by the GNSS Regulation which clearly provides for a strict division of roles and responsibilities between the involved parties.

68.

(a) Regarding GJU main tasks see Commission's position under point 17.

The Commission notes that this governance structure, and notably the dual role of ESA were clearly identified in the founding regulation of the GJU.

(b) The winding up of the GJU does not have any impact on the role of GJU in that phase of the programme.

On the other hand closing down the GJU was necessary to avoid duplication of roles between GJU and GSA.

69. The ESA/GJU agreement was intended to set forth a partnership between the parties co-financing the project whereby ESA would have applied its own rules for placing contracts.

Implementation and reporting arrangements were not detailed as in standard contractual relationships due to the cooperative nature of the agreement. The specific reporting modalities were established by the GJU executive committee when payment obligations to ESA started to fall due.

The delegation agreement between the Commission and ESA signed on December 2008 for the deployment phase, provides for strict monitoring and reporting obligations.

70. ESA was responsible for both the IOV Phase and EGNOS through two ESA programmes GalileoSat and ARTES 9.

71. The Commission is of the opinion that ESA is clearly accountable for the results of the technological development activities it is conducting. The Commission has clearly taken its political responsibilities in the programme. Every decision can be traced back to the body entrusted to take it.

73. The Commission exercised a key promoter role for the GNSS programmes.

In 2005-2007 the concession negotiations were in process and delivered in December 2006 the expected Heads of Terms.

Corrective actions were taken at the time when evidence of the failure of the concession negotiation became clear.

Difficulties experienced in the negotiations up to the end of 2006 were not sufficient to conclude on the impossibility of delivering the Galileo infrastructure under a PPP concession scheme.

Only by the beginning of 2007 the Commission had the elements to assess that the concession process prolongation would not have delivered good value for the public sector and therefore to terminate the negotiations.

The Commission also refers to its reply to point 23.

74. The difficulties experienced in the development phase were due to reasons which were largely outside the Commission's control and mostly not influenced by the management principles guiding its actions.

(a) The Commission managed to get clear objectives for the European GNSS Programmes, endorsed by Council and Parliament.

A programme of this magnitude is likely to raise a diverse range of stakeholder expectations, and notably Member States may have held and promoted different objectives but this has not changed the objectives set at the outset of the programme.

(b) The choice of a PPP concession model capable to capture different phases of the project (deployment, operation, commercial exploitation) corresponds indeed to a long term strategic vision and planning.

The lack of success of this process does not affect the long term approach adopted by the Council.

(i) Under a PPP Concession scheme the exploitation model and roadmap is supposed to be delivered by the private sector.

One of the reasons for choosing this model lays exactly in the fact that the private sector has been judged to be in the position to do so.

Following the GNSS Regulation the Commission will be in charge to define such roadmap for Galileo in parallel with the deployment of the infrastructure.

As far as EGNOS is concerned the establishment of the roadmap will be a matter for negotiations in the context of the selection of the future EGNOS operator.

(ii) The problems encountered in negotiating a framework agreement for EGNOS depended largely on the dynamics between the EGNOS stakeholders.

The negotiation of the agreement has been taken over by the GSA and concluded by the Commission without any discontinuity or gap of negotiating power.

The EC – EOIG agreement was finalized by December 2008 and signed on 31 March 2009.

(iii) Taking into account the political and strategic nature of the programme the Commission has taken care to regularly inform and check the consensus at Council meetings.

(c) Due to the provisions of the Treaty, the Commission had to create two legal structures: the GJU (under Article 171) to serve as a cooperation vehicle with ESA on the Development and validation phase, and the GSA (under Article 308) to pilot the Deployment and Operations phase. To pave the way for these two structures, support activities were performed under four different contracts, but these did not involve the creation of legal structures.

(d) See the Commission comments under point 41 c).

(e) The risk matrix for the concession has been developed in a comprehensive form during the dialogue phase and with the assistance of experienced advisors by the GJU.

An extensive set of documents on the identification and possible allocation of such risks have been produced during the course of the negotiations with the concession candidates.

The nature of the project, as described above, did not allow a thorough identification and appreciation of the magnitude of these risks up front.

(f) The Commmission exercised a key promoter role for the GNSS programmes. Corrective actions were taken at the time when evidence of the failure of the concession negotiation became clear.

Difficulties experienced in the negotiations up to the end of 2006 were not sufficient to conclude on the impossibility of delivering the Galileo infrastructure under a PPP concession scheme.

Only by the beginning of 2007 the Commission had the elements to assess that the concession process prolongation would not have delivered good value for the public sector and therefore to terminate the negotiations.

## CONCLUSIONS AND RECOMMENDATIONS

75. Given the innovative nature and the technical sophistication of the project the Commission considers the Court's evaluation of the management of the development and validation phase overly negative.

(a) The GJU was not conceived as a strong operational programme manager. Regulation 876/2002 clearly states that: "For the implementation of the development phase of the Galileo programme, a Joint Undertaking within the meaning of Article 171 of the Treaty is hereby set up for a period of four years. The aim of the Joint Undertaking shall be to ensure the unity of the administration and the financial control of the project for the research, development and demonstration phase of the Galileo programme, and to this end mobilise the funds assigned to that programme." It also requires from the GJU to " charge to [ESA] the carrying-out of the activities required during the development phase with regard to the space segment and the earth segment associated with the system," effectively recognising ESA responsibility for carrying out the technological development activities.

(b) The Commission, within the limits of its responsibility, constantly supervised and guided the programme. The Commission stepped in whenever was needed to avert blockages, provide additional funds and adapt the structures of the programme.

The realignment of the programme proposed by the Commission in 2008 clearly assigned the role of programme manager to the Commission, to address the issue to which the Court has given prominence.

76. The PPP was prepared with the level of information available at the time, based on preparatory work having recourse to state of the art external advice.

The PPPs conception was based on studies and reports elaborated in the course of the Galileo definition phase, which had shown the viability of delivering the Galileo deployment, operation and commercial exploitation under a PPP structure entailing private financing. The choice of the PPP has been encouraged and finally endorsed by the Council. The preparation of the PPP was constrained by the limited time available. The specific challenges of the Galileo PPP, linked principally with technical and market specificities explain in a large part the inability to conclude the concession process.

77. ESA encountered technical and programmatic difficulties, which explain the delays and cost overruns.

78. RTD activities have been instrumental in helping define the Galileo mission and performances, focus on all the main user sectors, addressing research on applications and other aspects that will enable the future use of Galileo.

Those activities have raised significant interest in the users' communities and have developed technologies and knowledge that will be exploited in a later commercialization phase.

79. The integration of EGNOS into Galileo has been essential to ensure the continuity of the EGNOS programme, and secure the needed financing.

In spite of the technological difficulties, and thanks to the clarification of the institutional framework at the initiative of the Commission, EGNOS will be the first European GNSS programme in operation.

80. The Commission had to exercise its promoter's role over the duration of the programme, taking into account all stakeholders, especially ESA as partner in this joint initiative. The Commission actively managed the situation, and regularly took the initiative to unblock and foster the programme.

81. The Commission has overhauled the management of the programme, taking on board many recommendations of the Court of Auditors.

82. The Commission decided to propose to take over the programme management of Galileo at a decisive time for the programme. Council and EP endorsed this proposal by adopting the regulation 683/2008. It is part of the remit of Commission to propose the most appropriate solution over the long term.

***Recommendation 1***

The Commission has already made very concrete steps to adapt its resources and its legal and financial instruments to act as a programme manager. In order to facilitate this process a Galileo Interinstitutional Panel (GIP) has been set up.

(a) The Commission has secured the transfer of 30 experienced staff from GSA (some with experience dating back to GJU) and completed internal recruitments to set up a dedicated Galileo team.

(b) Regulation 683/2008 is clarifying the respective roles and responsibilities of ESA and the Commission. In application of this Regulation, the Commission has entered into the delegation agreements with ESA for the performance of FOC procurement activities and EGNOS further development activities.

(c) Regulation 683/2008 provided the Commission with a dedicated Galileo budget line to fund the infrastructure. The Commission is using public procurement to purchase the infrastructure.

As regards the operations and replenishment costs, the Commission is preparing the next financial framework to ensure adequate budget coverage. It will also review the financial instruments made available under its financial regulation to make sure they are adequate for the funding of the programme.

(d) The governance framework created by Regulation 683/2008, clearly allocates roles and responsibilities.

83. Regulation 683/2008 has clearly tasked the Commission to exercise leadership and to propose to Council and Parliament scenarios for Galileo beyond the Deployment Phase. In addition a Galileo Interinstitutional Panel is set up.

***Recommendation 2***

Regulation 683/2008 has reiterated the programme's political objectives that have remained constant over the past years. It has also provided the programme with a solid roadmap for the deployment phase, and has requested the Commission to come up in 2010 with a Communication on the future of Galileo beyond the Deployment phase.

(a) The Commission's Communication will cover, inter alia, the strategic and operational objectives of Galileo. It will address the question of the model for the operations of the system taking into account market realities, desirable positioning of the system on the value chain, and will clearly highlight the consequences of models proposed in terms of budget and public sector responsibilities.

(b) The Communication will tackle the issue of the integration of EGNOS into Galileo.

84. Commission has already started to work with the various stakeholders to draft this Communication and has sought the support of external advisers to help it take stock of the wealth of information gathered over the years, notably thanks to the Concession negotiation experience.

***Recommendation 3***

In order to be ready in time for the end of the Deployment phase, the Commission has started the work for the preparation of the operational phase. It will take into account the experience available.

85. The Commission will analyse the options as required by the Regulation 683/2008 and present its conclusion in 2010.

***Recommendation 4***

(a + b) In the framework of the Communication, the Commission is compiling user requirements and mapping out the enabling actions that are needed to foster the use of GNSS technology. This will enable the Commission to propose an appropriate regulatory framework.

(c) The Commission has taken steps to ensure that an operational EGNOS meets the needs of its users, particularly in the aviation sector, and for that purpose has selected an experienced operator with strong aviation background.

86. The Commission has set up and may set up other joint undertakings. Each of those are thoroughly planned and assessed against the criteria relevant for their activity, on a case by case basis.

***Recommendation 5***

The Commission carefully examines, on a case by case basis, the rationale and the optimal governance of any new joint undertaking.

## ANNEX II

The EGNOS programme was conducted under an optional ESA programme (ARTES 9) under ESA programme management. As the first ESA programme in navigation, it suffered from numerous technical difficulties.

b) This research programme has been run for more than 10 years, during which technical requirements changed and the certification environment evolved.

c) Due to the failure of the Concession negotiation the Roadmap for EGNOS had to be redrafted in accordance with the new governance established in July 2008 by Regulation 683/2008.

d) One of the main reasons for EGNOS not being operational has been the difficulties experienced by ESA to keep the signal available with the level of quality and reliability that may enable its certification.

Technical acceptance by ESA has only started beginning of March 2009. This is a prerequisite for handover of the system to EC, which will, at that time, and not before accept the system if it meets the objectives that ESA has set for itself in the ARTES 9 programme.

e) ESA's and GJU's efforts to demonstrate the capabilities of EGNOS overseas have been coordinated and funded by the Commission. Based on these preparatory studies, the Commission will decide whether to propose or not the extension of EGNOS outside Europe.

f) The GJU received from the Commission TEN-T 2004 and TEN-T 2005 funds specifically targeted at EGNOS, as well as funds from DG AIDCO in 2005. In addition, several FP6 projects were dealing with EGNOS. Finally, the GJU benefited from a discretionary studies budget approved on a yearly basis by its Board, that could have been used, if GJU Management had so decided, to fund specific EGNOS-related studies.

## ANNEX III

The agreements with NRSCC and MATIMOP and the GJU were transferred to the GSA. The winding up of GJU was agreed with MATIMOP and NRSCC at Management Board level. Third country discussions were held by the Commission, not by the GJU, and therefore the closing down of the GJU had no impact on such discussions.

## ANNEX IV

The Commission refers in general to the replies provided above to the text of the Court's report, in particular paragraphs 39, 41 and 42.

A.2. Due to the unprecedented nature of the project it was not possible to reach the level of maturity on requirements and constraints that can be found in projects with established industries and services (motorways, hospitals, power plants…), where risks are already relatively well identified and cost comparators easy to build based upon existing cost data. In view of the time pressure, and the difficulty to find enough precedents to build upon, the Commission and the GJU opted for a competitive dialogue process for the procurement, in order to enable for a gradual fine tuning of the tender specifications.

The competitive dialogue procedure exists to handle complex cases such as the Galileo PPP given its technical, financial and legal set up.

The unknown elements characterizing the Galileo PPP were supposed to be tackled through this procedure by interactions with extremely serious and dedicated bidders.

The extension of the dialogue process and the interactions between the GJU and the candidates, even after their merger, produced important results, which were incorporated in the Heads of Terms.

A.3. See the reply to A.2.

A.4. See the reply to A.2.

A.5. In all its recent relevant regulatory activities, the Commission has included provisions fostering GNSS applications (see for instance the European Electronic Toll System).

The Commission has however been careful not to distort competition in favour of Galileo or EGNOS.

The respective shares of revenues depending directly or indirectly on the public sector were estimated by the prospective concessionaire at the time of negotiations. The communication on the future of Galileo will reassess these figures and propose adequate regulatory measures.

A.6. The choice of the PPP has been encouraged and finally endorsed by the Council.

Developing a reliable public sector comparator was not a realistic option for lack of relevant data, contrary to what exists for more mainstream industries.

Even data coming from the IOV (in-orbit validation) could not be used to develop such a comparator, because of the material difference in scope between the IOV and FOC (full operational capability).

A.7. Through the competitive dialogue, innovative solutions have been generated and proposed by bidders, and thoroughly discussed.

Particular care was given to assess those innovative commercialisation solutions that the bidders had identified. Through this process the Commission was able to gain insight into new applications and markets.

A.9. These topics were covered under the preliminary studies conducted by Price Waterhouse Coopers, and the conclusion of those studies were supporting the value for money of the PPP option.

B.1. The GJU staff encompassed professionals having accrued specific experience in the space domain and projects, having specific management experiences in relation to public sector infrastructure projects and project financing. There was no "knowledge gap" when compared to industry teams.

Experienced advisors were involved in the conception phase of the Programme (see in particular the inception study). As from the start of the active phase of the competitive dialogue, experienced advisors (Price Waterhouse Coopers, Lovell's,…) and European Investment Bank senior staff were assisting the GJU in negotiations either before or after the merging of the candidates and in the context of the merger process itself.

B.2. Throughout the competitive dialogue phase, full attention was given to the assessment and fostering of the understanding of all parties as to the requirements for entering into a Concession.

This was one of the reasons for the choice of the competitive dialogue procedure.

B.3. During the competitive dialogue phase, the draft contract was further refined and expanded, and extensive discussions on the choice of applicable law were held.

B.4. The planning was ambitious, and the GJU amended it to take account of the fact that negotiations were more complex than initially expected.

B.5. The continued feasibility of the project was regularly reviewed and commented upon, notably in successive communications from the Commission.

B.6. See the reply to A.6.

B.7. As noted by the Court, the tender process managed to attract a diverse range of European companies, strongly dedicated to the project. It is only natural that for an innovative and challenging space project, space industry took a prominent role in the consortia. Operators were nevertheless present in all competing consortia.

B.8. See the reply to A.2.

B.11. Private sector bid costs were not assessed as there was no intention to fund them from public money.

B.12. See the reply to B.1.

B.13. The costs of external advisors were constantly monitored.

C.1. See the reply to B.2.

C.2. The bids were thoroughly assessed and compared.

C.4. In spite of the merger, the GJU managed to drive the negotiation process and achieve convergence on many topics, which was reflected in the Heads of Terms signed at the end of 2006 with the merged consortium.

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Le 6 janvier 2010

JORF n°0094 du 22 avril 2009

Texte n°3

LOI

**LOI n° 2009-433 du 21 avril 2009 autorisant l'approbation du protocole portant amendement de l'accord entre le Gouvernement de la République française et l'Agence spatiale européenne relatif au Centre spatial guyanais (CSG) (1)**

NOR: MAEJ0809338L

L'Assemblée nationale et le Sénat ont adopté,

Le Président de la République promulgue la loi dont la teneur suit :

**Article unique.**

Est autorisée l'approbation du protocole portant amendement de l'accord entre le Gouvernement français et l'Agence spatiale européenne relatif au Centre spatial guyanais (CSG), signé à Paris le 12 décembre 2006, et dont le texte est annexé à la présente loi (2).

La présente loi sera exécutée comme loi de l'Etat.

Fait à Paris, le 21 avril 2009.

Nicolas Sarkozy

Par le Président de la République :

Le Premier ministre,
François Fillon
Le ministre des affaires étrangères
et européennes,
Bernard Kouchner

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(1) *Travaux préparatoires* : loi n° 2009-433.

*Sénat* :

Projet de loi n° 90 (2008-2009) ;

Rapport de M. Xavier Pintat, au nom de la commission des affaires étrangères, n° 127 (2008-2009) ;

Discussion et adoption (procédure d'examen simplifiée) le 16 décembre 2008 (TA n° 31, 2008-2009).

*Assemblée nationale* :

Projet de loi, adopté par le Sénat, n° 1331 ;

Rapport de M. François Loncle, au nom de la commission des affaires étrangères, n° 1470 ;

Discussion et adoption (procédure d'examen simplifiée) le 9 avril 2009 (TA n° 259).

(2) Le texte sera publié ultérieurement au Journal officiel de la République française.

Le 6 janvier 2010

JORF n°0094 du 22 avril 2009

Texte n°4

LOI

**LOI n° 2009-434 du 21 avril 2009 autorisant l'approbation de la déclaration de certains gouvernements européens relative à la phase d'exploitation des lanceurs Ariane, Vega et Soyouz au Centre spatial guyanais (1)**

NOR: MAEJ0809349L

L'Assemblée nationale et le Sénat ont adopté,

Le Président de la République promulgue la loi dont la teneur suit :

**Article unique.**

Est autorisée l'approbation de la déclaration de certains gouvernements européens relative à la phase d'exploitation des lanceurs Ariane, Vega et Soyouz au Centre spatial guyanais, adoptée à Paris le 30 mars 2007, et dont le texte est annexé à la présente loi (2).

La présente loi sera exécutée comme loi de l'Etat.

Fait à Paris, le 21 avril 2009.

Nicolas Sarkozy

Par le Président de la République :

Le Premier ministre,
François Fillon
Le ministre des affaires étrangères
et européennes,
Bernard Kouchner

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(1) Travaux préparatoires : loi n° 2009-434.

*Sénat* :

Projet de loi n° 89 (2008-2009) ;

Rapport de M. Xavier Pintat, au nom de la commission des affaires étrangères, n° 127 (2008-2009) ;

Discussion et adoption (procédure d'examen simplifiée) le 16 décembre 2008 (TA n° 30, 2008-2009).

*Assemblée nationale* :

Projet de loi, adopté par le Sénat, n° 1330 ;

Rapport de M. François Loncle, au nom de la commission des affaires étrangères, n° 1470 ;

Discussion et adoption (procédure d'examen simplifiée) le 9 avril 2009 (TA n° 258).

(2) Le texte sera publié ultérieurement au Journal officiel de la République française.

# Basic Plan
# for Space Policy

***- Wisdom of Japan***

***Moves Space -***

**June 2, 2009**

**Established by**

**Strategic Headquarters for Space Policy**

# Contents

## Introduction

This Basic Plan for Space Policy forged this time is based on the Basic Space Law established in May 2008 and is a Japan's first basic policy relating to space activities.

Japan's use and R&D of space began from the "Pencil Rocket" project launched by Professor Itokawa of Tokyo University in 1955. Since then, approximately half a century has passed and Japan has reached to hold a position as one of the leading countries of the space development. Japan's outstanding performance such as continuous successful launch of H-IIA Launch Vehicles after overcoming all sorts of failures, HDTV images of the moon captured by "Kaguya" and experiments conducted by Japanese astronauts in Japanese experiment module "Kibo" of the International Space Station shows the sophisticated technological capability as well as helps to bring space activities closer to the Japanese people.

However, looking at the international trends, even China and India in addition to the space advanced countries such as United States, Europe and Russia have actively been participating in the use and R&D of space in recent years, and it is undeniable to feel a sense of crisis over Japan's use and R&D of space as mentioned below:

**(1) Absence of general strategy for space at the country level**

A lack of affiliation between research & development and its utilization/industrial promotion caused the whole government to fail to take advantage of the achievements of the use and R&D of space at the country level because it was not specifically positioned as a "national strategy".

**(2) Insufficiency of Japan's track record of space utilization**

Not only in the Western countries, but also many countries such as Russia and China set information gathering for national security purposes by using satellites as one of the major objectives of their space policy. In Japan, on the other hand, space is partially utilized in civilian purposes in areas such as weather forecast, telecommunication and broadcasting. Yet, in other areas as well as from diplomatic aspects, Japan's utilization of space should be pursued further. In particular, use of space for national security purposes is limited in a generalized area.

**(3) A lack of international competitiveness of industry**

According to a private study, the space equipment industry in Japan has decreased by approximately 40% of sales and nearly 30% of workforce in the past decade. Space industry for major technologies, parts and system is not fully competitive internationally, and weakness of international competitiveness of space industry is showing a lack of practical accomplishment and experience. Most of Japan's operational satellites such as broadcasting satellite are imported from overseas and it is extremely unusual to export Japanese space satellites and rockets to foreign countries.

The Basic Space Law aims to solve these existing issues and stipulates that the government formulates Basic Plan for Space Policy. This law aims to powerfully work in a comprehensive and systematic manner to "change space policy from R&D-driven to utilization-driven underpinned by high technological capabilities", to "utilize in the area of national security" beyond the generalized theory while maintaining an exclusively defense-oriented policy in accordance with the principle of pacifism enshrined in the Constitution of Japan, to promote "space diplomacy" and "research and development of the forefront areas" and at the same time to forge "improvement of industrial competitiveness" while aiming to become "environment-friendly".

## Chapter 1　Status of the Basic Plan for Space Policy

The Basic Space Law legislated by lawmakers was enacted on May 21, 2008 and entered into force on August 27, 2008, providing a major turning point for Japan's use and R&D of space. The Strategic Headquarters for Space Policy, led by Prime Minister as the Director General of the Headquarters, was established in the Cabinet with the enactment of the basic law to strategically promote the use and R&D of space for the entire nation.

This law also stands on a total of 6 fundamental principles; a peaceful use of space, improvement of the lives of the people, development of industry, progress of human society, contribution to international activities and appropriate care of the environment. It also stipulates a total of 11 basic measures; utilization of satellites for improvement of the quality of life of the Japanese people, formation of world peace and a safe and secure society in Japan, autonomous launch of satellites, promotion of space development and utilization by private businesses, maintenance and improvement of reliability, promotion of advanced space development and utilization, promotion of international cooperation, environment conservation, retainment of human resources, promotion of education and learning, and information control concerning the use and R&D of space.

The Strategic Headquarters for Space Policy is to draw up a basic plan for the use and R&D of space (Basic Plan for Space Policy) as a national strategy of Japan to fulfill these various principles of the Basic Space Law based on the Article 24 of the Law.

To promote the measures and policies in a comprehensive and systematic manner based on the Article 24 of the Basic Space Law, the use and R&D of space are stipulated as detailed below:

1. Presentation of the basic directions to promote the use and R&D of space
2. Measures and policies for the use and R&D of space to be conducted by the government in a comprehensive and systematic manner
3. Promotion of measures and policies based on the Basic Plan for Space Policy

As for the measures and policies, specific goals and its timeframe should also be established as a rule.

Due to the characteristic of the space development that it requires about 3 to 5 years to develop and supply equipment such as satellites, launch vehicles and necessary sensors, it is most often the case to require an appreciable period from the start of development to utilization. To comprehensively promote in a well-planned manner, the plan should be expected to cover a long period.

Taken these into consideration, the measures should be expected to take 5 years to advance in a comprehensive and unified manner while overlooking 10 years of the future. Further, the plan will be reviewed after 5 years of its formulation. However, it should be reviewed as needed based on a result of follow-ups.

## Chapter 2　Basic Policy to promote the use and R&D of space

### 1. The promotion of the use and R&D of space with Japanese character

The value placed on the information in the 21st century is increasing than ever and the importance is rising as a foundation of social and economic development. Collection of wide-ranging information related to various socioeconomic activities, events concerning a secure and pleasant social environment, changes of meteorological phenomena and global environment and enhancement of knowledge can be done specifically by the use and R&D of space and will furnish far away from the earth with an efficient and systematic broad approach in a small amount of time. Further, the sophisticated technological capabilities are essential to employ information collection.

Space policies of major countries who are actively involved in the use and R&D of space are distinguished from others who aim at "taking a worldwide leading role", "taking initiative role in business", "focusing on the interests of security" and "displaying the country's national prestige".

Japan’s space development and utilization has been focusing on the research and development thus far, but Japan will change its policy to emphasize the space utilization and aim to maximize the possibility and potential capability of the use and R&D of space in various sectors in order to enhance the quality of life of the nation, ensure national security, and international contribution and cooperation, together with improvement of its capability of research and development.

Therefore, Japan will aim that space activities bring about improvement in quality of citizen life and international contribution to ensure good living standards for citizens by collecting necessary information to use space for national security and disaster relief, higher levels of productivity in agriculture and fisheries, realization of advanced personal navigation system as well as to use space for foreign diplomacy, monitoring disasters in Asia, solving global issues and contributing to gain human's intellectual property.

To realize this, it is important to promote improvement of the environment to exert maximum effort to make the most of private sector vitality and competitive standing autonomously. At the same time, Japan must promote space science research and development for foundational and advanced technologies from a long-term perspective, and by actively exercising utilization of space as users of the public purpose. And, in cooperation with private sectors, it is important to make use of the results of the use and R&D of space toward improvement in the quality of service to the citizens and put into practical contribution to the world.

To draw out and execute the space policy, it is essential that all the government unites to promote it, together with the Strategic Headquarters for Space Policy as a gamemaker. From now on, the Basic Plan for Space Policy is considered as Japan's national strategy for the use and R&D of space in the medium- and long-term for promotion of comprehensive and systematic advancement of the policy.

For realization of these goals, the following 6 objectives are drawn out as an important pillar to promote the policy:

## 2. Six Basic Pillars for Japan's use and R&D of space

### (1) Realization of a secure, pleasant and affluent society utilizing space

Japan's use and R&D of space have already become an essential factor of our daily lives in various use; daily weather forecast using meteorological satellites, data communication and satellite broadcasting using telecommunications satellites, cartography, natural resource exploration, utilization for agriculture and fisheries and disaster monitoring using land and ocean observing satellites, car navigation and measurement using positioning satellites (GPS).

However, except some sectors such as weather, communication and broadcasting, the application of satellites is still in a validation phase or in an early stage of practical applications. Therefore, it is the pressing issue to utilize the maximum potential of space to realize an even more secure, pleasant and affluent society.

For that reason, it is the goal for the use and R&D of space to respond to the various social needs such as ensuring of public safety, preservation and conservation of national land, facilitation of food supply, stability of natural resource and energy supply, solutions of global environmental issues (realization of low carbon environment), enhancement of the domestic quality of life (realization of a healthy and long-lived society and convenience for the people), and sustainable development of industry and the creation of employment.

For the promotion of the policy, it is important to conduct of research and development of satellites including a series of satellites to realize utilization that responds continuously and effectively to the social needs, to pursue a effective and efficient use of satellites such as a combined use of various satellites or a multi-purpose use of one satellite, to increase value of utilization by collaborating not only with space segments but ground systems, to expand users as wide as potential ordinary citizens not limited to professionals and to increase the convenience of satellite data utilization.

**(2) Enhancement of national security utilizing space**

The utilization of space in the area of national security in Japan had been following the views of the Diet Resolution Concerning Peaceful Utilization of Space established in 1969 and limited to the satellites use of Japan Self-Defense Forces as mentioned that "the satellites only if those were widely prevailing and the equivalent functions of satellites (excerpted from the official government view announced in February 6$^{th}$, 1985)". Therefore, it has been limited to the general usage such as for communication, meteorological, global positioning and information gathering.

However, foreign countries are believed to retain information gathering satellites that overwhelm the ability of commercial satellites, and also they retain early-warning satellites equipped with sensors to detect ballistic missile launches.

As Japan maintains an exclusively defense-oriented policy, for the function of information gathering to detect any indications of various situations in advance and for the purpose of enforcing warning and surveillance function of Japan's surrounding costal area and airspace, as well as securement of communication method for activities such as international peace cooperation, which is the primary role of Japan Self-Defense Forces, it is extremely important to use the space which does not belong to any country's territory and unconstrained by any conditions such as geomorphic landscape. For that reason, on the basis of stipulation of the international agreements and the principle of pacifism enshrined in the Constitution of Japan with the Basic Space Law in mind, the new use and R&D of space are promoted to enforce the national security for the purpose of improving and reinforcement of information gathering functions and enhancement of warning and surveillance activities in light of the international situation, especially the circumstances in North East Asia.

Further, the position of the use and R&D of space in the entire defense capability will be determined in the Defense Guideline and the Mid-term Defense Program which will have been reviewed by the end of 2009. The consistency of promotion of the use and R&D of space is to be ensured in collaboration with the Defense Guideline.

**(3) Promotion of Space diplomacy**

The promotion of space diplomacy is to utilize Japan's distinguished science technology and the special characteristics of the use and R&D of space, which includes activities beyond national boundaries such as global information collection, into Japan's diplomacy (“Space for the Diplomacy”) and to exert efforts to promote smooth space development and utilization (“the Diplomacy for Space”).

**1) Promotion of "Space for the Diplomacy"**

Japan has used satellites to expand the use for the contribution of disaster monitoring in Asia, attempt to establish a remote education and telemedicine system and responding to global environmental issues caused by climate change and monitoring of the U.N. World Heritages. Further, Japan has built a collaborative cooperation with leading countries of the space development in the space science and International Space Station Program and proved a steady contribution.

For Asian countries, Japan has been contributive by providing a meteorological satellites, Himawari, to some 30 countries of the Asia-Pacific region for over 30 years since 1977 and helped to prevent disasters for approximately 2.2 billion people. The Asia-Pacific Regional Space Agency Forum (APRSAF) led by Japan was established in 1993, and Sentinel Asia started its operation in 2006 to deliver images of stricken areas in the event of a disaster in the Asia-Pacific region. Through activities of Sentinel Asia and the International Charter “Space and Major Disasters” which is the similar international framework that delivers satellite images in times of disaster, images have been provided from Japan's Advanced Land Observing Satellite "Daichi" in events such as forest fire occurred in Australia in February 2009 and China Sichuan earthquake occurred in May 2008, as well as events occurred in countries such as Indonesia, Vietnam and Thailand for approximately 100 times in the last 3 years.

As for global environmental issues including climate change, Japan played a leading role for the establishment of the Group on Earth Observations (GEO), and in the future, Japan will participate in observing greenhouse gases and changes in climate and water cycle, as well as provide information including global topographic data, for the purpose of formation of the Global Earth Observation System of Systems (GEOSS) under international cooperation.

For monitoring the World Heritage Sites, Japan Aerospace Exploration Agency (JAXA) has been participating in UNESCO’s "Open Initiative on the use of space technologies to support the World Heritage" by providing satellite images.

In the area of space science, Japan has been working with the United States and Europe under a panhuman project such as space astronomy and solar system exploration. Further, in the International Space Station Program, Japan is not only conducting its activities in Japanese Experiment Module “Kibo” but also will play a significant role in supporting overall activities of the International Space Station with cargo transportation H-II Transfer Vehicle (HTV).

All these prior experiences and the contribution of Japan to the international society, including in disaster monitoring and space science are diplomatic assets which enhance Japan's international leverage and presence, as well as a source of its soft power. It is important for Japan to utilize this kind of power as a tool for diplomacy to assert itself in the international society. In this context Japan has set “human security” as one of the pillars of its foreign policy and has been actively promoting it.

Human security is a concept that aims to establish the world where people can live in dignity and peace through protection of them from transboundary threats such as natural disaster, environmental degradation and climate change, as well as through their empowerment to overcome these threats themselves. The use and R&D of space will be reinforced and used as a tool to realize "human security".

**2) Promotion of "the Diplomacy for Space"**

The demands for space use in Japan are inadequate to promote the use and R&D of space. It is necessary to find needs from outside Japan by developing a cooperative relationship with leading countries of the space development and putting efforts for diplomacy in addition to provide support to the space industry’s overseas activities.

When providing Japan's support to the space industry, Japan must pay attention to the status of foreign private corporations which have received orders from foreign countries by receiving strong support from their government. Also, Japan has to find demands of the use and R&D of space in foreign countries by putting diplomatic efforts as establishing a government-level bilateral relation and providing public funds such as Official Development Assistance (ODA).

For the use and R&D of space, it is undesirable to conduct the entire activity independently in consideration of the huge amount of money needed from development and launch of satellite. It is important to deepen a relationship with leading countries of space development more than ever to allow realization of efficient use and R&D of space by establishing a partnership for sharing responsibilities.

Further, even though the international rules for space have been established at international fora such as the Committee on the Peaceful Uses of Outer Space (COPUOS), Conference on Disarmament (CD), there are new challenges such as measures to space debris (hereinafter referred to as "debris") and future challenges of ascription of natural resources of the moon and space traffic management, which are important to conduct the use and R&D of space. In addition to the four treaties on space(Note), it is necessary for Japan to proactively participate in formulating international rules for space.

(Note) The four treaties on space include "Outer Space Treaty", "Rescue Agreement", "Liability Convention" and "Registration Convention".

**(4) Creation of vigorous future by promoting R&D of the forefront areas**

Space given as a frontier to mankind has unlimited possibilities such as for accumulation of human intellectual properties, expansion of human frontier and the new usage of space energy. Without research and development of advanced science and technology, it is indeed impossible to give a challenge to the harsh space and realize these possibilities.

Promotion of the advanced research and development will bring in new technical breakthrough and at the same time, the achievement will enrich the life on the ground and demonstrate great potential to create a vigorous future. Further, these challenges would give hope and dreams to Japanese people, especially to children who are responsible for the next generation.

In addition, the advanced research and development should be considered as a challenge for all mankind and it is important for Japan to plan independently and take the initiative in international cooperation.

For space science such as space astronomy, solar system exploration and other studies, Japan has always achieved the top-level results in the world by unifying the space science, which has been conducted to unveil the solar system and space itself as well as to solve the mysterious origin of how life began, and the advanced engineering research for spacecrafts.

In the recent achievement of space astronomy, the Japanese X-ray astronomy satellite "Suzaku" has succeeded in high-accurate observation of the distortion of space-time around black holes, and the infrared astronomical satellite "Akari" has been used to help create a catalogue over the shining sky with infrared radiation. For the solar system exploration, Japan has achieved remarkable success of solar observation by the solar observation satellite "Hinode", asteroid probe by the asteroid explorer "Hayabusa" and moon exploration by the lunar orbiter "Kaguya".

And as a part of the International Space Station program, human space activities have been making considerable achievements; one is to provide sophisticated human space technologies of "Kibo", which was completed in

2009 and will start its utilization operation in the days ahead, other one is the outstanding performance of Japanese astronauts. Japan's human space technology is reaching its well-positioned situation to achieve useful outcome for people's living. For the research on space environment utilization, its achievement of space-medicine has used for medical treatment for the elderly and also for prevention study of osteoporosis and urinary calculosis, as well as to make effective application for medicine development using a high quality protein crystallization. Furthermore, it is expected that "Kibo" will be utilized for useful function for the world as a "geosphere observation and diagnosis station" that astronauts deliver information concerning weather, disaster, agriculture and fisheries in real time which is comprehensively organized from the ground after the information related to space and the earth is collected individually.

As a country who aims to establish a nation based on the creativity of science and technology, it is important for Japan to actively participate in the space science and human space activities to probe deep into space and expand the human's sphere of activities as a leading country of the space development based on the actual results and technical capabilities achieved so far.

Further, for the space solar power which may solve the worldwide environmental and energy issues confronting humankind, Japan has been involved in necessary research to realize space solar power with countries such as the United States through information exchange. Currently confirmation of each required principled technology has been in progress and it is important to apply step-by-step verification in the future toward the realization while ensuring its safety and economic efficiency.

**(5) Fostering strategic industries for the 21st century**

The space industry can be considered as an important base to support the space activities of Japan when promoting the use and R&D of space.

The space industry covers not only the space equipment industry but also the service industry using space for communication and broadcasting services, a cartological service using satellite images and a positioning service using navigation system. Also, the utilization of space is expanding to industries such as pharmaceutical industry, medical and bio industry for drug development in "Kibo" using microgravity and development of safe and secure small-sized clinical instruments, but also for clothing, food and housing industries, which was remotely related to the traditional space activities. As mentioned, the utilization widely stretches out to many areas. There is an expectation that it would make a ripple effect to various industries that it would increase an added value of industries and create new innovation by fusing together with materials, technology and services of other industries.

However, the current situation is that the international competitiveness of Japan's space industry is weak and majority of the operational satellites that have been brought into Japan by the government and private companies are U.S.-made. Meanwhile, Japanese private companies had never received an order of any commercial satellite launch service neither from home nor abroad. However, Japanese private companies finally received orders for manufacturing commercial satellites and launching a Korean government satellite with H-IIA Rocket during 2008 and 2009, and it is still in an early stage for commercial deployment.

For satellites, Western countries have accumulated their performance in orbit based on the demands from the governments, and the results helped to increase the sense of customers' trust bringing the Western companies to gain higher share in the international market of man-made satellites as before. Japan has fewer demands compared to Western countries and the research is focused on research and development. For that reason, there is not enough actual performance on orbit and it is still in a validation phase and Japan has not been able to obtain any share.

In addition, some countries such as Russia, China and India have commercially deployed their rockets at a low price.

Further, it has been difficult for companies to maintain their profitability because the amount of production of space components and parts is so small and they are specialized goods.

Then domestic companies tend to withdraw from the business. On the other hand, importing space parts also causes many cases which include malfunctions caused by deterioration of quality and termination of supply due to sudden stop of production. Although Japan has accumulated technology in top-level in the world, the share in market is limited due to less experience in orbital demonstration. Especially for observing sensors, in the area of optical sensors, which is implemented commercially, Japan has not gained much competitiveness.

In addition, as for test facilities necessary for research, development and manufacturing of satellites and launch vehicles, there are several problems including maintenance of aging facilities, and newly facilitating and refurbishment of facilities to eliminate the influence with development and production schedule.

According to a private study, the size of space equipment industry in Japan has decreased by approximately 40% in sales and nearly 30% in workforce in the past 9 years (from 1998 to 2006).

As explained above, it is the pressing challenge to enforce Japan's international competitiveness further to respond to the severe situation of the space equipment industry in Japan.

For the space utilization industry, public and private sectors provide funds to help development and operation of satellites and rockets. This is called Public Private Partnership (PPP). When the government makes policies such as for guarantee of product purchase, it leads to promote expansion of the space utilization service industry. In Japan, satellites for communication and broadcasting are independently launched and develop services, but in the utilization of satellite images, data from foreign satellites is mainly used.

In light of these circumstances, it is important to strengthen the international competitiveness by developing Japan's space industry into a strategic industry for the 21st century after the electric and electronic industries and automobile industry.

For the promotion of the policy, it is important to focus on strengthening technical ability, enhancing efficient development and production of private companies and developing new international markets, as well as to prepare for the maintenance and development of a space transportation method which supports Japan's autonomous space activities.

**(6) Consideration for environment**

The use and R&D of space provide benefit to the daily life of the people, but also have clues to solve the energy and the environmental issues such as global warming. On the other hand, the use and R&D of space themselves require consciousness toward the earth environment and at the same time toward the space environment.

For the aspect of the global environment, Japan's use and R&D of space are based on a pillar to contribute significantly to the global environmental issues such as climate changes. For that reason, implementation of the use and R&D of space must be based on the spirit and carried out with sufficient attention not to worsen the global environment.

For the aspect of the space environment, artificial materials such as spent orbital stage of launch vehicles and retired satellites left on the space and fragments caused by explosion and collision scattering in orbit, are infecting the operation of satellites and the human space activities at the International Space Station.

Chinese satellite fracture experiment of a ballistic missile in January 2007 and collision of the orbiting satellites of the United States and Russia in February 2009 caused a large amount of debris in space. The amount of debris is expected to increase further by chained collision of debris in the future.

In the future, as a country aiming to expand the use and R&D of space, Japan is required to take a lead in making a contribution to decrease the occurrence of debris caused by a launch of Japanese rockets and satellites and to increase the level of debris monitoring for preservation of the space environment in collaboration with the international society.

# Chapter 3 Measures that the Government should take comprehensively and systematically for the use and R&D of space

## 1. Nine systems and programs for the use and R&D of space

For the promotion of the policy for the use and R&D of space, it is suitable to define the social demands of high expectation toward the use and R&D of space and set up a goal for countermeasures to satisfy these demands on the basis of the 6 objectives mentioned in Chapter 2. After that, it is reasonable to focus on achieving the goal and apply necessary policy through cooperation with public and private sectors in light of distribution of resources and cost-benefit performance.

Based on this philosophy, the social demands to be realized through the use and R&D of space and a specific goal to correspond to each demand for the next 10 years are summarized in this chapter and Appendix 1.

By combining efficiently and effectively various satellites, such as land and ocean observing satellites, data relay satellites, satellites for national security, global environment observing satellites, meteorological satellites, communication and global positioning satellites and scientific satellites, with programs of the International Space Station, or versatile utilization of individual satellite, the measures to be taken are consolidated into the following 9 systems and programs. The 5-year development and utilization plan of these satellites that overlooks the next 10 years from 2009 is formulated in Appendix 2.

Further, these systems and programs will be executed based on the opinions from the concerned industry-academic-government parties at the Committee Conference on Promotion of the Use and R&D of Space (tentative name and hereinafter referred to as "Committee Conference"), who are involved in research and development and utilization of space, and then the systems and programs are crystallized for the promotion. Evaluation will be conducted in an appropriate and timely manner and the results will be used for the promotion. Moreover, an appropriate space transportation system will be established to support these systems and programs at the same time of cultivating the space diplomacy and the space industry involved in common.

## (1) Formation of utilization systems

### A. Land and Ocean Observing Satellite System to contribute to Asia and other regions

As a satellite system that corresponds to the following major social needs and goals for the next 10 years, a land and ocean observing satellite system that contributes to Asia and other countries will be targeted for the promotion of the 5-year development and utilization plan.

#### 1) Social needs and goals for the next 10 years

##### (a) Ensuring the public safety

- To correspond to the demands of "understanding information in the event of disaster in Asian region", information such as satellite images is provided when a disaster is occurred. However, it takes approximately one day for "Daichi" to provide images, which is insufficient to be used as an initial response to disasters, and also the resolution of images is insufficient to understand its detailed situation such as house and road damages. In addition, there is a limitation to satisfy the entire demands because information gathering satellites limit provision of images for a security purpose. For that reason, the followings are set as goals: (i) in case of disasters in Asian region, Japan will work together with stricken countries and others to basically take images within 3 hours after an occurrence of disaster, coupled with shooting from air planes, and then provide these images to stricken countries, also for the purpose to utilize them for relief activities by Japan, (ii) in case of disasters in Japan, images of stricken area will be taken to provide disaster relief agencies with detailed information such as house and road damages, along with the latest image archives. After that, image and information of crustal deformation will be provided to understand the status such as detailed situation of damage, a risk of secondary disaster and condition of rehabilitation and reconstruction, as well as to widely understand the stricken area. Further, in case of floods and sediment disasters, detailed information of house and road damages should be understood. For these purposes, maintenance and utilization of satellites and sophistication of analysis method, such as using 4 to 8 units of optical and radar satellites, are targeted for better understanding of disaster condition.

Further, at the same time of disaster occurred in Japan, images will be taken in cooperation with a information gathering satellite in addition to the above mentioned satellite. Along with the past archived data, a land and ocean observing satellite system which can be used to contribute to Asia and other regions by providing images of a wider area and an information gathering satellite which can be used to provide analyzed information based on higher resolution image data will be utilized in a mutually complementary manner.

- To respond to the demands of "prediction and monitoring crustal deformation", as a country which is located in the area of one of the world's most active crustal deformation (movement of ground), GPS-based control stations installed in approximately 1,200 locations all over Japan are used to receive GPS satellite data and for monitoring the deformation. On the other hand, although a validation approach for utilization of a L band radar sensor has been carried forward, it has not been able to put in practical use due to the circumstances that there was a time gap between updates of the satellite and it was unable to be used for observation for a few years in addition to its fewer numbers of operation. In the future, crustal deformation will be broadly and densely monitored with the accuracy of 1 centimeter, by utilizing broadly analyzed results of satellite image obtained by acquiring information of the ground surface widely over a long duration continuously with high frequencies, in combination of specified point information provided by GPS-based control stations. This will enable monitoring by condition of a surface rather than a point. Prediction accuracy in crustal deformation and volcanic activities will be improved in the future, especially when a massive crustal deformation is predicted or a volcanic activity becomes increased. In the case, GPS receivers are used for temporary observation on site and conduct monitoring of target area at least every 3 hours. Also, by providing satellite image including information about discolored water as soon as possible, the satellite utilization will be realized as a method to monitor submarine volcano activities.

**(b) Preservation and management of territorial land**

To answer to the demands of "gathering of land information", Japan has been recording and gathering images of the land from satellite. However, the operation of satellite is not serial, and gathering and provision of data was not conducted in a continuous and integrated way. For that reason, except for some of the empirical approach such as updating topographic maps on a scale of one to 25,000, the utilization is still insufficient as a whole. In the future, it is aimed that optical and radar sensors using a series of satellites are used to continuously and widely observe the land and the data is utilized as basic information for national land preservation and management, agriculture and forestry and environment by collecting and distributing them systematically. For example, by comprehensively improving image quality with enhanced resolution of optical stereo vision sensor by more than twice, Japan is to realize to make more detailed map and to expand its utilization for local governments and private sectors along with the areas of forest management and environment management.

Further, attempts have been made to monitor illegal logging and the World Heritages from "Daichi" showing that there is a potential to expand the utilization of Japanese satellite images in overseas.

**(c) Facilitation of food supply (Updating agriculture and coastal fishing activities)**

- To respond to the demands of "understanding growing condition and quality of grain and other agricultural products", satellite images can be analyzed to understand the growing condition and estimate of rice quality, such as rice's contents of protein and water, and its actual utilization has already started in some areas. Approach will be made in the future to improve the estimate accuracy and pursue the sophistication for farm management. Further, irrigated rice damages caused by disasters are currently assessed visually, but it is expected to have fewer loss assessors as decreased number of farmers, and it is a challenge to improve the method of loss assessment. Japan will aim to establish a loss assessment method using high-resolution satellite images to enable overall evaluation of irrigated rice in Japan, and organize a system that can deploy the method in all prefectures, which is still in a validation phase at 14 prefectures. In addition, constant monitoring of conditions related to crop productions in the major area of breadbasket in the world will be realized to use for Japan's food supply strategy as basic information.

- To respond to the demands of "understanding fisheries", Japan will aim for healthy development of a fishing industry and stable supply of marine products by giving contribution to improve a prediction of occurrence of red tides harmful to coast fishing and aquaculture industry. Specifically, enhancement of resolution on optical sensors will allow not only to schematically determine the occurrence of red tides over the wide area of Tokyo Bay, but also to spot detailed damage condition, for example in the Tokyo Bay estuary.

**(d) Facilitation of natural resources and energy supply**

For the demands of "exploration of oil and mineral resources in land and seabed areas", satellite data has been used for natural resources exploration in continental areas, but its analysis ability has not reached its full potential. For that reason, an ability to detect minerals that make up geological layers that contain oil, and minerals such as rare metals, is improved by three times from the current ability of 10 types to 30 types. Also, it is aimed for continuous and wide area observation using a highly sensitive sensor to precisely and efficiently detect the possible areas of oil and minerals and upgrade the exploration method of resources contained in continental areas.

Further, there are various resources and energy existed over the Japan's territorial seas, said to be the world's $6^{th}$ largest size, and exclusive economic zone, as well as possibly two hundred nautical mile of the continental shelf. There is an expectation to secure these resources, but the utilization is still limited that "Daichi" is used to observe the oil slick phenomenon (a release of crude oil from the sea floor and becoming an oil slick on the water surface) in a validation phase. In the future, Japan is to aim for improving the detection ability of oil slick by enhancing the sensor resolution and contributing to natural resources exploration of seabed in the water territories in Japan. The collected information will be utilized as basic information for the Japan's strategy to secure resources and energy.

#### (e) Others

To respond to maritime events such as smuggling in Japan’s surrounding ocean area, illegal operation of foreign fishing boats, suspicious vessels, major accidents at sea, or sea piracy on sea lanes bound for Japan, the research and development of ocean monitoring system utilizing a satellite will be conducted. For example, the images taken from satellites as well as from airplane constantly or at least every 3 hours collaborating with a ground system to identify the target vessels would be effective.

### 2) 5-year development and utilization plan

To realize the above goals, the following measures will be taken:

- As the "ASTER sensor" equipped on the American earth observatory satellite Terra and "Daichi", both of which are currently in operation, will be used to gather information in the event of disasters and territorial land information as well as investigation of oil and minerals, it will be aimed to operate "Daichi" as a series and improve the abilities of optical sensors (including hyper spectral sensor) and radar sensors with wide adaptability and high resolution, advance the analysis method, and conduct the research and development to reduce process time as well as research and development of satellites. As a first step to do this, "Daichi-2" will be launched, equipped with L band radar which is unique technology of Japan to promote the utilization of a satellite.
- To conduct observation of Asia with great frequency and high resolution, It will be aimed to improve resolution of optical, radar sensor and small-sized satellite (ASNARO (tentative name)) in low cost. To realize this, Government will work together with private companies to research and develop a satellite and promote a launch of small-sized demonstration satellite equipped with optical sensors.
- A data relay satellite "Kodama" will be used to support global data transmission of "Daichi" and promote continuous securement of a data relay satellite necessary for continuous data transmission by "Daichi" series.
- For ocean monitoring, Government will conduct research and development of a method to gather information of marine navigation

necessary to secure vessel safety in collaboration with satellite images and information gathering system of marine navigation on the ground.

**B. Global environmental change and weather observing satellite system**

As a satellite system to respond to the following major social needs and goals for the next 10 years, a global environmental change and weather observing satellite system will be implemented and the 5-year development and utilization plan will be promoted:

**1) Social needs and goals for the next 10 years**

**(a) Ensuring public safety**

To answer to the demands of "high-precision weather forecasting", various observation data of the multifunctional transport satellites "Himawari-6" and "Himawari-7" have been utilized for weather forecasting and prediction of tracks of typhoons and its strength. However, currently there is a challenge that it is difficult to predict a very local and torrential downpour. For that reason, there is an expectation to enhance the total forecast accuracy. Japan will aim to increase the observation frequency for the distribution of clouds and moisture by the current 30 minutes to by 10 minutes and continue to provide information to people. Japan will also increase the accuracy of weather forecasting by doubling the sensor resolution and gathering detailed information to utilize the data for disasters such as very local heavy rain.

**(b) Facilitation of food supply (advancement of deep-sea fishery)**

To realize healthy development of the marine products industry and stable supply of marine products, it is essential to conduct scientific investigation to improve the forecast evaluation accuracy for the condition and movement of fishery resources. As one of the methods, utilization of observed data for sea temperature, oceanic current and ocean color provided by satellites has reached its practical realization. However, the current situation only allows seeing the comprehensive condition of oceanic current and other information. Therefore, in the future, Japan will aim to prepare a structure for easy data access and to improve the productivity of fishery and realize efficient support of operation, together with having regional fishery information with the increase of spatial resolution by the sensors boarded on Japan’s satellites.

**(c) Resolving the global-level environmental issues (realization of low carbon society)**

In collaboration with land and ocean observing satellite system to contribute to Asia and other regions, Japan will respond to the following demands:

- To respond to the demands of "gathering information of global distribution and the amount of absorption and emission related to greenhouse gases such as $CO_2$ and methane gas", distribution of greenhouse gases concentration had been measured at limited locations (approximately 280 locations) on ground. However, Japan's Greenhouse gases observing satellite "Ibuki" launched in January 2009 enabled observation at 56,000 points globally and it was in a phase to observe and analyze the globe cyclopaedically. Further, among the land and ocean observing satellite system to contribute to Asia and other regions, "Daichi" has been used for the development of evaluation methods of greenhouse gasses emissions from forest degradation. In the future, "Ibuki" would be used for continuously detecting more detailed greenhouse gasses absorption and emissions in each region and absorption by forest ecosystem while continuous observation of the global distribution of greenhouse gases concentration and improvement of sensor ability by twice as much as the present ability to increase the measurement point and its accuracy. It would enable precise understanding of the change in absorption and emission of greenhouse gases caused by the change of climate condition and logging and providing scientific evidences for the emission reduction of greenhouse gases in the future which the entire world must tackle with. Also, by improving the resolution performance of "Daichi" and then detecting more detailed changes in forests and vegetation as sinks of greenhouse gases, “Daichi” would be utilized for gathering information and verifying the Reducing Emissions from Deforestation and Forest Degradation (REDD) in developing countries. Through these activities, Japan will aim to contribute to the global warming countermeasures effective for the next phase of the Kyoto Protocol.

- To respond to the demands for "understanding the global water circulation and environmental changes", Japan has been conducting the observation of precipitation distribution related to water cycle and clouds and aerosol distribution related to the global environmental changes in international frameworks using overseas satellites, but it requires continuous observation to see the long-running changes and it is expected for the further improvement of prediction accuracy. For that reason, Japan will aim to improve the accuracy by doubling the current ability to measure the global precipitation distribution and improve the ability for higher accuracy by more than twice as high as the current ability for clouds and aerosol distribution in international frameworks for the future. Also, Japan will aim to clarify and establish methods for generating mechanism of abnormal meteorology such as El Nino, desertification and torrential rainfall, and to establish the clarification and forecast methods for global environment changes and water circulation mechanism by understanding them continuously, globally and in more details, as well as to conduct disaster prevention by providing necessary information quickly and properly.

**2) 5-year development and utilization plan**

To realize the above goals, the following measures will be taken:

- As for the "AMSR-E sensor" equipped on the American earth observatory satellite "Aqua" and "PR sensor" equipped on the American tropical rainfall measuring mission "TRMM" which are currently in operation, it will be aimed to continue the global observation of the water cycle which is a major cause of the global environment changes and continue to observe the amount of rainfall and moisture, and also advance research and development to enhance the ability of sensors and the analysis method as well as the research and development of satellites. Of the Global Change Observation Mission (GCOM), GCOM-W will be launched at first. Then, research and development of the Dual-frequency Precipitation Radar sensor (DPR) will be advanced to observe a perpendicular distribution in the precipitation area and equipped on the American Global Precipitation Measurement (GPM) satellite for launching

- Further, of the GCOM, while improving the ability of the global imager sensor to understand the amount of clouds, aerosol and vegetation and advancing the research and development of GCOM-C including enhancement of analysis method, Government will conduct the research and development of the Clouds Profiling Radar CPR) sensor to observe a perpendicular distribution of clouds and aerosol and their movement and equip the sensor on the European Earth Cloud, Aerosol and Radiation Explorer "Earth CARE Mission satellite" for launching.
- While "Ibuki" will be used for measuring a concentration distribution of the global greenhouse gases which is a cause of the global warming as well as the global temporal variation, Government will advance research and development to improve the analysis method and ability of sensors.
- While "Himawari-6" and "Himawari-7" will be used for continuous weather forecasting, the geostationary global environment observation satellites "Himawari-8" and "Himawari-9" with twice higher resolution of a sensor than those of "Himawari-6" and "Himawari-7" attempt to improve weather forecasting accuracy for very local heavy rain. Further, "Himawari-6" and "Himawari-7" have an air traffic control function as multifunctional transport satellites and will be used this function continuously.

### C. Advanced telecommunication satellite system

As a satellite system that corresponds to the following major social needs and goals for the next 10 years, an advanced information and communication satellite system will be implemented for the promotion of the 5-year development and utilization plan.

#### 1) Social needs and goals for the next 10 years

##### (a) Ensuring the public safety

To respond to the demands of "securing a communication method in case of disasters", commercial communications satellites are used in the event of disasters for disaster information distribution and communication by the government and local public agencies. However, it requires a ground-based station for a satellite (receiving antenna and special equipment), and communication via general methods such as widely used mobile phones holding a hundred million subscribers becomes disconnected when there is damage to portable base stations on ground. For that reason, Japan will aim to conduct research and development to enable satellite communication only by mobile phone terminals and to use both a ground system and a satellite system and bring it to a validation phase using engineering test satellites.

**2) 5-year development and utilization plan**

To realize the above goals, the following measures will be taken:

- It will be aimed to advance research and development on an interference avoidance technique, coordination technique of a ground system and a satellite system and large deployable antenna technique to enable to use the same frequency band in the ground system and satellite system in an attempt of realizing a ground/satellite commonly used mobile phone system in which mobile phone terminals can be used for communicate via both ground and satellite communication.
- Further, Government will conduct a utilization and validation experiment of high speed Internet communication in the Asia-Pacific region and isolated islands using the ultrahigh-speed Internet satellite "Kizuna", as well as utilization and validation experiment of mobile telecommunications from the engineering technology satellite VIII type "Kiku-8".

**D. Positioning satellite system**

As a satellite system that corresponds to the following major social needs and goals for the next 10 years, a positioning satellite system will be implemented for the promotion of the 5-year development and utilization plan.

**1) Social needs and goals for the next 10 years**

**(a) Enhancement of the domestic quality of life (Improving convenience)/ Ensuring the public safety**

To respond to the demands of "realization of highly accurate positioning", currently services using a positioning satellite system such as car navigation systems are widely spread and the utilization of a positioning satellite has been expanding, but it has not been able to pinpoint a location of people. For that reason, Japan will aim to achieve highly accurate positioning using a Quasi-Zenith Satellite System and improve its convenience by creating new applications such as a seamless personal navigation that works with satellite and ground systems, and to realize safety of the country and people to response to the needs of "ensuring the public safety" in the future. Further, by establishing a structure using 3 satellites after validation of technology and ability of a Quasi-Zenith Satellite System, supplementation and backup of systems for GPS become possible. Also, by using 7 satellites, a self-contained satellite positioning system can be established that covers the East Asia and Oceania region.

**2) 5-year development and utilization plan**

To realize the above goals, the following measures will be taken in cooperation with the government's "Basic Plan for the Advancement of Utilizing Geospatial Information" and "Action Plan for the Advancement of Utilizing Geospatial Information":

- For a Quasi-Zenith Satellite System that is a core of a positioning satellite system, Government will conduct technical and utilization verification and promote measures for system verification, as well as to promote a new usage that links with ground systems such as a personal navigation system with help of both public and private sectors.

## E. Satellite system for national security

As a satellite system that corresponds to the following major social needs and goals for the next 10 years, we will promote a 5-year development and utilization plan of satellite system for national security purposes.

**1) Social needs and goals for the next 10 years**

After the launch of North Korean missile Taep'o-dong in August 31, 1998, Information Gathering Satellites were introduced mainly for national security purposes in light of diplomacy and defense as well as for crisis management in case of wide-scale disasters. Since then, a creation of four-satellite systems, two optic and two radar, in order to take images of a specific location on earth more than once a day was set as a goal. However, this four-satellite system is yet to be fully established until now.

Further, the use and R&D of space for national security purposes have been limited to "generally-used satellites and those with equivalent functions".

From now on, it will be aimed to enhance the information gathering functions by increasing opportunities to take images areas of interest, improving quality of images and shortening time for information-sharing, as well as to reinforce functions for surveillance and reconnaissance activities in nautical and airspaces surrounding Japan. With this in mind, it will be aimed to promote new policy for the use and R&D of space for national security purposes including research of sensors for an early-warning system.

**2) 5-year development and utilization plan**

To realize the above goals, the following measures will be taken:

**(a) Expansion and reinforcement of Information Gathering Satellites' functions**

In the next 5 years, Government will establish the aforementioned system of four satellites and increase the amount of information by increasing the frequency of image-taking improving the quality of information through enhancement of the resolution of optical and radar satellites which exceeds the level of commercial satellites. Government will also improve data timeliness by shortening the processing time and shorten time required between the time of a request and distribution of products. By making these efforts, Government should be able to improve and reinforce the function of Information Gathering Satellites and intensify information gathering abilities required for the support of national security purposes in light of diplomacy and national defense and the crisis control management in case of major disasters.

**(b) New use and R&D of space in the national security field**

Government will aim to steadily promote research of sensors for an early-warning system and research of radio property for a validity check of a radio information gathering function in space.

## (2) Promotion of research and development programs

### F. Space science program

As a program that corresponds to the following major social needs and goals for the next 10 years, space science program will be implemented for the promotion of the 5-year development and utilization plan.

#### 1) Social needs and goals for the next 10 years

**(a) Creation of scientific achievement to lead the world (accumulation of intellectual assets)**

To respond to the needs of "continuous creation of world-leading achievement in science research", Japan has made world-leading achievements in space science such as space astronomy and solar system exploration. The achievements in space science are a basis of the entire use and R&D of space. In the future, Japan will take a close collaboration with other fields beyond space science and aim to promote the study based on a reinforcement of the structure to promote participation of excellent scientists of universities, as well as to continuously create world-leading achievements.

#### 2) 5-year development and utilization plan

To realize the above goals, the following measures will be taken:

- Aiming to create scientific achievements leading to understanding space itself, Government will launch the Radio Astronomy Satellite "ASTRO-G" for scientific observation and conduct research and development of the next generation X ray Astronomy Satellite "ASTRO-H", while conducting an X ray observation by "Suzaku" and infrared observation by "Akari" both of which are currently in operation.
- As a solar system exploration, It will be aimed to create scientific achievements leading to understanding of the solar system and earth (including atmosphere and magnetosphere). Targeting the sun, moon, terrestrial planet (Mercury, Venus and Mars), Jupiter and its satellites and asteroids, a Venus probe "PLANET-C" will be launched for scientific observation, and research and development of the Mercury exploration project "Bepi Colombo" and the follow-on mission after "Hayabusa" will be conducted, while conducting

magneto spherical observation by the currently operating magnetosphere exploration satellite "Akebono" and the magneto tail observation satellite "GEOTAIL", asteroid samples collection by "Hayabusa", a solar observation by "Hinode" and lunar exploration by "Kaguya".

- To realize lower cost, faster and challenging research of space science, Small Scientific Satellite will be used. Around a set of three small scientific satellites will be launched every 5 years to respond to the various requests of scientists.
- To respond to the use by various scientists, data collected by science satellites will be accumulated and published.
- Other than satellites, as the research of various flying methods of vehicles and a part of the science and engineering research utilization the followings will be promoted:
  - Astronautical engineering study and its flight demonstration to renovate flying methods of large balloons and Sounding rockets, as well as space and astronautical science using these methods.
  - Space biology and microgravity science for creation of scientific achievements in biological science, material science and fluid science, using the microgravity environment in Sounding rockets and "Kibo".

**G. Human space activity program**

As a program that corresponds to the following major social needs and goals for the next 10 years, the human space activity program will be targeted for the promotion of the 5-year development and utilization plan.

**1) Social needs and goals for the next 10 years**

**(a) Enhancement of the domestic quality of life (realization of a healthy and long-lived society)**

In order to satisfy the needs of "realization of a healthy and long-lived society", the prevention study of osteoporosis and urinary calculosis and effective application of high quality protein crystallization for drug development have currently been conducted by applying the research achievement of space medicine for the senior citizen medical care, but they are not for practical use yet. For that reason, from now Japan will aim to achieve practical results through the use of the microgravity environment focusing on the issues for the life of people and the solutions for social issues such as medical care for elders, problems of nursing care and drug development.

**(b) Creation of scientific achievement to lead the world (accumulation of intellectual assets and expansion of activity area of humans)**

To respond to the needs of "continuous creation of world-leading achievement of science research", Japan has achieved results to lead the world in the structural survey by "Kaguya" and space science utilizing the microgravity environment in "Kibo". Japan has also been undertaking various efforts to expand the activity domain of humans through the solar system exploration and activities in the International Space Station. In the future, Japan will focus on continuously creating the world leading results in the fields such as biological science, materials/fluid science and space environment utilization science. Further, by promoting the space activities of humans and robots, Japan will aim to expand the activity domain of humans and realize the moon exploration using robotics by around 2020, with a view of cooperation of robots and humans.

**2) 5-year development and utilization plan**

To realize the above goals, the following measures will be taken:

- Japan will focus on issues to respond to the social demands in drug development and medical fields and food, energy and nano material fields and to promote the space environment utilization close related to people’s life such as realizing better life for people and corresponding to issues concerning clothing, food and housing as well as excretion issues in the aging society. In addition, as the only participant in the International Space Station Program in Asia, Government will promote the international cooperation with Asian countries by providing them with the opportunities to use "Kibo" for experiments.
- In the scientific research utilizing microgravity, Government will continue the selection and promotion of researches aiming to achieve the scientific results to lead the world as well as to promote

the commercial use by private companies and the accumulation of technologies that leads to the future human space activities. And It will be aimed to promote new technology development for the basic experiment such as space solar power by utilizing the characteristics of "Kibo" equipped with the exposed experimental platform unique among the other partners of International Space Station Program.

- In addition, "Kibo" will be used as a "geosphere observation and diagnosis station" to deepen the understanding of the human's homeland, the Earth. And Japan will contribute to the world's environmental observation within the framework of international cooperation led by Japan by installing sensors such as "SMILES" (a sensor to diagnose the ozone layer at the mid and low latitudes) to observe the earth on the exposed experimental platform of "Kibo" for gathering and transmission of information.
- The utilization of "Kibo" will be promoted, conducting maintenance and operation of "Kibo" consistently, and a H-II Transfer Vehicle will be launched to the International Space Station every year in order to conduct transportation of goods necessary for operating the Space Station (laboratory equipment water, food, etc.) based on the international agreements.
- Government will conduct the examination of the moon exploration with robots technologies in perspective of human space activities. (See item 2, (4), (2), (b) in Chapter 3.)

**H. Space Solar Power Program**

As a program that corresponds to the following major social needs and goals for the next 10 years, a Space Solar Power Program will be targeted for the promotion of the 5-year development and utilization plan.

**1) Social needs and goals for the next 10 years**

**(a) Resolving the global-level environmental issues (realization of low carbon society)**

To respond to the demand of "realization of energy to support the low carbon society", renewable energy power (for example, solar power generation and wind-generated power) has been used on earth, but there are some stability issues, and the utilization of energy to overcome these issues has not been realized in space. In the future, research and development of the technology necessary to realize the solar power generation system in space for clean and stable energy utilization without any geopolitical influences, Japan will aim to have prospects for practical application within the next 10 years, comparing with the progress of the renewable energy development on earth.

### 2) 5-year development and utilization plan

To realize the above goals, the following measures will be taken:

- Government will examine the system for the development of space solar power program from a comprehensive point of view in collaboration with related institutions, and also conduct demonstration of technologies for the energy transmission technology in parallel. Based on the result, Government will conduct ample studies, then start technology demonstration project in orbit utilizing "Kibo" or small sized satellites within the next 3 years to confirm the influence in the atmosphere and system check.

## I. Small demonstration satellite program

As a program that corresponds to the following major social needs and goals for the next 10 years, a small demonstration satellite program will be targeted for the promotion of the 5-year development and utilization plan.

### 1) Social needs and goals for the next 10 years

#### (a) Continuous development of industry and creation of employment

To respond to the demands of "expansion of new industry and space related industry as well as creation of employment", it is required to expand industrial areas besides the space equipment industry under the current situations. Also the space industry is the important strategic industry to steadily promote the systems and programs of A to H described above. With these in mind, it is important to eliminate technical risks of new technologies from the viewpoints of reinforcement of industrial structure, improvement of international competitiveness and advancement of the use and R&D of space. For that reason, Japan will aim to promote demonstration of leading-edge technologies utilizing small satellites and to promote support for small and medium-sized companies, venture companies and universities to develop micro satellites, which leads to the development of new industries and space related industries and creation of employment.

**2) 5-year development and utilization plan**

To realize the above goals, the following measures will be taken:

- As a strategic industry that supports Japan's space development and utilization, the Japanese unique strength of miniaturization techniques will be utilized as a part of increasing competitiveness in space related industries, launch small satellites (100 kg to 1 t) and micro satellites (under 100 kg) in collaboration with small and medium size companies, venture companies and universities, and the latest technologies in orbit such as satellite system technologies and parts/components will be demonstrated.
- Government will provide support for production and expand opportunities to launch micro satellites developed by small and medium size companies, venture companies and universities.

## 2. Promotion of specific measures in each area

### (1) Promotion of the use and R&D of space to support realization of a secure, pleasant and affluent society

To realize a secure, pleasant and affluent society, the following four systems will be mainly used:

A. Land and ocean observing satellite system to contribute to Asia and other regions

B. Global environmental change and weather observing satellite system

C. Advanced telecommunication satellite system

D. Positioning satellite system

Further, building the satellite data utilization system will be promoted to improve and expand convenience of satellite data utilization for specialists and general users.

**1) Building the satellite data utilization system**

The "satellite data utilization system" is a comprehensive name of a series of hardware/software and human resources from receiving satellite data to providing necessary data to users. This is equivalent to an infrastructure on the earth for providing observation data by satellites.

The data handled by satellites can be classified into "image data" (acquired by optical sensors and radar sensors of land and ocean observing satellites), "positioning data" (transmitted by positioning satellites), "communication data" (handled by communication satellites) and "other measurement data" (such as observation data of greenhouse gases in the atmosphere and X-ray emission from celestial objects). Currently, the use of image data is widened in various operations of the national and local government such as maintenance and modification of registration book of the cultivated acreage survey in Japan, update of topographic maps on a scale of one to 25,000 and gathering information of flooded areas promptly in the event of floods. For that reason, particularly "image data" should be focused and, therefore, "satellite data" mentioned here means "image data". However, "image data" intended for the national security is not covered here.

**(a) Collecting users' opinions**

To provide a place for ongoing understanding of the utilization needs of satellites, the Committee Conference will be used in which relevant government agencies and related parties in industries and universities participate. The Committee Conference will figure out the status of satellite utilization in relevant government agencies and other organizations, collect various opinions based on actual experiences such as improvement of satellite operation methods, functions and utilization methods of new satellites and sensors, and promote the measures and policies by reflecting these opinions to the future development and utilization of satellites.

**(b) Satellite data utilization system for improvement of user convenience**

Currently, the satellite data is stored, maintained and provided by multiple institutions, and searching and ordering data is conducted for each satellite and mounted sensor. Therefore, it is difficult for general users to find out where to access for necessary data without having knowledge about satellites and sensors. For example, if there is an interface that allows access to various satellite data from a single online search, the convenience for specialists and general users will be improved. In addition to the search, if the system to obtain the required data with a single operation is realized, the convenience increases much more.

To realize this kind of environment, Japan will promote measures and policies to prepare data archive and data distribution system. For the promotion of the measures and policies, concerned parties including relevant government agencies and private companies will understand the demands of users and examine a distributed system by connecting data administrators on the network and specific methods of search and distribution, on the premise that the data directly sent from satellites will be maintained by data administrators of each satellite. Government will aim to achieve maximum effects with fewer budgets by utilizing know-how of private sectors while using the existing system assets as far as possible.

**(c) Creating of standard data policy**

For a preparation of the satellite data distribution system, it is necessary to examine the way to provide data in consideration of a balance between the method of data provision from a viewpoint of usage promotion and the market deployed globally on a commercial basis and also in consideration of usage purposes, image resolution as well as a use fee.

Further, it is necessary to organize the way of thinking to process information by secondarily adding other information to the provided satellite data and providing data to the third party, in collaboration with the movement of the related areas such as "Basic Plan for the Advancement of Utilizing Geospatial Information".

Besides the above, it is necessary to create and publish guidelines as standard data policies for provision of satellite data including preparation and standardization of metadata and security policies such as preventions of database falsification, and to prepare an environment for a safe use by showing requirements for the data use.

The concerned parties of relevant government agencies and private companies will examine these measures and summarize them into a standard data policy within one or two years.

**(2) Promotion of the use and R&D of space to reinforce the security of Japan**

To reinforce the national security, the following measures will be taken in addition to the ones stipulated in "E. Satellite system for national security":

**1) New use and R&D of space in the area of national security**

In Japan, a sufficient level of expertise on the use and R&D of space is yet to be accumulated in the defense sector. For this reason, cooperation between related institutions is important to actively utilize the leading civilian technology ("spin-on").

Further, sensors which are necessary for an early-warning system to detect ballistic missile launch have a variety of use such as detection of forest fire. The Japanese government as a whole will therefore seek to promote effective utilization of these technologies by combining functions of defense purposes together with functions for other purposes.

**2) Data management for national security**

As commercial imaging satellites already reached high resolution ability, other countries have set rules to regulate general use of high resolution image information, such as "shutter control" (a regulation of shooting, distribution and sales of images of important facilities for security purpose) and sales restriction of images which exceeds certain levels of resolution. Taking into consideration the future advancement of the research and development of higher resolution imaging satellites, Government will examine to create necessary rules from the viewpoint of national security in collaboration with the Committee on the Advancement of Utilizing Geospatial Information.

**(3) Promotion of the use and R&D of space contributing to diplomacy and diplomatic effort for space**

Diplomacy will be covered by the whole system programs of A to I.

**1) Contribution to the Asia-Pacific region**

- In Asia, Japan will establish a leadership by utilizing the leading role in the APRSAF and the position as the only participant of the International Space Station program in Asia.

  Further, by linking the operations in the APRSAF and the bilateral cooperation utilizing various support tools such as ODA properly, Japan will provide contribution so as to show the Japan's presence, such as providing public funds for construction of ground reception stations for earth observation satellites, not to mention the provision of satellite images through the Sentinel Asia.

- APRSAF was established to provide a framework among space institutions in the Asia-Pacific regions led by Japan and it has conducted various exchanges and operations. Because there is a great expectation to Japan from related countries, it is effective to use the APRSAF when providing contributions to the use and R&D of space in these areas. On the other hand, the APRSAF can be used to establish the government level space network such as hosting an international ministerial-level meeting in regard to space by taking opportunities of ministerial-level meetings for science technology in Asia.
- In the future, when considering efficient utilization of a Quasi-Zenith Satellite System, Government will examine its characteristics of providing positioning information not only to Japan but also to the Asia-Pacific regions.
- By proceeding observation by "Himawari", Japan will provide further contribution to monitor disasters and the environment of the Asia-Pacific regions by providing higher resolution images more frequently.
- By utilizing approaches made to the Asia-Pacific regions, Japan will develop the contribution to other countries in Middle East, Africa and South America where the demand for the use and R&D of space has been increasing.

**2) Contribution to the global environmental issues**

- Japan can provide further contribution to the global environmental issues by utilizing "Ibuki" which was launched in January 2009 to observe the greenhouse gases, and satellite clusters GCOM used for observation of climate and water cycle changes which is to be launched in the future, as well as "Himawari-8" and "Himawari-9" with enhanced function of the global monitoring function. Japan will take initiative in the international discussions concerning the construction of international frameworks of global environment observation and monitoring not only through obtainment and publication of data from satellites but also through transmission of data analysis results.
- Japan has been contributive to the global environmental issues caused by the climate changes. In addition, Japan will take active participation in new challenges such as decreasing space debris as a space

environmental issue.

- Japan will aim for mid-and-long term development of human resources to take a leading role as a chairman for international for a including COPUOS through providing opportunities to gain experience in international diplomacy for people having knowledge in space areas as well as enhancing education of space science and engineering in universities and other educational institutions.

**3) Enhancement of bilateral relation**

- Between the U.S. and Japan, there is long-term and multidisciplinary collaborative cooperation such as complementary and reinforced cooperation in the positioning information of the U.S. GPS constellation and the Japanese Quasi-Zenith Satellite System, collaborative cooperation in the GX rockets, as well as participation in a cooperative program to share parts in development of a satellite and its launch in the areas of earth observation and space science. Japan will establish a Japan-U.S. space forum to discuss further collaboration in the space field to promote this closer relationship.
- Between Europe and Japan, there is cooperation such as mutual accommodation of strategic parts, technical adjustment between the Japanese Quasi-Zenith Satellite System and European satellite system Galileo, as well as participation in a cooperative program to share parts in development of satellites and these launches in the areas of global observation and space science. Each of European countries helps each other in the areas of their specialty independent from the U.S., and Japan will try to establish a space forum to deepen cooperation in space governance, space science and space utilization (for example, collaboration between land and ocean observing satellites of Japan and Europe which work in a different time zone).
- In relation to other leading countries of the space development and utilization (Russia, China and India, etc.), Japan will establish close relationship with them based on the technical capabilities of each country.
- In relation to developing countries, Government will collect and analyze information not only from overseas offices of relevant ministries and agencies but also from private companies and establish plans of important areas and items for the future support projects. Government

will also try to seek for demands of the use and R&D of space in each country by utilizing governmental funds via ODA and Japan Bank for International Cooperation (JBIC).

Japan has to support the demands as a whole; therefore, Governmetn will clarify a person in charge of a support project and reinforce collaboration among domestic relevant ministries and agencies including Japan International Cooperation Agency (JICA) and JAXA as well as collaboration among overseas offices (local offices of Japanese embassies, JICA, JAXA, Japan External Trade Organization (JETRO), JBIC, etc.) and among Japanese government and the overseas offices. Also, Japan will organically combine multiple support programs of Japan such as providing governmental funds, technical cooperation and cultivation of human resources.

Government will use top-level sales and the network of diplomatic establishments abroad for exploitation of a new market abroad.

- Japan will provide assistance to developing countries under the concept of "human security" that is a pillar of Japan's foreign diplomacy. When providing support, it is important to pay attention not only that the assistance should promote each country's use and R&D of space but also that its effects should result in the protection and enrichment of people's lives and livelihoods from various threats such as disasters, environmental degradation and climate changes.

**(4) Promotion of the world's leading research and development**

As the world's leading research and development, the following programs will be promoted:

F. Space science program

G. Human space activity program

H. Space solar power program

To advance these programs, following measures will be promoted:

**1) Promotion of space science research challenging for scientific discovery**

For promotion of space science program, scientific research and engineering research will be conducted in an integrated manner with not only the collaborations of JAXA and researchers of universities at the individual level but also the utilization of inter-university institutes. Also, the system of space science researches will be reinforced by the collaboration and unification of various fields in earth science, plasma science, astronomy using observation facilities on the earth and a large accelerator such as in the international linear collider concept. With these efforts, It will be aimed to continuously create world's leading scientific achievements and utilize the evaluation and selection process of themes and contents in the space science areas as well as promote and maintain the principles of independence, democracy, openness and international cooperation.

Further, the results of advanced technologies will be applied actively for space development utilization fields and industries other than the space science.

**2) Promotion of human space activity**

**(a) International Space Station Program**

As for the operations of the International Space Station, a specific plan after 2016 has not been made internationally, and it is still in a phase to discuss about extending its operation among the international partners of Japan, U.S., Russia, Europe and Canada. Government will comprehensively determine the extension of its operation after 2016 in consideration of the utilization results, Japan's future plan for human space activity and the status of each county.

**(b) Moon exploration with robot technologies in perspective of human space activities**

The moon has a similar origin as the earth and plays an important role for scientific elucidation of the origin and evolution of the solar system, and the possibility of resource utilization is uncertain. Therefore, the moon will be the main target of the solar system exploration in the immediate future.

Government will conduct the examination of the Japanese-original, extensive and long-term moon exploration to lead the world to solve the origin and evolution of the moon and to investigate the possibility of scientific use and resource utilization of moon, in perspective of manned activities on the moon which enables sophisticated judgment at the place

Specifically, while taking the following plans into consideration in perspective of collaboration of robots and human activities, Government will take approximately a year to make a full-scale effort to consider significance, goal, target achievement, research and development items, technical steps, medium- to long-term schedule and cost estimates. In addition, while keeping original goals, Government will pay attention to the movements of each country and consider possibilities of international cooperation, and at the same time, Government will promote these activities under a proper structure of evaluation system.

・ As a first step (around 2020), it will be aimed to realize robotic exploration on the moon by advanced robots such as a bipedal walking robot utilizing the Japanese specialty in robot technologies as a preparation to construct the base for scientific exploration.

・ As the next step, it will be aimed for the development of full-scale exploration in collaboration with humans and robots by utilizing the base for manned scientific exploration.

Establishing footings for human space activities through this plan will bring in various significances such as exertion of leading scientific technologies, accumulation of human intellectual assets, most advanced technological power including accumulation of industrial power for the future and development of human resources, securement of national benefits and improvement of international presence through enhanced diplomatic power as an advanced country, as well as a value to have dream, confidence and pride for the people. On the other hand, it requires a large amount of funds to cover the entire activities individually, and it is essential to consider the Japanese culture that values a human life more than anything. For that reason, it is necessary to make efforts step by step toward the improvement of ability to conduct manned spacecraft activities by utilizing achievements through activities of the International Space Station program and constructing base technologies from longitudinal perspectives.

**3) Promotion of the leading research and development contributive to the measures for the environment and energy problems**

**(a) Space solar power program**

The space solar power program is a new energy system which generates energy by collecting solar energy in space and sending it to the earth to use it as electricity. The space solar power generation in space is not influenced by the weather nor time of day, and it can stably generate power with approximately 10 times higher efficiency than that of solar photovoltaics on the ground.

To realize economically-efficient space solar power generation compared to a solar power generation and other energy system on the ground, various advanced techniques are required such as those to efficiently gather energy in space, send out energy efficiently and safely from space to the ground, and transport goods to space economically and structure large scale constructions.

To nail down these technical challenges, "H. Space solar power program" will be promoted based on the research to date.

Further, Government will determine its development toward the practical use in consideration of system examination, technical verification, comparison with competitive technologies and necessary expenses in this program.

**(5) Fostering space industries as a strategic industry**

The space industrial development will be covered by the entire systems and programs of A to I.

**1) Reinforcement of international competitiveness**

**(a) Promotion of reinforcement of international competitiveness in space equipment industries such as satellites, rockets, and parts/components.**

To maintain independent space activities and reinforce international competitiveness toward increase of sales in the space equipment industries such as satellites and rockets, it is necessary to maintain and reinforce a basis for competitive power such as base technologies and facilities usable for industries in consideration of international market competitiveness. For that reason, the following measures and policies will be promoted:

- To improve performance of satellites and rockets, increase their reliability and reduce their costs, Government will make efforts to the continuous research and development and demonstration on orbit using small satellites of improving system technologies such as formation flight technologies of satellites and to improve performance of rockets, and parts and components such as satellite observation sensors and avionics of rockets, by using the most advanced technologies of information communication.

- To ensure stable procurement of strategic parts and components, it will be aimed to accelerate the domestic production of strategic parts, securing a second source for single source parts and utilizing commercial parts including applying the excellence technologies possessed by mid and small companies and universities. Further, it will be aimed to reinforce the international competitiveness further by properly applying the most advanced commercial parts with high quality and performance.
- Government will promote structured accumulation and maintenance of technical information such as design standards of space equipment and reliability technology as a shared infrastructure, and sharing and utilizing it within government, industry and academia.
- It will be aimed to conduct appropriate maintenance, upgrade and repair of test facilities and equipment which are infrastructure necessary for the research and development of satellites and rockets in order that space industries and organizations can use them whenever they want and then extend their use to private companies further.
- To maintain independent abilities of tracking and controlling of satellites and rockets, Government will maintain and develop technologies necessary for these activities as a base technology, and advance utilization of the leading information communication technologies as well as appropriate maintenance and upgrade of facilities and equipments. Further, for smart operation of satellites, Government will develop a transportable data receiving system and integrated high-speed data processing system. In addition, from a viewpoint to maintain independent and stable operations of Japan's satellites, Government will make efforts to secure the positions for satellites on stationary orbit and frequencies through the International Telecommunication Union (ITU).
- To gain predictability of corporate activities and promote an efficient

development and production of space equipment by companies which leads to cost reduction, Government will propose medium- to long-term satellite development and utilization plan indicated in Appendix 2, and examine cross-sectional schemes in systems and programs for miniaturization of satellites and parts/components, series production, commonization and standardization, as well as promotion of block buy, productivity increase and investment of companies.

**(b) Expansion of the base for the space utilization industry and promotion of international competitiveness reinforcement**

To expand the base of the space utilization industry and reinforce the international competitiveness, the following measures will be taken:

- As one of measures to secure an initial demand to launch a new service in the space utilization industry, Government will examine to purchase a commercial service, and promote PPP activities for help of the private sectors entry into public service.
- For satellite image data which can be a significant business resource for the space utilization industry, Government will secure data accessibility in a form that users are easy to use and conduct continuous data provision and user support, as well as create ideas to promote innovation of the space utilization industry by providing utilization examples of satellite data.
- Through these utilization promotion measures, Government will create new business and data usage applications and make efforts to expand the base of space utilization by promoting the entry of venture companies which can be new providers of space utilization. Moreover, Government will pay attention to the international trend of new space utilization business such as space travel.

**(c) Promotion of research and development for reinforcement of international competitiveness**

As a research and development to reinforce international competitiveness in space industries, the measures based on the following points of view will be promoted. At the same time, small satellites will be actively used based on "I. Small demonstration satellite program".

- Government will establish and share research and development goals and roadmap plans with public and private sectors in consideration of international market competitiveness and promote research and development based on them.

- It is important to conduct both short-term development and mid- to long-term development. The former is the research and development leading to the enhancement of competitiveness of systems and the securement of independency with the aim of increasing cost competitiveness, reliability and performance, and the latter is the research and development of latest technologies including fundamental research to create international competitiveness in the future.
- For a technology with high technical risks to be installed on practical-use satellites, Government will make a package plan ranging from the research and development to actual demonstration featuring a demonstration plan in space to demonstrate it in advance using small satellites.
- Industries competitiveness will be increased by reinforcing collaborations with industries in the areas of the latest research and development in space science and applying the achievements to industries.

**(d) Promotion of international market development in perspective of using top-level sales**

Domestic demands from public and private sectors are insufficient to benefit satellite and rocket industries. Therefore, it is necessary to develop international markets such as those of the U.S. where there has already been an enormous market and the Asia/Pacific areas and Africa where a future growth is expected. Further, it is necessary to draw up strategies from a comprehensive viewpoint including the operation , systems on the ground, utilization service ,application and human resource development, not to conduct the market development of a satellite alone.

With these in mind, the development of the international market will be promoted under the following strategies:

- To cope with demands of other countries and explore a market for the Japanese space equipment and application, Government will work together with overseas diplomatic facilities to reinforce community-based promotion and information gathering activities in collaboration with companies. By analyzing the needs obtained through these activities, Government will advance market development in consideration of promoting satellites and application systems as a total package.

- Based on the analyzed results of activities for finding needs as described above, Government will develop international market by efficiently conducting top-level sales.

**2) Promotion of construction of space transportation system to support independent space activities**

The space transportation system is an essential technology to allow Japan to launch satellites to space independently as needed. From this viewpoint, H-IIA/H-IIB rockets are developed and operated as Japan's backbone rockets, and are used for launching Japan's important satellites including information gathering satellites, land observing satellites, meteorological satellites and the H-II Transfer Vehicle for the International Space Station. In addition, M-V rockets are used for launching scientific satellites that contribute to the accumulation of Japan's intellectual assets, and after termination of the operation, the solid rocket system technology is will be maintained.

The operation of the backbone rocket H-IIA has already transferred to a private sector and the rocket is used to provide a commercial launch service by the private sector. However, it requires continuous share acquisition in commercial markets to conduct economical use and R&D of space. Therefore, Government will continue to promote improvements such as the increase of reliability to maintain and enhance international competitiveness continuously, and promote measures to efficiently cope with the various demands of satellites which are to be increased in the future by using most appropriate rockets.

**(a) Promotion of rocket development and utilization that correspond to the satellite development and utilization plan, advanced research and development and world's satellite demands**

**(i) Basic support**

To maintain the ability to launch necessary satellites to space independently, domestically-developed rockets will be used basically when launching government-affiliated satellites like other countries. Also, Government will encourage to use domestically-developed rockets when Japanese private companies launch their satellites.

In order to achieve stable and efficient commercial launch service after the transfer of rocket operation to a private sector, Government will make consideration to systematic procurement and promotion of investment by a private sector and take necessary measures to maintain safety for commercial launch service in accordance with the medium- and long-term development and utilization plan of satellites as mentioned in Appendix 2.

**(ii) Establishment of transportation system associated with the development and utilization plan of satellites**

・ **H-IIA series rockets**

For H-IIA/H-IIB rockets, Government will continue to position them as the Japan's backbone rockets and use them for launch of satellites constantly. To improve financial support for the Japan's use and R&D of space and maintain and improve international competitiveness in the commercial launch service, It will be continued to improve the technologies for increasing reliability, operation ability, launch performance and safety and to make efforts for cost reduction at the same.

・ **GX rockets**

For GX rockets, there is significance to promote from five viewpoints; 1) providing efficient transportation as midsized rockets, 2) back-up rockets for backbone rockets, 3) establishing strategic cooperation of Japan and the U.S., 4) industrial development toward the entry of private sectors into the use and R&D of space, and 5) acquisition of technology in the liquefied natural gas (LNG) propulsion. However, there are some issues at the present to clarify a technical feasibility of LNG propulsion system, mission demands including the national security, and entire development plan with necessary cost. Therefore, the government will determine whether its development will be started or not, based on the prospects in technical aspects, demands, the whole picture of the plan and necessary expenses.

- **Solid rockets**

Japan has been accumulated many unique technologies in the solid rocket system, which is an important technology for short-term satellite launch. Its technology has been maintained even after the termination of M-V rockets operations. Government will promote solid rockets as a part of methods to maintain flexible and efficient support for the demands of small satellites in the area of space science and earth observation as mentioned in Appendix 2 by utilizing the accumulated technology.

**(iii) Maintenance and development of base technologies**

To maintain Japan's competitive space transportation system and its technology which stands on independency for the future, Government will make efforts to maintain and develop base technologies through measures and policies in the Chapter 3, 2, (5), 1).

**(iv) Research and development of future transportation system**

To respond to various transportation demands which will be required in the future, it is important to conduct its research and development.

For that reason, Government will examine future transportation systems including a reusable transportation system, orbit transfer vehicle and air-launch system, as well as advance research and development to establish its base technology. At the time, it is necessary to collaborate with improve activities of the H-IIA rockets and examination of moon exploration by robots in perspective of manned activities.

**(b) Promotion of maintenance and development of launch sites**

Launch sites are an important infrastructure that ensures Japan's independent access to space. In addition, it is necessary to maintain their conditions so as to use the sites anytime even from a viewpoint of improving international competitiveness in commercial launch service by private sectors.

In Japan, the launch sites are maintained and operated by JAXA, and some of the facilities at the sites are old and are required to take appropriate actions against aging.

For that reason, Government will make efforts to maintain and enhance functionalities by conducting the maintenance and upgrading of the facilities at the launch sites, and examine restrictions in the period of launch and improvement of environment at the launch sites.

Further, Government will investigate and examine the way of maintenance and development appropriate for the launch sites from a long-term perspective to correspond to future demands of satellites and development and utilization of rockets.

**3) Promotion of industrial activities**

**(a) Utilization of abilities of small and medium companies, venture companies and universities**

For the further advancement of the space industry, it is extremely important to utilize abilities of excellent technologies developed by small and medium size companies and venture companies as a new leader of technology. Further, it is also important to promote cooperation among government, industry and academia more than before.

Government will make efforts to expand the base for the space development industries by promoting future utilization of commercialized technologies into space and vise versa and enhancing utilization of satellite data. In addition, for the promotion of participation in the space development and utilization, Government will support small and medium companies, venture companies and universities which have new technologies and ideas under new concepts in the way of manufacturing support of micro satellites, attempting to expand opportunities for launching satellites and sharing facilities.

**(b) Actions on taxation and finance, and other measures**

The operations related to the use and R&D of space generally require enormous amount of investment, and the return of the investment takes a long time under the competition among ground systems. Further, there are major operational risks such as a failure of rocket launch and a limited remedy to recover satellite functions in orbit in case of malfunction due to harsh environment in space. It is also necessary to note that insurance does not cover the whole damage. Therefore, it is necessary to consider equalization of competition conditions internationally to expand investment by private sectors including research and development investment of companies and to promote newcomers as well as to promote international development of the space industry. For that reason, Government will make efforts to actively utilize general measures and policies of each ministry including actions on taxation and finance as well as other measures not limited to space.

Further, because the space industry handles important technologies, sensitive technologies and information related to rockets and satellites, it is necessary to apply appropriate measures such as export control, internal direct investment regulation and sensitive information control for sound space industry developments.

**(i) Taxation**

- R&D tax incentives
- Taxation for the promotion of investments in small and medium-sized enterprises
- Tax system for angel
- Exemption from customs

  Customs are exempted for parts/components of rockets for satellite and satellite launching which are difficult to manufacture in Japan. (Until the end of fiscal 2010)

In addition, export exemption is applied to a consumer tax for launch service.

**(ii) Financial**

- Export finance of JBIC and trade insurance of Japan Trade Insurance
- Utilization of policy finance institutions such as Development Bank of Japan and Japan Finance Corporation for research and development of space equipment and space-related services

### (6) Preservation of the environment

Preservation of the environment covers the entire systems and programs of A to I.

#### 1) Consciousness of the earth environment

For the use and R&D of space, it is necessary to pay attention to the impact to the earth environment by the space activities themselves.

In the future, Government will continuously manage and improve factors which may influence the environment by constructing environmental management systems and promoting the development and utilization aiming to control emissions of wastes and chemical substances in accordance with the related environment regulations of ISO 14000 series, while keeping balance with the environmental measures and policies.

Further, as an example of spin-offs of space-related technologies into environmental fields, application of rocket's insulation to insulation paint for ground construction materials and application of power generation systems for space to low-pollution and efficient power generation systems on the ground are considered. Government will contribute to conserve the global environment by actively encouraging spin-offs of space-related technologies.

#### 2) Preservation of the space environment

To deal with the issue of debris from a viewpoint of preservation of the space environment, it is necessary for Japan to observe the space objects to understand the population of debris, and make efforts to limit the generation of debris caused by Japan's use and R&D of space, as well as conduct research and development of technology to remove already existing debris. Further, Government will make continuous efforts for the space weather forecast including solar wind, because some natural phenomena such as solar wind may influence the space utilization.

##### (a) Understanding distribution conditions of debris

For understanding of debris population, Japan conducts observation of debris using a space observation facilities which is currently retained by JAXA and other organizations. However, the ability to detect orbital objects is limited to about 1 meter in size at most in low-Earth orbit, and Japan does not have the higher accurate ability to detect the sub-meter class orbital objects which would potentially cause break-up of satellites in case of the collision. In the future, it will be aimed to observe sub-meter class debris especially in low-Earth orbit and determine the orbital characteristics of them. These works will be done in collaborating with the facilities owned by the Ministry of Defense and the data supplemented by the other countries.

**(b) Minimizing generation of debris**

For minimization of debris generated by Japanese space activities, it is effective to prevent separation of parts and components from satellites in operation and to prevent break-up of mission-ended satellites, JAXA has voluntary registered the Space Debris Mitigation Standard and tried to comply with it. On the other hand, the establishment of debris mitigation guidelines has been conducted by the United Nations and other international organizations. In 2002, the Space Debris Mitigation Guidelines was established by the Inter-Agency Space Debris Coordination Committee (IADC), and in 2007, "UN Space Debris Mitigation Guidelines" was endorsed by COPUOS.

Also in the U.S. and Europe, debris mitigation guidelines have been registered and debris mitigation works has been concluded along with them. The International Organization for Standardization (ISO) has been conducting standardization on debris mitigation area. Government will promote preservation of the space environment by participating in the international frameworks and keeping international cooperation to limit generation of debris.

Government will also reduce the debris generated by Japanese space activities by collision avoidance maneuver which is supported by knowledge of debris population, and by debris mitigation activities complied with the international standards. Further, Government will promote research to protect satellites from collision with debris, and to limit objects surviving atmospheric re-entry to minimize the ground casualties.

**(c) Removal of debris**

IADC and other groups have pointed out that increase of collision rate among debris would invite the chain reaction of mutual collision among debris. For this issue, it is required not only to reduce the generation of debris but also to remove existing debris positively. In Japan, the technology to capture and remove the orbital objects is still in the research phase.

As a next step of this approach, Government will promote the research to demonstrate the technology to capture debris and remove it from its orbit using small satellite, with coordinating among international communities.

### (7) Investment in human resources responsible for the next generation and facilitation of public participation

Facilitation of investment in human resources responsible for the next generation and public participation will cover the whole system programs of A to I.

#### 1) Cultivation of engineers and researchers supporting the next generation

To promote the use and R&D of space, it is necessary to cultivate and secure excellent human resources who retain advanced knowledge and practical development experience in the space science and are capable of overlooking the entire earth from a wide and universal point of view. Especially, now that the industry has been downsized, it is difficult to maintain and secure excellent engineers with development experience in the space science although it is an extremely important issue to hand down technological capabilities. Therefore, it is important to continuously cultivate deserving human resources in universities and maintain and enhance available educational and research functions as well as to maintain and hand down the human technological basis necessary to continue the use and R&D of space in the space industries and organizations. For that reason, the following measures and policies will be promoted:

・Enhancement of space education and research in universities and other educational institutes

Not only by enhancing partnership of researchers in the JAXA and universities in the individual level but also by enhancing partnership with universities themselves, Government will strengthen space education and research in universities and other educational institutes. To do this, Government will provide opportunities to use the research facilities of JAXA and other organizations and realize maintenance and development of frameworks to promote educational research using a university sharing system to conduct collaborative research in specific assignments and projects.

・ Cultivation of practical-type engineers and researchers in collaboration with the space agency and universities

By utilizing the inter-university research institute system of JAXA, Government will encourage researchers and students of universities across the nation to participate in the forefront of the project and cultivate human resources with the knowledge of practical methodology of system development including *monozukuri* (product manufacturing).

・ Cultivation and securement of human resources from long-range perspective

By promoting measures and policies for continuous development of the space industry and enhancement of international competitiveness such as proposing the development and utilization plan of satellites from long-range perspective, Government will work on the improvement of capabilities of researchers and engineers while keeping the human technological basis in space organizations and industries.

・ Enhancement of human resource cultivation in Asia

By promoting collaboration with universities and research institutions at the core locations of human resource cultivation in Asia and collaborative development of small satellites conducted under APRSAF, as well as accepting human resources such as exchange students from Asia, it will be aimed to produce human resources who can support the space development and utilization in Asia by using Japan's space technology.

**2) Promotion of child education and public relations to appeal the lure of space**

Educating young people who lead the next generation to gain right knowledge and understanding about space is important in expanding the base of human resources engaged in the future use and R&D of space and maintaining continuous support of Japanese people for promotion of the space development. the following measures and policies will be promoted in collaboration with local educational institutions by promoting the projects to appeal children responsible for the next generation and utilizing the activities by the JAXA's space education center:

**(a) Expansion of opportunities for real experience and simulated experience**

・ Field trip to the facilities at launch sites during sightseeing and school excursion

In collaboration with travel agencies, the Tanegashima Space Center will invite young people for sightseeing and school excursion to feel the lure of space by actually seeing and toughing the facilities at the rocket launch site and knowing the actual fields of the use and R&D of space.

・ Enhancement of opportunity to meet with astronauts and scientists

Astronauts and scientists/engineers will visit educational institutions to give lectures to nurture dreams, hopes, curiosity and inquiring mind for children. Communication with the International Space Station will be provided to enhance the quality of classes about space science.

・ Utilization of science museums and Internet

Teacher training at science museums and cultivation of volunteer educators will be supported, and the events with school and local science museums such as experience-based classes about space science and space classes from the International Space Station will be promoted. Further, the Internet broadcasting of rocket launches will be conducted and digital archive contents will be improved.

**(b) Enhancement of space education**

・ Support for educational material enhancement

Learning activities in social study institutions such as science museum will be supported. Also, utilizing space food and messages from astronauts as educational materials, providing information to offer opportunities to learn about space at home with parent and child, and improving collaboration with overseas space agencies and international institutions will be enhanced.

- Utilization of vital power of private sectors and various groups

  To promote the space development and utilization, Government will work with private sectors and various groups to try various measures to show the space science achievements to Japanese people. Government will show the lure of space to them by improving cooperation with mass media by providing data of space institutions and opportunities to take pictures for movies and TV dramas.

**3) Promotion of public participation measures**

Enhancing interests of people is important to gain understanding of the use and R&D of space which requires enormous amount of national expenses. The following public participation measures will be promoted to expand the base of space utilization based on the fact that the use and R&D of space are becoming to be utilized not only by some experts but also by general public.

- Public participation contests

  To expand public participation opportunities in the use and R&D of space, Government will promote and support public participation activities such as an artificial satellite contest to find new ideas to use satellite and a space robot contest in collaboration with the organization hosting the Robot Contest.

- Approaches to seek for people's wisdom widely for new measures to use space, space policy and use and R&D of space

  To make the use and R&D of space closer and more useful for people's lives, the government will make efforts to seek people's wisdom.

- Efforts to obtain various supports and donation

  For the use and R&D of space, Government will examine various approaches to obtain support of not only government funds but also donation from Japanese people. Also, to make space more closely to the people, the name of satellites will be asked to the public.

# Chapter 4 Promotion of Measures Based on the Basic Plan for Space Policy

### (1) Structure to promote the measures and policies based on the Basic Plan for Space Policy

The measures and policies based on the Basic Plan for Space Policy will be promoted by relevant ministries as a whole centering on the Headquarters' secretariat under the Strategic Headquarters for Space Policy in the Cabinet. Further, in compliance with the supplementary provision of the Basic Space Law, Government will transfer the functions of the secretariat office of the Strategic Headquarters for Space Policy in the Cabinet to the Cabinet Office and prepare for necessary law revisions based on the results of examination in regard to the nature of the administrative structure and the institutions related to the use and R&D of space such as the JAXA.

### (2) Retaining budgets and human resources necessary for implementation of the measures and policies

Based on the Section 7, Article 24 of the Basic Space Law, Government will make efforts to take necessary actions to realize smooth implementation of the Basic Plan for Space Policy by budgeting its expenses within the extent of the nation's finances each year in order to secure funds necessary for conducting the Plan. At the same time, the government will make efforts to promote activities in private sectors as well as secure necessary budgets and human resources for the steady implementation of the measures and policies included in the Plan. For the annual budget, Government will make efforts to improve its efficiency and conduct rationalization based on the financial circumstances while keeping harmony with other political measures in Japan.

### (3) Follow-up of implementation status and public announcement of measures and policies

The specific implementation status of the measures and policies based on the Plan will be followed up (investigation of implementation progress of measures and policies) in cooperation with the relevant ministries headed by the Strategic Headquarters for Space Policy, and the results are publicized on the Internet. Further, based on the results of follow-ups and opinions in the Committee Conference, the Plan and the contents of measures and policies will be reviewed as needed.

### (4) Reinforcement of investigation and analysis functions about international trends

For the promotion of Japan's use and R&D of space, it is absolutely imperative to grasp the demands and needs of foreign countries such as for disasters and the global environment and to lead to effective international contribution. Further, from a viewpoint of creating the world leading scientific achievements and cooperation with foreign countries, it is necessary to grasp the trends of use and R&D of space in foreign countries. In addition, from a viewpoint of reinforcing international competitiveness of Japan's space industries including satellite predictions, launch services and broad range of data utilization obtained from satellites, it is also important to grasp the international trends such as the use and R&D of space of the leading countries in the space development, its expansion and deployment to overseas countries and potential needs of the developing counties.

In consideration of these circumstances, Government will make efforts to investigate the use and R&D of space trends in foreign countries and to reinforce the analyzing ability.

### (5) Development of laws related to the space activities

In accordance with the rules of the Basic Space Law, Government will prepare for the development of laws based on the results of examination about the nature of the legislation related to the space activities.

### (6) Ensuring linkage and consistency with political measures other than the space policies

To promote the Plan, Government will secure the consistency with political measures other than the space policies such as the Science and Technology Basic Plan, the Economic Growth Initiative, the Basic Plan on Ocean Policy, the Basic Plan for the Advancement of Utilizing Geospatial Information and political measures of the relevant ministries.

9 major social needs and current situation of development and

| main social needs | current state | goals for the next 10 years correspond to the social needs |
|---|---|---|
| 【Secure the Public Safety】 | | |
| **Understand information in the event of disaster in Asian region** | 【Disasters in Asian region】<br>Through activities of Sentinel Asia and others, satellite images have been provided from Japan's Advanced Land Observing Satellite "Daichi" to stricken countries ( so far approximately 100times).<br><br>【Disasters in Japan】<br>Satellite images are provided from information gathering satellites and "Daichi" when earthquake and other disasters occurred. However, it takes approximately one day for "Daichi" to provide images, which is insufficient to be used as an initial response to disasters, and also the resolution of images is insufficient to understand its detailed situation such as house and road damages. In addition, there is a limitation to satisfy the entire demands because information gathering satellites limit provision of images for a security purpose. | 【Disasters in Asian region】<br>Japan will work together with stricken countries and others to basically take images within 3 hours after an occurrence of disaster, coupled with shooting from air planes, and then provide these images to stricken countries, also for the purpose to utilize them for relief activities by Japan.<br><br>【Disasters in Japan】<br>Satellite images of stricken area will be taken to provide disaster relief agencies with detailed information such as house and road damages, along with the latest image archives. After that, image and information of crustal deformation will be provided to understand the status such as detailed situation of damage, a risk of secondary disaster and condition of rehabilitation and reconstruction, as well as to widely understand the stricken area. Further, in case of floods and sediment disasters, detailed information of house and road damages should be understood. |
| **Predict and monitor crustal deformation** | Frequent earthquakes and volcanic activities in Japan threaten citizens ' lives and properties, because Japan is located in the area of one of the world ' s most active crustal deformation (movement of ground). GPS-based control stations installed in approximately 1,200 locations all over Japan by the Geographical Survey Institute are used to receive GPS satellite data and for monitoring the deformation. On the other hand, although a validation approach for utilization of an L band radar sensor has been carried forward for 15 years, it has not been able to put in practical use due to the circumstances that there was a time gap between updates of the satellite and it was unable to be used for observation for a few years in addition to its fewer numbers of operation for a quick response to the occurrence of earthquakes and for monitoring the transition of volcanic activities. Furthermore, the verification for utilization of optical sensor has been carried out for monitoring submarine volcano activities, the effectiveness of which has already confirmed if the discoloration of sea water by the eruption is widely observed. | Crustal deformation will be broadly and densely monitored with the accuracy of 1 centimeter, by utilizing broadly analyzed results of satellite image obtained by acquiring information of the ground surface widely over a long duration continuously with high frequencies, in order to detect crustal deformation, to monitor the color of volcanic lakes and to study the mechanism of those activities, in combination of specified point information provided by GPS-based control stations. This will enable monitoring by condition of a surface rather than a point. Prediction accuracy in crustal deformation and volcanic activities will be improved in the future, especially when a massive crustal deformation is predicted or a volcanic activity becomes increased. In the case, GPS receivers are used for temporary observation on site and conduct monitoring of target area at least every 3 hours. Also, by providing satellite image including information about discolored water as soon as possible, the satellite utilization will be realized as a method to monitor submarine volcano activities. |

Appendix 1

utilization plan of satellites and other assets / goals for the next 10 years (1/8)

＜reference＞

| goals which the sensor, satellites etc. should achieve in order to fulfill the 10-year goals | user organization | expected satellites in 10 years |
|---|---|---|
| | | |
| 【Disasters in Asian region】<br>○Improve the resolution：approximately 1m resolution of both optical and radar satellite which are necessary to gather information detailed situation such as house and road damages in case of floods and sediment disasters. (maintaining 50km observation width)<br>○Increase the frequency of image-taking：take images within 3 hours by radar satellites which can take images even at night and under bad weather ( provide images within 4 hours ). The optical satellites will be used to collect more detailed information on the situation in a complementary manner.<br>・To take images every 3 hours of 24 hours in a day ⇒ 4 radar satellites (4 optical satellites as complement)<br>(note 1) It is aimed to shorten time to provide images taken by "Daichi-2" within 1 hour.<br>(note 2) A factor other than the number of satellites was not considered at above estimation, such as the inclination of their orbit which can increase the frequency of image-taking at the air field above our territorial land.<br>○Upgrade the methods of analysis (with comparing with latest data ) and shorten processing time (approximately 1 hour)<br><br>【Disasters in Japan】<br>Take images of stricken area in shorter time by utilizing both IGS and satellites mentioned above. | 【Disasters in Asian region】<br>Ministries and Agencies related to Japan Disaster Relief Team, such as MOFA, MPA,FDMA, MOD<br><br>【Disasters in Japan】<br>Cao (Disaster Management), CIRO, MPA, MIC ( FDMA ), MLIT, MOD | 【Disasters in Asian region】<br>"Daichi-2, 3" (optical, radar) and, later that, 2-4 satellites as series of "Daichi" Continuously ASNARO (tentative name) certification satellites ( optical, radar ) and, later that, 2-4 satellites continuously 1-2 Data Relay Satellites continuously<br><br>【Disasters in Japan】<br>IGS (optical, radar) and satellites mentioned Above |
| The improvement of those major points mentioned below will contribute to the increase of the accuracy of prediction, etc.<br><br>○Improve sensor performance：Sensor performance should be improved in order to realize more accurate observation.<br>① Successive operation of L band radar sensors<br>② Improvement of spatial resolution of optical sensors (color, 10 meters -> less than 5 meters)<br>○Improve observation frequency：Achievement of quick delivery of satellite image data (optical & radar), (usually in several days -> more than once per day)<br>○Advance analyzing method：Advancement of data processing system, advancement of prediction method tying up with other ground observation method. | 【Earthquake】<br>MLIT (GSI, JMA), MEXT (Headquarters for Earthquake Research Promotion)<br><br>【Volcano】<br>MLIT (JMA, JCG, GSI) | "Daichi-2, 3" (optical, radar) ,later that, 2-4 satellites as series of "Daichi" continuously<br><br>ASNARO (tentative name) certification satellites ( optical, radar ) and ,later that, 2-4 satellites continuously |

9 major social needs and current situation of development and

| main social needs | current state | goals for the next 10 years correspond to the social needs |
|---|---|---|
| **【Secure the Public Safety】** | | |
| **High-precision weather forecasting** | Weather observing satellites have been used for the observation for the distribution of clouds and moisture and for weather forecasting and prediction of tracks of typhoons and its strength using other observation data such as precipitation distribution and sea surface temperature. However, currently there is a challenge that it is difficult to predict a very local and torrential downpour. For that reason, there is an expectation to enhance the total forecast accuracy. | Necessary data will be acquired successively with improving forecast accuracy, in order to deliver weather forecast that is indispensable to everyday ' s life. Furthermore, to cope with a very local phenomenon whose forecast is extremely difficult today, Japan will aim to increase the observation frequency for the distribution of clouds and moisture by the current 30 minutes to by 10 minutes and continue to provide information to people. Japan will also increase the accuracy of weather forecasting by doubling the sensor resolution and gathering detailed information to utilize the data for disasters such as very local heavy rain. |
| **Secure communication methods in case of disaster** | To respond to the demands of "securing a communication method in case of disasters", commercial communications satellites are used in the event of disasters for disaster information distribution and communication by the government and local public agencies. However, it requires a ground-based station for a satellite (receiving antenna and special equipment), and communication via general methods such as widely used mobile phones holding a hundred million subscribers becomes disconnected when there is damage to portable base stations on ground. | Conduct research and development to enable satellite communication only by mobile phone terminals and to use both a ground system and a satellite system and bring it to a validation phase using engineering test satellites. |
| **Ocean monitoring** | Maritime events such as smuggling, illegal operation of foreign fishing boats, suspicious vessels, major accidents at sea occur in Japan ' s surrounding ocean area, and sea piracy on sea lanes bound for Japan is concerned. | Research and develop ocean monitoring system utilizing a satellite ( For example, the images taken from satellites as well as from airplane constantly or at least every 3 hours collaborating with a ground system to identify the target vessels would be effective.) |

Appendix 1

utilization plan of satellites and other assets / goals for the next 10 years (2/8)

## <reference>

| goals which the sensor, satellites etc. should achieve in order to fulfill the 10-year goals | user organization | expected satellites in 10 years |
|---|---|---|
| | | |
| The improvement of those major points mentioned below will contribute to the achievement of the forecast accuracy of very local heavy rain and torrential rain.<br><br>○Prepare appropriate number of satellite: The observation for the distribution of clouds and aerosol that depends on overseas satellites today in spite of one of necessary data to forecast weather will be successively carried out by domestic satellites to realize much more accurate data acquisition.<br>○Improve sensor performance:<br>①(Visible and infrared radiometer) Improve observation resolution from 1 kilometer to 0.5 kilometer in visible area and from 4 kilometers to 2 kilometers in infrared area, for monitoring clouds, moisture and ice floe.<br>②(Microwave radiometer) Improve observation resolution from 6 kilometers to 5 kilometers for monitoring sea surface temperature, sea winds and precipitation. (R & D will be carried out to realize much higher resolution near future.)<br>③(Second-generation global imager) Improve observation resolution from 1 kilometer to 0.25 kilometer for monitoring the amount of clouds and aerosol.<br>④(Dual-frequency precipitation radar) Improve rain sensitiveness of 3-D observation in precipitation area from 0.7 mm/h to 0.2 mm/h by using dual frequency, which will enable to observe snow.<br>⑤(Cloud profiling radar) Improve the minimum sensitiveness 10 times from 26dBZ to 35 dBZ for monitoring the vertical distribution of clouds and aerosol and their movement, which will enable to observe about 90 % amount of clouds.<br>○Improve observation frequency: Clouds and moisture by radiometers for visible and infrared rays will be observed more frequently from every 30 minutes to every 10 minutes.<br>○Advance forecasting method: Forecasting method should be made advancement in cooperation with other ground observation data. | (Weather forecast)<br>MLIT(JMA)<br><br>(Utilization)<br>MLIT, MOD, MEXT and others, local governments and private sector. | "Himawari-8, 9" (visible and infrared radiometer)<br><br>Global Change Observation Mission (GCOM-W(microwave radiometer)), later that, 1satellite continuously<br>GCOM-C(global imager sensor), later that, 1 satellite continuously<br><br>Global Precipitation Measurement ( GPM ( dual-frequency precipitation radar ) cooperated with NASA )<br><br>Earth Clouds, Aerosols and Radiation Explorer (EarthCARE(cloud profiling radar ) cooperated with ESA ) |
| ○ Research and development of mobile phone which can be used for communicate via both ground and satellite communication<br>Research and development to enable to use the same frequency band in the ground system and satellite system in an attempt of realizing a ground/satellite commonly used mobile phone system in which mobile phone terminals can be used for communicate via both ground and satellite communication.<br>・an interference avoidance technique<br>・coordination technique of a ground system and a satellite system<br>・large deployable antenna technique<br>○ Conduct a utilization and validation experiment of high speed Internet communication in the Asia-Pacific region and isolated islands using the ultrahigh-speed Internet satellite "Kizuna" | (R&D)<br>MIC/NICT, MEXT / JAXA<br><br>(assumed operator)<br>private sector | After research and development on the ground, bring it to a validation phase using engineering test Satellites |
| Research and develop a method to gather information of marine navigation necessary to secure vessel safety<br>○ Collaborate between satellite and information gathering system of marine navigation on the ground | MLIT(JCG), MOD | Consider to use satellites which can be utilized at Asia and other regions |

9 major social needs and current situation of development and

| main social needs | current state | goals for the next 10 years correspond to the social needs |
|---|---|---|
| **【Preserve and manage national land 】** | | |
| **Gather land information (cartography, land transition monitoring, etc.)** | The geographic characteristics of Japan are huge area of mountains and forests which reaches 70 % of total land, very long shorelines and several thousands of isolated islands. While Japan has been recording and gathering images of its land from satellites, the operation of satellites has not been serial, and gathering and provision of data has not been conducted in a continuous and integrated way. For this reason, except for some of the empirical approach such as updating topographic maps on a scale of one to 25,000, the utilization of such data is still insufficient as a whole. In foreign countries, the potential of demand for Japanese satellite data is still low. Attempts have been made to monitor illegal logging and the World Heritages sites from "Daichi" in overseas, but the provision of obtained satellite data to foreign countries has been limited. | It is aimed that optical and radar sensors using a series of satellites are used to continuously and widely observe the land and the data is utilized as basic information for national land preservation and management, agriculture and forestry and environment by collecting and distributing them systematically. For example, by comprehensively improving image quality with enhanced resolution of optical stereo vision sensor by more than twice, Japan is to realize to make more detailed map and to expand its utilization for local governments and private sectors along with the areas of forest management and environment management. Further, attempts of satellite data delivery to foreign countries are a potential to expand the utilization of Japanese satellite images in overseas. |
| **【National Security】** | | |
| **Surveillance and Reconnais-sance** | Satellite system which is capable of acquiring images of a specific location on earth more than once a day by optical and radar satellites is yet to be fully established. In addition, no Information other than images be gathered by satellites. | Enhance the information gathering functions by increasing opportunities of image acquisition which are corresponding to the areas of interest. Improving the quality of images and shortening time for information-sharing, as well as reinforcing functions for surveillance and reconnaissance activities in the ocean and aerospace surrounding Japan. In the course of stated improvement, it is aimed to promote new use and R&D of space regarding national security purposes including research of sensors for an early-warning function. |

## <reference>

| goals which the sensor, satellites etc. should achieve in order to fulfill the 10-year goals | user organization | expected satellites in 10 years |
|---|---|---|
| | | |
| The improvement of those major points mentioned below will contribute to create the environment of delivering land information at any time.<br><br>○Improve sensor performance: The performance of stereoscopic optical sensor should be improved from 2.5 meters to 1 meter in spatial resolution in order to monitor detailed land information.<br><br>○Increase observation frequency: Achievement of quick delivery of satellite image data (optical & radar), (usually in several days -> more than once per day)<br><br>○Advance utilization environment: Preparing a data delivery system that will ensure easier access satellite data for domestic and overseas users, by successive management of past and future satellite data. | MLIT, MAFF, MOE, local governments and private sector<br><br>(Promotion support for utilization of satellite data in foreign countries) MOFA | "Daichi-2, 3"(optical, radar) ,later that, 2-4 satellites as series of "Daichi" continuously<br><br>ASNARO(tentative name)certification satellites ( optical, radar ) and ,later that, 2-4 satellites continuously |
| | | |
| 【Information Gathering Satellites】<br>○Enhance the resolution: resolution of optical and radar satellites which exceeds the level of commercial satellites<br>○Increase the frequency of image acquisition : more frequent than "image acquisition of a specific location on the earth more than once a day"<br>○Shorten the processing time: shorten time required from request to the distribution of products as much as possible | CIRO, CSICE and others | IGS(optical, radar) |
| 【Research of sensors for an early-warning system】<br>Research of sensors and database for an early-warning system<br>○New objects to detect: flame of ballistic missile or forest fire.<br>○Necessary technology: technology of elements of high sensitive infrared sensor, technology to identify kind of flame<br>○Necessary facilities for support: prepare database to identify and secure the data communication capacity | MOD and others | The Japanese government as a whole promotes effective utilization of satellites, including the possibility of utilizing satellites in which defense purpose and other purpose are combined. |
| 【Research of radio information gathering function】<br>Research of radio property for a validity check of a radio information gathering function in space. | MOD and others | |

9 major social needs and current situation of development and

| main social needs | current state | goals for the next 10 years correspond to the social needs |
|---|---|---|
| **【Facilitate food supply】** | | |
| **Understand growing condition and quality of grain and other agricultural products** | Satellite data is now ready to use practically in various fields, such as monitoring domestic cultivated area, paddy acreage and damage of irrigated rice by disasters. Monitoring the growth situation of rice is now beginning to use practically. To apply to monitor the quality and growth of other crops, it is necessary to improve the estimation accuracy thorough the validation process.<br>Further, irrigated rice damages caused by disasters are currently assessed visually, but it is expected to have fewer loss assessors as decreased number of farmers, and it is a challenge to improve the method of loss assessment. | Satellite images can be analyzed to understand the growing condition and estimate of rice quality, such as rice's contents of protein and water, and its actual utilization has already started in some areas. Approach will be made in the future to improve the estimate accuracy and pursue the sophistication for farm management. Further, in the field of assessment for irrigated rice damages caused by disasters, it is expected to have fewer loss assessors as decreased number of farmers. Japan will aim to establish a loss assessment method using high-resolution satellite images to enable overall evaluation of irrigated rice in Japan, and organize a system that can deploy the method in all prefectures, which is still in a validation phase at 14 prefectures. In addition, constant monitoring of conditions related to crop productions in the major area of breadbasket in the world will be realized to use for Japan's food supply strategy as basic information. |
| **Understand fisheries** | Oceanic information that is observed data for sea temperature, oceanic current and ocean color by satellites is now being provided, in combination with other data derived from meteorological satellites and direct observations. Use of satellite data has already reached the stage of its practical realization, however, the U. S. and French satellite data is considered as the most usable from the viewpoint of data accessibility. It is insufficient yet to use Japanese satellite except for research purposes. | To update coastal fishing activities, Japan will aim for healthy development of a fishing industry and stable supply of marine products by giving contribution to improve a prediction of occurrence of red tides harmful to coast fishing and aquaculture industry. Specifically, enhancement of resolution on optical sensors will allow not only to schematically determine the occurrence of red tides over the wide area of Tokyo Bay, but also to spot detailed damage condition, for example in the Tokyo Bay estuary. To advance deep-sea fishery, the current situation only allows seeing the comprehensive condition of oceanic current and other information. Therefore, in the future, Japan will aim to prepare a structure for easy data access and to improve the productivity of fishery and realize efficient support of operation, together with having regional fishery information with the increase of spatial resolution by the sensors boarded on Japan ' s satellites. |

## Appendix 1

utilization plan of satellites and other assets / goals for the next 10 years (4/8)

### <reference>

| goals which the sensor, satellites etc. should achieve in order to fulfill the 10-year goals | user organization | expected satellites in 10 years |
|---|---|---|
| | | |
| The improvement of those major points mentioned below will contribute to the advancement and sustainable development for agriculture.<br><br>○Improve sensor performance<br>①(Monitoring cultivated land) Improve spatial resolution of optical sensor (2.5meters -> 1 meter) and of L band radar sensor (10 meters –> 1-3 meters)<br>②(Monitoring growing condition and quality of grain) Improve an detective ability using by much more frequency (hyperspectrum, 14 bands -> 185 bands)<br>③(Second-generation global imager) Improve observation resolution from 1 kilometer to 0.25 kilometer, for monitoring broad and detailed condition of cultivated land.<br>○Request for observation: Assure users ' request for observation in harvest period<br>○Advancement of analyzing method: Establish data-analyzing method | MAFF, local governments and private sector | "Daichi-2, 3"(optical, radar) ,later that, 2-4 satellites as series of "Daichi" continuously<br><br>ASNARO(tentative name)certification satellites ( optical, radar ) and ,later that, 2-4 satellites continuously<br><br>GCOM-C(global imager sensor), later that, 1 satellite Continuously |
| The improvement of those major points mentioned below will contribute to the advancement and sustainable development for fisheries.<br><br>○Prepare appropriate number of satellite: Besides using foreign satellites, domestic satellites that will realize more accurate observation should be utilized successively.<br>○Improve sensor performance:<br>① Improve optical sensor for the spatial resolution (color, 10 meters -> several meters)<br>②Improve other necessary sensors (thermal infrared imager, microwave radiometer, microwave scatterometer, ocean color scanner, satellite altimeter) for spatial resolution (several kilometers –> about 1 kilometer)<br>○Prepare for data delivery system: Certain delivery to local governments | MAFF, Fisheries Research Agency and local governments | Global Change Observation Mission (GCOM-W(microwave radiometer)), later that, 1 satellite continuously<br>GCOM-C(global imager sensor), later that, 1 satellite continuously<br>"Daichi-3"(optical) and, later that, 1-2 satellites continuously<br><br>Foreign satellites (thermal infrared imager, microwave scatterometer, satellite altimeter) |

9 major social needs and current situation of development and

| main social needs | current state | goals for the next 10 years correspond to the social needs |
|---|---|---|
| **【Facilitate natural resources and energy supply】** | | |
| **Explore oil and mineral resources in land and seabed areas** | Satellite data has been used for natural resources exploration in continental areas, but its analysis ability has not reached its full potential.<br>Furthermore, there are various resources and energy existed over the Japan's territorial seas, said to be the world's 6th largest size, and exclusive economic zone, as well as possibly two hundred nautical mile of the continental shelf. There is an expectation to secure these resources, but the utilization is still limited that "Daichi" is used to observe the oil slick phenomenon (a release of crude oil from the sea floor and becoming an oil slick on the water surface) in a validation phase. | An ability to detect minerals that make up geological layers that contain oil, and minerals such as rare metals, is improved by three times from the current ability of 10 types to 30 types.<br>Also, it is aimed for continuous and wide area observation using a highly sensitive sensor to precisely and efficiently detect the possible areas of oil and minerals and upgrade the exploration method of resources contained in continental areas.<br>Further, Japan is to aim for improving the detection ability of oil slick by enhancing the sensor resolution and contributing to natural resources exploration of seabed in the water territories in Japan. The collected information will be utilized as basic information for the Japan's strategy to secure resources and energy. |
| **【Resolve the global-level environmental issues (realize low carbon society)】** | | |
| **Gather information of global distribution and the amount of absorption and emission related to greenhouse gases such as $CO_2$ and methane gas** | Distribution of greenhouse gases concentration had been measured at limited locations (approximately 280 locations) on ground. However, Japan's Greenhouse gases observing satellite "Ibuki" launched in January 2009 enabled observation at 56,000 points globally and it was in a phase to observe and analyze the globe cyclopaedically.<br>Further, "Daichi" has been used for the development of evaluation methods of greenhouse gasses emissions from forest degradation. | "Ibuki" would be used for continuously detecting more detailed greenhouse gasses absorption and emissions in each region and absorption by forest ecosystem while continuous observation of the global distribution of greenhouse gases concentration and improvement of sensor ability by twice as much as the present ability to increase the measurement point and its accuracy.<br>It would enable precise understanding of the change in absorption and emission of greenhouse gases caused by the change of climate condition and logging and providing scientific evidences for the emission reduction of greenhouse gases in the future which the entire world must tackle with.<br>Also, by improving the resolution performance of "Daichi" and then detecting more detailed changes in forests and vegetation as sinks of greenhouse gases, "Daichi" would be utilized for gathering information and verifying the Reducing Emissions from Deforestation and Forest Degradation (REDD) in developing countries.<br>Through these activities, Japan will aim to contribute to the global warming countermeasures effective under the post-2012 framework. |

Appendix 1

utilization plan of satellites and other assets / goals for the next 10 years (5/8)

## <reference>

| goals which the sensor, satellites etc. should achieve in order to fulfill the 10-year goals | user organization | expected satellites in 10 years |
|---|---|---|
| | | |
| The improvement of those major points mentioned below will contribute to the advancement for the exploration of natural resources.<br><br>○Improve sensor performance<br>① (Monitoring geology and minerals) Improve detective ability by using much more frequency (hyperspectrum, 14 bands -> 185 bands)<br>②(Monitoring natural resources in land and seabed areas) Successive operation of L band radar sensors and improvement for the spatial resolution of L band radar sensor (10 meters -> 1-3 meters)<br>③Develop thermal infrared sensors (5 bands, 30 meters)<br>○Advance analyzing method: Establish data-analyzing method such as detecting natural minerals | METI | "Daichi-2, 3"(optical, radar, hyperspectrum sensor)and, later that, 2-4 satellites as series of "Daichi" continuously<br><br>ASNARO(tentative name)certification satellites ( optical, radar ) and, later that, 2-4 satellites Continuously |
| | | |
| Make it possible to monitor global warming effectively, by improving carbon cycle model and others as bellow.<br><br>○Improve the ability of sensors;<br>①(Greenhouse gases observing sensor) Novel research and development including the study for new sensors based on the detailed analysis of the observation data from "Ibuki." (Improvement of the accuracy of observation and the spatial resolution for CO2, methane gas, etc. Current accuracy of observation is 4 ppm for CO2 and 0.04 ppm for methane gas.)<br>②(L band radar, Optical sensor(color)) Improve the spatial resolution from 10 m to 1~3 m (radar), and from 10 m to 3 m (optical sensor), to detect more detailed changes in forests and vegetation as sinks of greenhouse gase Research and development of new sensors<br>③(Global imager sensor) Improve the spatial resolution from 1 km to 250 m, to measure the amount of vegetation (terrestrial and oceanic primary production)<br>○Improve the analysis methods; Improve carbon cycle model and atmospheric transportation model and, etc. for more effective analysis method of the concentration distribution of greenhouse gases, the absorption and emissions, absorption by forest, and so on.<br>○Improve the international system; Improve the international system to use the analysis method with the observation data from "Daichi." | MOE / National Institute for Environmental Studies<br>MAFF (Forestry Agency) | 1 satellite as asuccessor of GOSAT (passive spectrometer or the other observation sensors)<br><br>"Daichi-2, 3" (optical, radar) and later that, 2-4 satellites as series of "Daichi" continuously<br><br>GCOM-C (globalimager sensor) and, later that, 1 satellite continuously |

9 major social needs and current situation of development and

| main social needs | current state | goals for the next 10 years correspond to the social needs |
|---|---|---|
| **【Resolve the global-level environmental issues (realization of low carbon society)】** | | |
| **Understand the global water circulation and environmental changes** | Japan has been conducting the observation of precipitation distribution related to water cycle and clouds and aerosol distribution related to the global environmental changes in international frameworks using overseas satellites, but it requires continuous observation to see the long-running changes and it is expected for the further improvement of prediction accuracy. | Japan will aim to improve the accuracy by doubling the current ability to measure the global precipitation distribution and improve the ability for higher accuracy by more than twice as high as the current ability for clouds and aerosol distribution in international frameworks for the future. Also, Japan will aim to clarify and establish methods for generating mechanism of abnormal meteorology such as El Nino, desertification and torrential rainfall, and to establish the clarification and forecast methods for global environment changes and water circulation mechanism by understanding them continuously, globally and in more details, as well as to conduct disaster prevention by providing necessary information quickly and properly. |
| **Realize energy to support the low carbon society** | Renewable energy power (for example,solar power generation and wind-generated power) has been used on earth, but there are some stability issues, and the utilization of energy to overcome these issues has not been realized in space. | Research and development of the technology necessary to realize the solar power generation system in space for clean and stable energy utilization without any geopolitical influences, Japan will aim to have prospects for practical application within the next 10 years, comparing with the progress of the renewable energy development on earth. |
| **【Enhance the domestic quality of life (realize a healthy and long-lived society, and convenience for the people)】** | | |
| **Realize a healthy and long-lived Society** | The prevention study of osteoporosis and urinary calculus and effective application of high quality protein crystallization for drug development have currently been conducted by applying the research achievement of space medicine for the senior citizen medical care, but they are not for practical use yet. | Japan will aim to achieve practical results through the use of the microgravity environment focusing on the issues for the life of people and the solutions for social issues such as medical care for elders, problems of nursing care and drug development. |

## ＜reference＞

| goals which the sensor, satellites etc. should achieve in order to fulfill the 10-year goals | user organization | expected satellites in 10 years |
|---|---|---|
| | | |
| Contribute to establish forecast model for global environment changes, clarify generating mechanism of abnormal meteorology and prevent disaster by improving points as bellow.<br><br>○ Develop observation satellites; Continuous observation of the distribution of clouds and aerosol by domestically-developed satellites (possible to high-precision measurement), instead of overseas ones novel development and utilization of sensors to observe vertical distribution of clouds and aerosol<br>○ Improve the ability of sensors; It will be aimed to improve the ability of sensors for high-precision measurement as follows,<br>①(Microwave radiometer) Reduce the measurement error by half to detect the amount of rainfall and moisture in detail (Current error of observation is ± 70%)<br>②(Global imager sensor) Improve the spatial resolution from 1 km to 250 m, to measure the amount of clouds, aerosol, and etc.<br>③(Dual-frequency precipitation Radar sensor) Improve the measurement sensitivity of vertical distribution of rainfall in precipitation area with dual-frequency observation, from 0.7mm/h to 0.2mm/h<br>④(Clouds profiling radar) Improve the minimum measurement sensitivity by ten times to understand vertical distribution or movement of clouds and aerosol, from 26dBZ to 35dBZ (possible to understand 90% of the clouds)<br>⑤(L band radar, Optical sensor(color)) Improve the spatial resolution from 10 m to 1~3 m (radar), and from 10 m to 3 m (optical sensor), to detect more detailed changes in forests and vegetation as sinks of greenhouse gases<br>○ Improve the analysis methods; Improvement of the global environment changes analysis (atmosphere-ocean coupled model and etc.) | MLIT (JMA)<br>MOE / National Institute for Environmental Studies<br>MEXT / JAMSTEC | Global Change Observation Mission (GCOM-W (microwave radiometer) and, later that, 1 satellite continuously<br>GCOM-C (global imager sensor) and, later that, 1 satellite continuously<br><br>Global Precipitation Measurement (GPM (Dual-frequency precipitation Radar sensor) cooperated with NASA<br><br>Earth Clouds, Aerosols and Radiation Explorer (EarthCARE (clouds profiling radar), cooperated with ESA)<br><br>"Daichi-2, 3" (optical, radar) and later that, 2-4 satellites as series of "Daichi" continuously |
| ○ Research and development to have prospects for feasibility of space solar power system<br>・Technologies to gather energy efficiently in space<br>・Technologies to send energy efficiently and safely from space to the ground<br>・Technologies to construct large scale structures in space<br>○Short-term issue<br>・To conduct demonstration of technologies for the energy transmission on the ground and to confirm the influence in the atmosphere utilizing "Kibo" or small sized satellites. | (R&D)<br>MEXT / JAXA<br>METI / USEF<br>universities, private sector, etc. | Small sized demonstration satellite for space solar power system |
| | | |
| ○ The utilization of "Kibo" will be promoted, conducting maintenance and operation of "Kibo" consistently, and transportation of goods necessary for operating the Space Station (laboratory equipment water, food, etc.) to the International Space Station will be conducted every year based on the international agreements. (Government will comprehensively determine the extension of its operation after 2016 in consideration of the utilization results, etc.)<br>○ To focus on issues to respond to the social demands in drug development and medical fields and food, energy and nano material fields and to promote the space environment utilization close related to people's life such as realizing better life for people and corresponding to issues concerning clothing, food and housing as well as excretion issues in the aging society. In addition, as the only participant in the International Space Station Program in Asia, Government will promote the international cooperation with Asian countries by providing them with the opportunities to use "Kibo" for experiments. Japan will also contribute to the world's environmental observation. | MEXT / JAXA<br>universities, private sector, etc. | H-II Transfer Vehicle (HTV) test flight, operational flight #1-#6) |

9 major social needs and current situation of development and

| main social needs | current state | goals for the next 10 years correspond to the social needs |
|---|---|---|
| 【Enhance the domestic quality of life (realize a healthy and long-lived society, and convenience for the people)】 | | |
| **Realize highly accurate positioning** | Currently services using a positioning satellite system such as car navigation systems are widely spread and the utilization of a positioning satellite has been expanding, but It has not been able to pinpoint a location of people. | Japan will aim to achieve highly accurate positioning using a Quasi-Zenith Satellite System and improve its convenience by creating new applications such as a seamless personal navigation that works with satellite and ground systems, and to realize safety of the country and people to response to the needs of "ensuring the public safety" in the future. Further, by establishing a structure using 3 satellites after validation of technology and ability of a Quasi-Zenith Satellite System, supplementation and backup of systems for GPS become possible. Also, by using 7 satellites, a self-contained Satellite positioning system can be established that covers the East Asia and Oceania region. |
| 【Create scientific achievement to lead the world (accumulate intellectual assets and expand activity area of humans)】 | | |
| **Create world-leading achievement in science research continuously** | Japan has made world-leading achievements in space science such as space astronomy and solar system exploration, and also been undertaking various efforts to expand the activity domain of humans through the solar system exploration and activities in the International Space Station. | Japan will take a close collaboration with other fields beyond space science and aim to promote the study based on a reinforcement of the structure to promote participation of excellent scientists of universities, as well as to continuously create world-leading achievements. Further, by promoting the space activities of humans and robots, Japan will aim to expand the activity domain of humans and realize the moon exploration using robotics by around 2020, with a view of cooperation of robots and humans. |

Appendix 1

utilization plan of satellites and other assets / goals for the next 10 years (7/8)

## <reference>

| goals which the sensor, satellites etc. should achieve in order to fulfill the 10-year goals | user organization | expected satellites in 10 years |
|---|---|---|
| | | |
| For a Quasi-Zenith Satellite System that is a core of a positioning satellite system, Government will conduct technical and utilization verification and promote measures for system verification, as well as to promote a new usage with help of both public and private sectors.<br>○Positioning accuracy: Realize the accuracy of 1-meter from that of 10-meter by GPS, and put to practical use for supplementation and backup of systems for GPS, especially in the survey fields<br>○Orbit: Realize more than 60 degrees in elevation angle in all over Japan<br>○Create demands: Promote a new usage that links with ground systems<br>(note) Ready to use QZSs in the same condition in the East Asia region such as Korea | (Technical and utilization verification)<br>MEXT / JAXA<br>METI / AIST<br>MLIT (GSI)<br>MIC / NIC<br>Private sector and others | Quasi-zenith Satellite-1 and additionally 2-6 satellites |
| | | |
| It will be aimed to continuously create world-leading scientific achievements, and scientific research and engineering research will be conducted in an integrated manner. It will be also aimed to expand the activity domain of humans.<br><br>○ Space astronomy (X-ray, infrared ray, and electric wave observation)<br>○ Solar system exploration (Mercury, Venus, and asteroids)<br>○ Robotic exploration on the moon for the future exploration in collaboration with humans and robots<br>○ Advanced missions with Small Scientific Satellites, demonstration of new sensors and technologies (Themes will be selected in science community)<br>○ Space biology and microgravity science such as biological science, material science, fluid science, and etc., using the space environment such as microgravity in "Kibo"<br>And so on. | MEXT / JAXA<br>universities | ASTRO-G (Electric wave) and the other space astronomy missions, (ASTRO-H (X-ray), SPICA (infrared ray),<br>Planet-C (Venus), BepiColombo (Mercury ) or the other solar system exploration mission (SCOPE (magnetosphere), asteroids exploration (the follow-on mission after "Hayabusa") etc.),<br>Moon landing and exploration mission, Small Scientific Satellites such as Ikaros etc. (3 satellites every 5 years) |

9 major social needs and current situation of development and

| main social needs | current state | goals for the next 10 years correspond to the social needs |
|---|---|---|
| **【Develop industry and create employment continuously】** | | |
| **Develop agriculture and fisheries further** | The demand for satellite data has been spreading for collecting information related to agriculture and/or fisheries and for monitoring the situation of land and ocean area. | Satellite data will be more contributed to the advancement and sustainable development for agriculture and fisheries, through the improvement of efficiency from monitoring crop growth and fishing area. |
| **Create new industry, expand space industry and create employment** | It is necessary to expand the base for the space utilization industry, not only the space equipment industry but also the service industry. The international competitiveness of Japan's space industry is weak, so it is necessary to strengthen the international competitiveness by developing Japan's space industry into a strategic industry. | Aim to double the sale of industry by promoting to develop new utilization of satellite data and by creating new industry applied the results of advanced technologies of space science. Enhance the international competitiveness of Japan's space industry in order to create employment. |

Appendix 1

utilization plan of satellites and other assets / goals for the next 10 years (8/8)

## <reference>

| goals which the sensor, satellites etc. should achieve in order to fulfill the 10-year goals | user organization | expected satellites in 10 years |
|---|---|---|
| | | |
| See the row of "Facilitate food supply" and "Preserve and manage national land". | | |
| ○ Goal of policy<br>・Create new industry by promoting to develop new utilization of satellite data<br>・Spin-off the results of advanced technologies of space science mission into use and R&D of space and industry other than space science<br>・Increase the entry into international market by enhancing the international competitiveness of satellites and sensors ( such as promotion of research and development, consideration of systematic procurement ) and by taking measures to develop international market<br>・Create new industry, expand space related industry and create employment by promoting the demonstration of advanced technology with small size satellites and others and by supporting the micro satellites of small and medium companies, venture companies and universities<br>・Aim to double the sale of space related industry and create employment by expanding the use and R&D of space | (R&D, promotion of utilization)<br>MEXT / JAXA<br>METI / NEDO, AIST, USEF<br>MIC / NICT<br>MLIT(GSI)<br>university and private sector | SERVIS-2, SDS-2 and others, 1 demonstration satellite every year |

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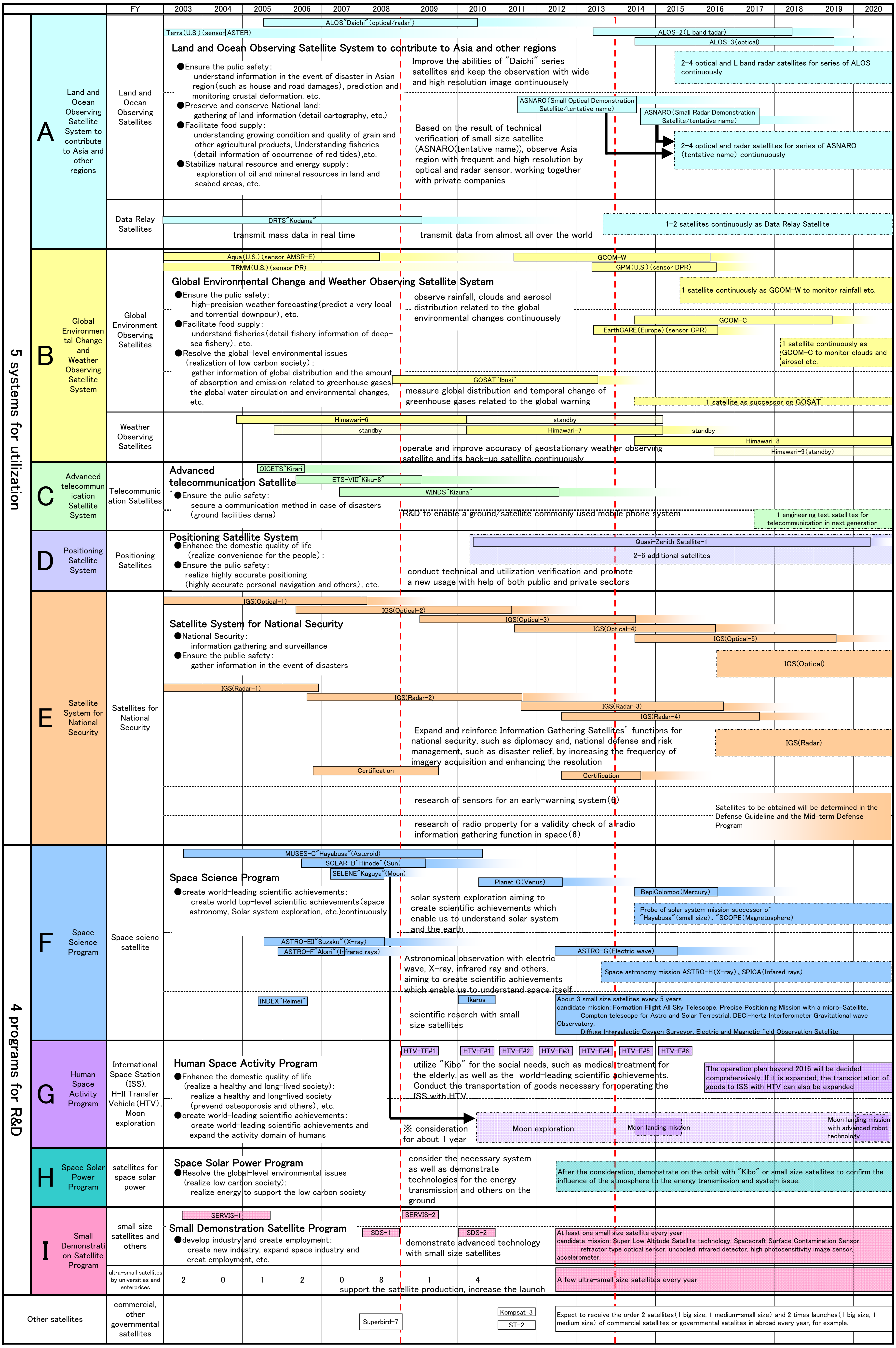
# 5-year development and utilization plan of satellites and other assets corresponding to 9 major social needs (foreseeing next 10 years)

( Necessary fund is estimated to be JPY2,500B for the utilization, R&D of all satellites described at this plan, which should be shared by government and private sector. This was estimated by Secretariat of Headquarters for Space Policy based on a certain assumption, so is not a target committed by government and is very rough one. )




| total number of satellites(4) | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | big size | 0 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 4 | – | – | – | – | – | – | – |
| | medium size | 0 | 0 | 1 | 3 | 0 | 1 | 1 | 0 | 3 | 4 | 3 | – | – | – | – | – | – | – |
| | small size | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 3 | 2 | 3 | 2 | – | – | – | – | – | – | – |

(1) Necessary fund is estimated on the assumption as below.
- big size satellite(development cost: JPY50B, launch cost: JPY12B)
- medium size satellite(development cost: JPY30B, launch cost: JPY9B)
- small size satellite(development cost: JPY6B, launch cost: JPY4.5B)

(2) This plan covers FY2009-FY2013
(3) Development period and procurement period prior to the launch are not described at this chart.
(4) This includes the order of satellites and their launch from abroad, but not the super small satellites.
(5) The number and the time of launch which are described within broken line are to decided later. (It is not counted at " total number of satellites".)
(6) It will be determined in the Defense Guideline and the Mid-term Defense Progran after the consideration what the entire defense capability should be

Appendix 2

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HB. 173

# A BILL

## FOR

AN ACT TO MAKE PROVISION FOR NIGERIANS TO ACQUIRE EQUITY INTEREST IN TELECOMMUNICATIONS COMPANIES CARRYING ON GLOBAL SATELLITE MOBILE TELECOMMUNICATIONS (GSM) BUSINESS IN NIGERIA AND FOR MATTERS CONNECTED THEREWITH

*Sponsors:*

HON. CHINWENDU ODEDO

HON. KHADIJA BURKA. A IBRAHIM

Commencement.

BE IT ENACTED by the National Assembly of the Federal Republic of Nigeria as follows—

Reservation of Shares for Nigerians.

1. Every Telecommunications Company carrying on Global Satellite Mobile telecommunications business in Nigeria shall provide for, and ensure the allocation of at least thirty percent (30%) of its total share capital to Nigerians, except where such a telecommunications company is a Public Limited Company.

Register of Nigerian Share Holders.

2.—(1) Every such telecommunications company shall, for the purpose of this Act, maintain a register showing very clearly the list of all Nigerians holding shares in the company.

(2) The register shall very clearly indicate the following particulars of the Nigerians holding shares in the Company—

(a) the surname, first name and middle name;

(b) age;

(c) sex;

(d) Occupation, specifying the nature of business;

(e) State of origin;

(f) the physical address (not P. O. Box),

(g) Current colored passport sized photograph;

(h) Current Tax Clearance Certificate number.

(3) The updated register shall be filed annually with the Corporate Affairs-

Commission (CAC).

Power to Inspect Register and Obtain Information.

**3.** Upon an application to a Telecommunications Company under this Act, the Company shall, within seven (7) working days of its receipt of the application, make available to the applicant for inspection, the register of the list of Nigerians holding shares in that company.

Restriction on the Allotment of Shares.

**4.** No single allottee under this Act shall be allotted more than two percent (2%) of the total number of shares reserved for Nigerians under this Act.

Compliance.

**5.** Every Telecommunications Company carrying on Global Satellite Mobile telecommunications business in Nigeria shall, within one year and six months of the coming into force of this Act, ensure compliance with the provisions of this Act.

Power of the Nigerian Communications Commission to give Directions.

**6.** Subject to the provisions of this Act, the Nigerian Communications Commission may give directions or make regulations generally with regard to the provisions of this Act, and it shall be the duty of the Telecommunications Company to comply with the Directions; but no direction shall be given which is inconsistent with the provisions of this Act.

Jurisdiction and prosecution.

**7.** An offence under this Act shall be tried in the Federal high Court, and any reference to Court or the Court shall be construed accordingly.

**8.** Without prejudice to the right of a citizen to seek civil redress, the Prosecution for offences under this Act shall be instituted before the Court in the name of the Federal Republic of Nigeria by the Attorney General of the Federation or such officer in the Ministry of Justice as he may authorize so to do, and in addition thereto, he may—

(*i*) after consultation with the Attorney General of any state in the Federation, authorize the Attorney General or any officer in the Ministry of Justice of that State; or

(*ii*) if a Court so directs upon an application by a citizen, or if the Commission so requests, authorize any legal practitioner in Nigeria, to undertake any such prosecution directly or assist therein.

**9.** The question whether any or what authority has been given in pursuance of section 11 of this Act shall not be inquired into by any person other than the Attorney General of the Federation.

Offences and Penalties:

**10.** Where any one allottee is allotted more than two (2) percent of the total shares reserved for Nigerians under this Act, he is guilty of an offence under this Act; punishable upon conviction with a fine of not less than ₦5,000,000.00 or imprisonment for a term not exceeding five years, but not less than three years, or both.

**11.** Where any Telecommunications company fails to set aside and, or allot at least Thirty Percent (30%) of its total share Capital to Nigerians, that Company shall by guilty of an offence, and upon conviction, be liable to pay 35% of its gross profits for that year of default complained about as fine.

**12.** Where any Telecommunications Company fails to maintain and, or update its register of Nigerians holding shares in the company, that Company shall be guilty of an offence, and upon conviction, liable to pay 35% of its gross profits for that year of default complained about as fine.

**13.** Without prejudice to the offences and penalties attached to the Telecommunications Company itself for offences under this Act, any person who, at the time of the commission of the offence—

(*a*) was an officer thereof;

(*b*) or purporting to act in the capacity of an officer thereof,

is himself guilty of that offence and liable to be prosecuted and punished for the offence in like manner as if he had himself committed the offence, unless he proves that the act or omission constituting the offence took place without his knowledge, consent or connivance.

**14.** Any officer of the Telecommunications Company prosecuted under this Act shall, upon conviction, be liable to a fine of not less than ₦5,000,000.00 or imprisonment for a term not exceeding five years but not less than three years, or both.

Interpretation.

**15.** In this Act, unless the context otherwise requires—

"Nigerian" means a human person who is a citizen of Nigeria as defined in the Citizenship Act, and does not include an artificial person.

"Court" or "the Court" means the Federal High Court of Nigeria.

"Citizen" means a Nigerian;

"Officer" in the case of a body corporate means, a chief executive, a director by whatever name called, manager and secretary of the body corporate;

in the case of a firm, a partner, manager and secretary of the firm; and

in the case of any other association of individuals, a person concerned in the management of the affairs of the association.

"Telecommunications Company" means a Telecommunications Company carrying on Global Satellite Mobile telecommunications (GSM) business in Nigeria

Short Title.

**16.** This Act may be cited as the Telecommunications (Equity) Bill, 2009.

# УКАЗ

## ПРЕЗИДЕНТА РОССИЙСКОЙ ФЕДЕРАЦИИ

**О преобразовании закрытого военного городка № 1 в закрытое административно-территориальное образование - поселок Звездный городок Московской области**

В целях обеспечения безопасного функционирования федерального государственного бюджетного учреждения "Научно-исследовательский испытательный центр подготовки космонавтов имени Ю.А.Гагарина" и в соответствии с предложением Правительства Российской Федерации п о с т а н о в л я ю :

1. Преобразовать закрытый военный городок № 1 (г. Щелково-14, пос. Звездный, Московская область) в закрытое административно-территориальное образование - поселок Звездный городок Московской области.

2. Утвердить границы закрытого административно-территориального образования - поселка Звездный городок Московской области согласно приложению.

3. Сохранить для закрытого административно-территориального образования - поселка Звездный городок Московской области действующий особый режим безопасного функционирования предприятий и (или) объектов, предусматривающий ограничения на въезд и постоянное проживание граждан, на полеты летательных аппаратов над его территорией и иные ограничения в соответствии с законодательством Российской Федерации.

4. Правительству Российской Федерации совместно с органами государственной власти Московской области осуществить до 1 января 2011 г. необходимые организационно-правовые мероприятия, связанные с преобразованием закрытого военного городка № 1 в

закрытое административно-территориальное образование - поселок Звездный городок Московской области.

5. Настоящий Указ вступает в силу со дня его подписания.

Президент
Российской Федерации Д.Медведев

Москва, Кремль
19 января 2009 года
№ 68

ПРИЛОЖЕНИЕ
к Указу Президента
Российской Федерации
от 19 января 2009 г. № 68

# ОПИСАНИЕ
## границ закрытого административно-территориального образования - поселка Звездный городок Московской области

Границы закрытого административно-территориального образования - поселка Звездный городок Московской области (кадастровые номера 50:14:04:0328:0133 и 50:14:04:0348:0220) проходят:

на севере - от точки Б до точки В по границе с сельским поселением Анискинское Щелковского муниципального района;

на востоке - от точки В до точки Г по границе с землями, занимаемыми садоводческим некоммерческим товариществом "Мир", от точки Г до точки Д (Ж) по границе с землями, занимаемыми садоводческим некоммерческим товариществом "Труд-1", от точки Д (Ж) до точки З по границе с землями, занимаемыми садоводческим некоммерческим товариществом "Труд-1", от точки З до точки И по границе с землями, занимаемыми Чкаловским учебно-опытным лесничеством Московского государственного университета леса;

на юге - от точки И до точки К по границе автомагистрали Чкаловское шоссе, от точки К до точки В' по границе с землями, занимаемыми Чкаловским учебно-опытным лесничеством Московского государственного университета леса;

на западе - от точки В' до точки Г по границе с землями, занимаемыми садоводческим товариществом "Химик", от точки Г до точки А (Д') по границе с землями, занимаемыми гаражно-строительным кооперативом "Звездный", от точки А (Д') до точки Б по границе с землями, занимаемыми Чкаловским учебно-опытным лесничеством Московского государственного университета леса.

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РОССИЙСКАЯ ФЕДЕРАЦИЯ

# ФЕДЕРАЛЬНЫЙ ЗАКОН

## О навигационной деятельности

Принят Государственной Думой 30 января 2009 года

Одобрен Советом Федерации 4 февраля 2009 года

### Статья 1. **Сфера действия настоящего Федерального закона**

1. Настоящий Федеральный закон устанавливает правовые основы осуществления навигационной деятельности и направлен на создание условий для удовлетворения потребностей в средствах навигации и услугах в сфере навигационной деятельности.

2. Действие настоящего Федерального закона распространяется на отношения, возникающие в связи с осуществлением навигационной деятельности и оказанием услуг в сфере навигационной деятельности, в том числе в целях обеспечения обороны и безопасности Российской Федерации.

Статья 2. **Основные понятия, используемые в настоящем Федеральном законе**

Для целей настоящего Федерального закона используются следующие основные понятия:

1) навигационная деятельность - деятельность, связанная с определением и использованием координатно-временных параметров объектов;

2) средства навигации - технические средства, устройства и системы, предназначенные для формирования навигационных сигналов, передачи, приема, обработки, хранения и визуализации навигационной информации;

3) объекты навигационной деятельности - объекты, оснащенные средствами навигации и (или) использующие средства навигации в целях навигационной деятельности, а также объекты, обеспечивающие функционирование средств навигации;

4) услуги в сфере навигационной деятельности - деятельность, направленная на удовлетворение потребностей в средствах навигации и их эксплуатации, а также в навигационной информации;

5) навигационные сигналы с открытым доступом - сигналы, предназначенные для решения задач координатно-временного и навигационного обеспечения без ограничений, связанных с режимом санкционированного доступа.

Статья 3. **Субъекты правовых отношений в сфере навигационной деятельности**

Субъектами правовых отношений в сфере навигационной деятельности являются органы государственной власти, органы местного самоуправления, физические и юридические лица, обеспечивающие создание и функционирование средств навигации и объектов навигационной деятельности, а также физические и юридические лица, оказывающие и получающие услуги в сфере навигационной деятельности в соответствии с гражданским законодательством.

Статья 4. **Особенности осуществления навигационной деятельности**

1. В целях обеспечения обороны и безопасности Российской Федерации, повышения эффективности управления движением транспортных средств, уровня безопасности перевозок пассажиров, специальных и опасных грузов, проведения геодезических и кадастровых работ транспортные, технические средства и системы (в том числе вооружение, военная и специальная техника), перечень которых определяется федеральными органами исполнительной власти, органами исполнительной власти субъектов Российской Федерации и органами местного самоуправления в соответствии с их полномочиями, подлежат оснащению средствами навигации, функционирование которых обеспечивается российскими навигационными системами.

2. Особенности осуществления навигационной деятельности в период мобилизации, в период военного положения и в военное время определяются Правительством Российской Федерации.

### Статья 5. **Права собственности на средства навигации и объекты навигационной деятельности**

1. Средства навигации и объекты навигационной деятельности могут находиться в собственности Российской Федерации, собственности субъектов Российской Федерации, муниципальной собственности, собственности физических и (или) юридических лиц.

2. Космические аппараты и объекты наземной космической инфраструктуры, относящиеся к спутниковым навигационным системам и создаваемые за счет средств федерального бюджета, являются собственностью Российской Федерации, изымаются из оборота и не подлежат отчуждению.

### Статья 6. **Финансовое обеспечение навигационной деятельности**

1. Финансовое обеспечение навигационной деятельности основывается на ее целевой ориентации и множественности источников финансирования и осуществляется за счет бюджетных ассигнований федерального бюджета, бюджетов субъектов Российской Федерации, местных бюджетов, собственных или привлеченных средств юридических и физических лиц, а также за счет иных источников в соответствии с законодательством Российской Федерации.

2. Финансовое обеспечение деятельности федерального органа исполнительной власти, органа исполнительной власти субъекта Российской Федерации, органа местного самоуправления, уполномоченных на решение задач в сфере навигационной деятельности в соответствии с законодательством Российской Федерации, является расходным обязательством соответственно Российской Федерации, субъекта Российской Федерации, муниципального образования.

Статья 7. **Полномочия в сфере навигационной деятельности**

1. Президент Российской Федерации определяет основные направления государственной политики в сфере навигационной деятельности.

2. Правительство Российской Федерации:

1) организует реализацию государственной политики в сфере навигационной деятельности в целях обеспечения обороны и безопасности Российской Федерации, в интересах различных отраслей экономики и международного сотрудничества Российской Федерации в указанной сфере;

2) обеспечивает создание, эксплуатацию и развитие спутниковых навигационных систем в целях обеспечения обороны и безопасности Российской Федерации;

3) устанавливает порядок оснащения средствами навигации объектов навигационной деятельности в целях обеспечения обороны и безопасности Российской Федерации, повышения эффективности управления движением

транспортных средств, уровня безопасности перевозок пассажиров, специальных и опасных грузов;

4) создает при необходимости федерального сетевого оператора в целях обеспечения единства технологического управления в сфере навигационной деятельности и оказания услуг в указанной сфере для федеральных государственных и иных нужд, определяет его задачи и функции.

3. Органы государственной власти субъектов Российской Федерации и органы местного самоуправления имеют право получать услуги в сфере навигационной деятельности в установленном ими порядке.

### Статья 8. **Участие физических и юридических лиц в навигационной деятельности**

Физические и юридические лица могут осуществлять навигационную деятельность для собственных нужд и оказание услуг в сфере навигационной деятельности на всей территории Российской Федерации без ограничения точности определения координат объектов навигационной деятельности, за исключением территорий и объектов, для которых законодательством Российской Федерации установлен особый режим безопасного функционирования и перечень которых утверждается Правительством Российской Федерации.

Статья 9. **Условия предоставления навигационных сигналов с открытым доступом**

Навигационные сигналы с открытым доступом предоставляются субъектам правовых отношений в сфере навигационной деятельности на безвозмездной основе и без ограничений.

Статья 10. **Информационное обеспечение навигационной деятельности**

В целях информационного обеспечения навигационной деятельности уполномоченный федеральный орган исполнительной власти на своем официальном сайте в сети "Интернет" размещает сведения об услугах в сфере навигационной деятельности, оказываемых в соответствии со стандартами государственных услуг, и данные стандарты.

Статья 11. **Защита информации о средствах навигации и об объектах навигационной деятельности**

Защита информации о средствах навигации и об объектах навигационной деятельности от неправомерного доступа, уничтожения, модифицирования, блокирования, копирования, предоставления, распространения, а также от иных неправомерных действий в отношении такой информации осуществляется в соответствии с законодательством Российской Федерации.

Статья 12. **Вступление в силу настоящего Федерального закона**

1. Настоящий Федеральный закон вступает в силу со дня его официального опубликования, за исключением части 1 статьи 4 настоящего Федерального закона.

2. Часть 1 статьи 4 настоящего Федерального закона вступает в силу с 1 января 2011 года.

Президент
Российской Федерации Д.Медведев

Москва, Кремль
14 февраля 2009 года
№ 22-ФЗ

ПРАВИТЕЛЬСТВО МОСКВЫ

Р А С П О Р Я Ж Е Н И Е

23 марта 2009 г. N 491-РП

О праздновании 50-летия полета в космос
Ю.А.Гагарина

В целях исполнения Указа Президента Российской Федерации от 31 июля 2008 г. N 1157 "О праздновании 50-летия полета в космос Ю.А.Гагарина" и в связи с проведением в Москве в 2009-2011 гг. мероприятий, посвященных этой дате:

1. Утвердить План основных городских мероприятий по подготовке и проведению празднования 50-летия полета в космос Ю.А.Гагарина в 2009-2011 гг. согласно приложению к настоящему распоряжению (далее - План).

2. Организаторам мероприятий, указанным в приложении к настоящему распоряжению:

2.1. Считать приоритетной задачу популяризации научно-технических достижений России и возрождения интереса москвичей к космонавтике.

2.2. Обеспечить выполнение Плана (п.1.), оказывать необходимое содействие по подготовке и проведению мероприятий празднования 50-летия полета в космос Ю.А.Гагарина.

3. Департаменту культуры города Москвы:

3.1. В 2009-2011 гг. организовывать в учреждениях культуры проведение праздничных мероприятий, посвященных памятным датам отечественной космонавтики.

3.2. В 2011 году совместно с Государственным учреждением культуры города Москвы "Мемориальный музей космонавтики" организовать подготовку и проведение комплекса юбилейных мероприятий и инновационных образовательных проектов для детей и молодежи.

3.3. Совместно с Департаментом образования города Москвы, Департаментом семейной и молодежной политики города Москвы, Комитетом общественных связей города Москвы обеспечить широкое привлечение к участию в этих мероприятиях учащихся, студентов, представителей общественных организаций и объединений.

4. Департаменту образования города Москвы:

4.1. Обеспечить проведение в 2009-2011 гг. в образовательных учреждениях культурно-познавательных мероприятий, тематических авиационно-космических игр, викторин, конкурсов и олимпиад, а также образовательных и экскурсионных программ для учащихся.

4.2. Активизировать работу по созданию Московского авиационно-космического парка, организовывать работу Космоцентра в Московском городском дворце детского (юношеского) творчества на Воробьевых горах.

4.3. В дни школьных каникул обеспечить проведение профильных авиационно-космических лагерей для учащихся.

5. Департаменту науки и промышленной политики города Москвы:

5.1. Совместно с Департаментом семейной и молодежной политики города Москвы провести комплекс мероприятий для молодых ученых и студентов, направленных на развитие авиационно-космической науки и технологий.

5.2. Проводить в рамках ежегодного Международного форума "Высокие технологии XXI века" секционные заседания, посвященные юбилейным событиям в области космонавтики.

6. Департаменту семейной и молодежной политики города Москвы:

6.1. Организовывать проведение в государственных учреждениях, ведущих социально-воспитательную работу с детьми, подростками и молодежью по месту жительства, мероприятий, посвященных 50-летию полета в космос Ю.А.Гагарина.

6.2. Совместно с Советом ректоров вузов Москвы и Московской области организовывать проведение студенческих научно-практических конференций, конкурсов научных работ и других мероприятий авиационно-космической тематики.

6.3. При разработке городской Программы развития научно-технического творчества молодежи города Москвы предусмотреть отдельный раздел, посвященный авиации и космонавтике.

7. Департаменту физической культуры и спорта города Москвы ежегодно организовывать проведение на стадионах и открытых спортивных площадках города тематических физкультурно-массовых мероприятий для детей и молодежи.

8. Департаменту социальной защиты населения города Москвы организовывать проведение в центрах социального обслуживания и стационарных учреждениях праздничных культурно-массовых мероприятий для ветеранов авиационно-космической отрасли, посвященных юбилейным датам отечественной космонавтики.

9. Комитету общественных связей города Москвы:

9.1. Совместно с общественными объединениями города Москвы организовать проведение мероприятий, посвященных юбилейным датам отечественной авиации и космонавтики.

9.2. В рамках Комплекса мероприятий по государственной поддержке детского движения города Москвы совместно с заинтересованными организациями активизировать работу по формированию детского аэрокосмического движения, оказывать содействие общественным организациям в подготовке и проведении мероприятий авиационно-космической тематики.

10. Префектурам административных округов города Москвы обеспечить проведение на территории округов мероприятий празднования 50-летия полета в космос Ю.А.Гагарина.

11. Департаменту территориальных органов исполнительной власти города Москвы обеспечить координацию проведения праздничных мероприятий в административных округах города Москвы.

12. Пресс-службе Мэра и Правительства Москвы оказать содействие организаторам в информировании населения о мероприятиях празднования 50-летия полета в космос Ю.А.Гагарина.

13. Комитету рекламы, информации и оформления города Москвы:

13.1. Совместно с префектурами административных округов города Москвы ежегодно в День космонавтики 12 апреля обеспечивать праздничное тематическое оформление города.

13.2. Оказать содействие организаторам в размещении рекламы о проводимых мероприятиях празднования на объектах наружной рекламы в соответствии с нормативными правовыми актами города Москвы.

14. Комитету по туризму города Москвы организовать распространение рекламно-информационных материалов о мероприятиях по подготовке и проведению празднования 50-летия полета в космос Ю.А.Гагарина, представленных организаторами по их заявке, через Туристический информационный центр города Москвы.

15. Департаменту здравоохранения города Москвы организовать медицинское обеспечение мероприятий по заявкам организаторов.

16. Департаменту потребительского рынка и услуг города Москвы совместно с префектурами административных округов города Москвы по заявкам организаторов оказывать содействие в обеспечении торгового обслуживания зрителей праздничных мероприятий.

17. Управлению координации деятельности по обеспечению безопасности города Москвы обеспечить координацию деятельности по поддержанию правопорядка и общественной безопасности в период подготовки и проведения мероприятий.

18. Просить Главное управление внутренних дел по городу Москве обеспечить общественный порядок в местах проведения праздничных мероприятий.

19. Просить Главное управление МЧС России по городу Москве организовать контроль за обеспечением пожарной безопасности в местах проведения мероприятий, на прилегающих территориях и оперативное реагирование на возможные чрезвычайные ситуации.

20. Органам исполнительной власти города Москвы обеспечить осуществление расходов на реализацию Плана основных городских мероприятий по подготовке и проведению празднования 50-летия полета в космос Ю.А.Гагарина в 2009-2011 гг. (приложение) за счет и в пределах средств, предусмотренных в бюджете города Москвы по соответствующим направлениям.

21. Контроль за выполнением настоящего распоряжения возложить на первого заместителя Мэра Москвы в Правительстве Москвы Швецову Л.И.

П.п.Мэр Москвы Ю.М.Лужков

Приложение
к распоряжению Правительства Москвы
от 23 марта 2009 г. N 491-РП

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Приказ Роскосмоса от 24 апреля 2009 г №63 «О Комиссии по экспортному контролю Федерального космического агентства»

П Р И К А З

ФЕДЕРАЛЬНОЕ КОСМИЧЕСКОЕ АГЕНТСТВО

(РОСКОСМОС)

О Комиссии по экспортному контролю

Федерального космического агентства

В целях обеспечения исполнения Федерального закона от 18 июля 1999 г. № 183-ФЗ "Об экспортном контроле" (Собрание законодательства Российской Федерации, 1999, № 30, ст. 3774; 2002, № 1, ст. 2; 2004, № 27, ст. 2711; 2005, № 30, ст. 3101; 2007, № 49, ст. 6044, 6079), руководствуясь Положением об осуществлении контроля за внешнеэкономической деятельностью в отношении оборудования, материалов и технологий, которые могут быть использованы при создании ракетного оружия, утвержденным постановлением Правительства Российской Федерации от 16 апреля 2001 г. № 296 (Собрание законодательства Российской Федерации, 2001, № 17, ст. 1715; 2001, № 41, ст. 3959; 2002, № 41, ст. 3983; 2005, № 7, ст. 562), и Положением об осуществлении контроля за внешнеэкономической деятельностью в отношении товаров и технологий двойного назначения, которые могут быть использованы при создании вооружений и военной техники, утвержденным постановлением Правительства Российской Федерации от 7 июня 2001 г. № 447 (Собрание законодательства Российской Федерации, 2001, № 24, ст. 2459; 2002, № 41, ст. 3983; 2004, № 20, ст. 1949; 2005, № 7, ст. 562),

П Р И К А З Ы В А Ю :

1. Образовать Комиссию по экспортному контролю Федерального космического агентства и утвердить прилагаемые:

Положение о Комиссии по экспортному контролю Федерального космического агентства;

Состав Комиссии по экспортному контролю Федерального космического агентства.

2. Утвердить для участия в межведомственном экспертном совете по космической технике, товарам и технологиям двойного назначения, образуемом при Федеральной службе по техническому и экспортному контролю, следующие кандидатуры экспертов с правом подписи заключений:

Коростелев Алексей Михайлович - начальник Управления международного сотрудничества

Матанов Александр Борисович - заместитель начальника отдела Управления международного сотрудничества

Широков Алексей Георгиевич - начальник отдела Управления международного сотрудничества

3. Организациям ракетно-космической промышленности, осуществляющим научную и (или) производственную деятельность по поддержанию обороноспособности и безопасности Российской Федерации и систематически получающим доходы от внешнеэкономических операций с контролируемыми товарами и технологиями, создать внутрифирменные программы экспортного контроля и получить государственную аккредитацию в Федеральной службе по техническому и экспортному контролю в соответствии с Положением о государственной аккредитации организаций, создавших внутрифирменные программы экспортного контроля, утвержденным постановлением Правительства Российской Федерации от 29 февраля 2000 г. № 176 (Собрание законодательства Российской Федерации, 2000, № 10, ст. 1139; 2005, № 7, ст. 562; 2002, № 41, ст. 3983; 2001, № 5, ст. 393).

4. Контроль за исполнением настоящего приказа возложить на заместителя руководителя Федерального космического агентства В.П.Ремишевского.

Руководитель А.Н.Перминов

П О Л О Ж Е Н И Е

о Комиссии по экспортному контролю Федерального космического агентства

## I.Общие положения

1.1. Комиссия по экспортному контролю Федерального космического агентства (далее – Комиссия) образована в целях осуществления организационно-методического руководства деятельностью организаций ракетно-космической промышленности (далее – организации) в отношении оборудования, материалов и технологий, включенных в Список оборудования, материалов и технологий, которые могут быть использованы при создании ракетного оружия и в отношении которых установлен экспортный контроль, утвержденный Указом Президента Российской Федерации от 8 августа 2001 г. № 1005 (Собрание законодательства Российской Федерации, 2001, № 33, ст. 3441; 2004, № 8, ст. 636; 2005, № 49, ст. 5203; 2007, № 33, ст. 4185), и товаров и технологий, включенных в Список товаров и технологий двойного назначения, которые могут быть использованы при создании вооружений и военной техники и в отношении которых осуществляется экспортный контроль, утвержденный Указом Президента Российской Федерации от 5 мая 2004 г. № 580 (Собрание законодательства Российской Федерации, 2004, № 19, ст. 1881; 2005, № 49, ст. 5201; 2008, № 10, ст. 912), а также для усиления контроля за осуществлением внешнеэкономических операций с товарами, информацией, работами, услугами, результатами интеллектуальной деятельности (правами на них), которые не подпадают под действие указанных списков, но могут быть использованы при создании оружия массового поражения, средств его доставки, иных видов вооружения и военной техники, либо при подготовке и (или) совершении террористических актов.

1.2. Комиссия в своей деятельности руководствуется Конституцией Российской Федерации, Федеральным законом от 18 июля 1999 г. № 183-ФЗ "Об экспортном контроле" (Собрание законодательства Российской Федерации, 1999, № 30, ст. 3774; 2002, № 1, ст. 2; 2004, № 27, ст. 2711; 2005, № 30, ст. 3101; 2007, № 49, ст. 6044, 6079), иными федеральными законами, международными договорами и иными нормативными правовыми актами Российской Федерации по внешнеэкономической деятельности и экспортному контролю, а также Положением о Федеральном космическом агентстве, утвержденным постановлением Правительства Российской Федерации от 26 июня 2004 г. № 314 (Собрание законодательства Российской Федерации, 2004, № 27, ст. 2777; 2006, № 52, ст. 5587; 2008, № 5, ст. 407; № 15, ст. 1557), и настоящим Положением.

## II. Основные задачи и функции Комиссии

2.1. Основными задачами Комиссии являются:

обеспечение защиты государственных интересов при осуществлении внешнеэкономической деятельности в отношении товаров, информации, работ, услуг, результатов интеллектуальной деятельности (прав на них), которые могут быть использованы при создании оружия массового поражения, средств его доставки, иных видов вооружения, военной техники, либо при подготовке и (или) совершении террористических актов;

повышение эффективности внешнеэкономической деятельности организаций за счет обобщения отраслевого опыта международного сотрудничества организаций ракетно-космической промышленности;

осуществление контроля за внешнеэкономическими сделками в соответствии с решениями Комиссии о характере внешнеэкономических сделок;

разработка рекомендаций по разрешению отраслевых проблемных вопросов в области экспортного контроля.

2.2. Комиссия в соответствии с возложенными на нее задачами выполняет следующие функции:

информирует экспортеров о целях, процедурах и правилах экспортного контроля, а также о том, что предполагаемые к экспорту товары, информация, работы, услуги и результаты интеллектуальной деятельности (права на них) могут быть использованы в целях создания оружия массового поражения и средств его доставки, иных видов вооружения и военной техники, либо при подготовке и (или) совершении террористических актов;

готовит предложения руководителю Федерального космического агентства по приоритетным направлениям внешнеэкономического сотрудничества и оптимальным вариантам развития внешнеэкономической деятельности организаций;

готовит предложения по приоритетным направлениям отраслевой политики в области экспортного контроля в целях нераспространения оружия массового поражения, средств его доставки, иных видов вооружения и военной техники;

в пределах своей компетенции проводит мониторинг внешнеэкономической деятельности организаций на предмет выполнения ими требований законодательства Российской Федерации и международных обязательств Российской Федерации по экспортному контролю с целью своевременного выполнения работ по международным космическим программам и проектам Российской Федерации, в том числе и коммерческим, а также в целях обеспечения порядка осуществления внешнеэкономической деятельности в отношении товаров, информации, работ, услуг, результатов интеллектуальной деятельности (прав на них), которые могут быть использованы при создании оружия массового поражения, средств его доставки, иных видов вооружения и военной техники, либо при подготовке и (или) совершении террористических актов, предотвращении правонарушений в указанной области;

содействует созданию в организациях внутрифирменных систем экспортного контроля и оказывает им необходимую информационно-методическую помощь;

в пределах своей компетенции осуществляет рассмотрение внешнеэкономических сделок организаций;

проводит анализ документов и информации, имеющих отношение к внешнеэкономической сделке, в целях определения ее соответствия международным обязательствам Российской Федерации, государственным интересам;

в пределах своей компетенции осуществляет проверку наличия (отсутствия) в экспортных материалах сведений, составляющих государственную тайну;

готовит и направляет принятое по результатам проведенного анализа документов и информации, имеющих отношение к внешнеэкономической сделке, заключение Комиссии о характере внешнеэкономической сделки в Федеральную службу по техническому и экспортному контролю для целей государственной экспертизы внешнеэкономических сделок;

организует обучение уполномоченных по экспортному контролю и сертификации технических экспертов организаций по вопросам экспортного контроля.

## III. Права и обязанности Комиссии

3.1. Для решения возложенных задач и выполнения своих функций Комиссия имеет право:

запрашивать и получать от управлений Федерального космического агентства, а также от организаций информацию и документы, необходимые для целей экспортного контроля;

в пределах своей компетенции принимать участие в проверках деятельности внутрифирменных систем экспортного контроля организаций путем запросов отчетных и справочных материалов.

3.2. Члены Комиссии несут ответственность в соответствии с действующим законодательством Российской Федерации за разглашение информации о внешнеэкономической и иной деятельности организации, содержащейся в документах, представленных в Комиссию.

## IV. Руководство и организация деятельности Комиссии

4.1. Комиссия формируется в составе председателя Комиссии, его заместителя, ответственного секретаря Комиссии и ее членов.

4.2. Состав Комиссии утверждается приказом Федерального космического агентства.

4.3. Председатель Комиссии (в его отсутствие – заместитель пред-седателя) имеет право в период между заседаниями Комиссии в исключительных случаях самостоятельно принимать оперативные решения по вопросам, относящимся к компетенции Комиссии.

4.4. Заседания Комиссии проводятся по мере накопления вопросов, требующих рассмотрения, но не реже одного раза в квартал.

4.5. Заседания Комиссии ведет председатель Комиссии, а в его отсутствие – его заместитель либо один из членов Комиссии по поручению председателя Комиссии.

В случае отсутствия члена Комиссии на заседании он вправе изложить свое мнение по рассматриваемым вопросам в письменной форме.

4.6. Для участия в обсуждении отдельных вопросов повестки дня на заседания Комиссии могут приглашаться представители организаций, ученые и специалисты.

4.7. Информация о месте и времени проведения заседания, повестке дня и материалы по вопросам, рассматриваемым на заседаниях Комиссии, рассылаются всем участникам заседания заблаговременно ответственным секретарем Комиссии (за исключением внеочередных заседаний).

4.8. Заседания Комиссии считаются правомочными, если на них присутствует более половины ее членов.

4.9. Решения Комиссии принимаются открытым голосованием простым большинством голосов присутствующих на заседании членов Комиссии (с учетом мнения отсутствующих). При равенстве голосов принятым считается решение, за которое проголосовал председательствующий на заседании. В случае несогласия с принятым решением член Комиссии вправе письменно изложить свое мнение, которое подлежит обязательному приобщению к протоколу заседания.

4.10. По результатам рассмотрения вопросов на заседаниях Комиссии принимаются решения, которые оформляются протоколами.

Протоколы заседаний подписываются председателем Комиссии, а в его отсутствие – заместителем председателя Комиссии или членом Комиссии, которому поручалось ведение соответствующего заседания, и утверждаются руководителем Федерального космического агентства или его заместителем.

В случае если решения Комиссии содержат служебную информацию ограниченного распространения, на протоколах Комиссии проставляется пометка «Для служебного пользования».

В случае если решения Комиссии содержат сведения, подлежащие засекречиванию в Федеральном космическом агентстве, протоколам Комиссии присваивается соответствующий гриф секретности.

4.11. Председатель Комиссии несет персональную ответственность за выполнение возложенных на Комиссию задач и функций.

С О С Т А В

Комиссии по экспортному контролю Федерального космического агентства

Ремишевский

Виктор Петрович - заместитель руководителя

(председатель Комиссии)

Савельев

Сергей Валентинович - заместитель руководителя

(заместитель председателя Комиссии)

Алтухов

Валерий Алексеевич - заместитель начальника Управления международного сотрудничества

Владимиров

Сергей Олегович - начальник Управления космических систем навигации, связи и наземных комплексов управления

Десятов

Александр Алексеевич- заместитель начальника Управления делами, руководитель Юридической службы

Коростелев

Алексей Михайлович - начальник Управления международного сотрудничества

Коротеев

Анатолий Сазонович - директор ФГУП "Центр Келдыша" (по согласованию)

Краснов

Алексей Борисович - начальник Управления пилотируемых программ

Макаров

Юрий Николаевич - начальник Сводного управления организации космической деятельности

Матанов

Александр Борисович - заместитель начальника отдела Управления международного сотрудничества

Мирончиков

Валерий Николаевич - заместитель начальника Управления кадров и безопасности

Панкратов

Андрей Анатольевич - начальник Управления обеспечения реализации программ и бухгалтерского учета

Райкунов

Геннадий Геннадиевич - генеральный директор ФГУП ЦНИИмаш (по согласованию)

Селин

Виктор Александрович - начальник Управления автоматических космических комплексов и систем управления

Шевченко

Сергей Николаевич - начальник Управления по боевой ракетной технике

Широков

Алексей Георгиевич - начальник отдела Управления международного сотрудничества

Чулков

Александр Николаевич - начальник Управления средств выведения, наземной космической инфраструктуры и кооперационных связей

Кочанов

Олег Игоревич - главный специалист-эксперт Управления международного сотрудничества (ответственный секретарь Комиссии)

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РОССИЙСКАЯ ФЕДЕРАЦИЯ

# ФЕДЕРАЛЬНЫЙ ЗАКОН

**О ратификации Протокола между Правительством Российской Федерации и Правительством Республики Казахстан о внесении изменения в Договор аренды комплекса «Байконур» между Правительством Российской Федерации и Правительством Республики Казахстан от 10 декабря 1994 г.**

Принят Государственной Думой 10 апреля 2009 года

Одобрен Советом Федерации 22 апреля 2009 года

Ратифицировать Протокол между Правительством Российской Федерации и Правительством Республики Казахстан о внесении изменения в Договор аренды комплекса «Байконур» между Правительством Российской Федерации и Правительством Республики Казахстан от 10 декабря 1994 г., подписанный в городе Алма-Ате 20 февраля 2008 года.

Президент
Российской Федерации Д.Медведев

Москва, Кремль
28 апреля 2009 года
№ 64-ФЗ

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Утверждена
постановлением
Кабинета Министров
Республики Татарстан
от 15.10.2008 № 751

# Программа «Использование результатов космической деятельности в целях социально-экономического развития Республики Татарстан (2008-2010 годы)» (подпрограмма республиканской целевой программы «Развитие и использование информационных и коммуникационных технологий в Республике Татарстан («Электронный Татарстан» 2008 – 2010 годы)»

**Паспорт**

**программы «Использование результатов космической деятельности в целях социально-экономического развития Республики Татарстан (2008 – 2010 годы)»**

| | |
|---|---|
| Наименование программы | Программа «Использование результатов космической деятельности в целях социально-экономического развития Республики Татарстан (2008-2010 годы)» (далее – Программа) |
| Основания для разработки Программы | Перечень поручений Президента Российской Федерации от 13 апреля 2007г. № Пр-619ГС.<br>Поручение Правительства Российской Федерации от 24 апреля 2007г. № СИ-П7-1951.<br>Стратегия развития информационного общества в России, утвержденная 7 февраля 2008г. Президентом Российской Федерации.<br>Указ Президента Российской Федерации от 17 мая 2007г. № 8470-638 «Об использовании глобальной навигационной спутниковой системы ГЛОНАСС в интересах социально-экономического развития Российской Федерации».<br>Закон Республики Татарстан от 27 декабря 2005 г. № 133-ЗРТ «Об утверждении Программы социально-экономического развития Республики Татарстан на 2005 - 2010 годы».<br>Постановление Правительства Российской Федерации от 25 августа 2008 г. № 641 «Об оснащении транспортных, технических средств и систем аппаратурой спутниковой навигации ГЛОНАСС или ГЛОНАСС/GPS».<br>Протокол заседания Коллегии Федерального космического агентства от 11 декабря 2007 г. № 24 по вопросу разработки республиканской целевой программы «Использование результатов космической деятельности в целях социально-экономического развития Республики Татарстан (2008 - 2010 годы)». |
| Государствен-ный заказчик | Государственное учреждение «Центр информационных технологий Республики Татарстан». |
| Основные разработчики Программы | Общество с ограниченной ответственностью «РУМАР».<br>Открытое акционерное общество «Научно-производст-венная корпорация «РЕКОД».<br>Казанский государственный университет им.В.И.Ульянова - Ленина.<br>Федеральное государственное унитарное предприятие |

| | |
|---|---|
| | «Научно-исследовательский институт космического приборостроения».<br>Государственное учреждение «Центр перспективных экономических исследований Республики Татарстан».<br>Закрытое акционерное общество «Совзонд».<br>Федеральное государственное унитарное предприятие «Производственное картографическое объединение «Картография». |
| Цели и задачи Программы | Основными целями Программы являются:<br>повышение качества жизни населения Республики Татарстан за счет широкомасштабного использования результатов космической деятельности в социально-экономической сфере, в сфере обеспечения безопасности жизнедеятельности, в деятельности органов государственной власти Республики Татарстан;<br>рост экономики, ускорение инновационного развития, создание новых рабочих мест, повышение производительности труда, увеличение инвестиционной привлекательности и конкурентоспособности Республики Татарстан за счет использования современных космических технологий и услуг;<br>повышение эффективности системы государственного и муниципального управления в Республике Татарстан.<br>Основными задачами Программы являются:<br>создание нормативно-правовых и организационно-технических условий, обеспечивающих эффективное использование результатов космической деятельности в Республике Татарстан;<br>создание и развертывание базовой навигационно-информационной инфраструктуры Республики Татарстан с использованием результатов космической деятельности;<br>создание и развертывание с использованием результатов космической деятельности информационных систем мониторинга и управления важнейшими видами деятельности Республики Татарстан;<br>создание и развертывание обеспечивающей инфраструктуры использования результатов космической деятельности. |
| Сроки и этапы реализации Программы | 2008-2010 годы |

<table>
<tr>
<td>Объемы и источники финансирования Программы</td>
<td>
Финансирование Программы осуществляется из средств бюджета Республики Татарстан с софинансированием отдельных мероприятий из федерального и местных бюджетов и внебюджетных (привлекаемых) средств.
<table>
<tr><th>Источник финансирования</th><th>2008 г., тыс.рублей</th><th>2009 г., тыс.рублей</th><th>2010 г. тыс.рублей</th><th>Стоимость работ всего, тыс.рублей</th></tr>
<tr><td>бюджет Республики Татарстан</td><td>129160</td><td>240500</td><td>194500</td><td>564160</td></tr>
<tr><td>бюджет Российской Федерации <*></td><td>3000</td><td>20000</td><td>3000</td><td>26000</td></tr>
<tr><td>внебюджетные средства <**></td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>Итого по Программе</td><td>132160</td><td>260500</td><td>197500</td><td>590160</td></tr>
</table>
<*> Финансирование Программы осуществляется при наличии источников и в пределах средств, выделяемых на эти цели из федерального бюджета.<br>
<**> Финансирование Программы осуществляется при наличии источников и в пределах средств, выделяемых на эти цели из внебюджетных источников.
</td>
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<tr>
<td>Ожидаемые конечные результаты реализации Программы (индикаторы оценки резуль-татов) и показатели бюджетной эффективности Программы</td>
<td>
Основными целевыми показателями реализации Программы на 2010 г. являются:<br>
покрытие территории Республики Татарстан сигналами высокоточной спутниковой навигации, 100%<br>
доля органов государственной власти и органов местного самоуправления, использующих данные дистанционного зондирования Земли для принятия управленческих решений, 100%<br>
доля органов государственной власти и органов местного самоуправления, использующих Геоинформационную систему для принятия управленческих решений, 100%<br>
доля органов государственной власти и органов местного самоуправления, использующих актуальный базовый картографический комплект для принятия управленческих решений, 100%<br>
Полный перечень целевых индикаторов и показателей реализации Программы на 2010 г. в разрезе целей, задач и мероприятий приведен в приложении к Программе.
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## Введение

Наша страна создала уникальный космический потенциал. Однако в течение длительного времени недостаточно внимания уделялось практическому использованию результатов космической деятельности.

Современный этап развития государства характеризуется высокими темпами экономического роста Российской Федерации и ее ведущих регионов, в том числе Республики Татарстан, достигнутыми преимущественно благодаря топливно-энергетическому и сырьевому секторам.

Национальные интересы России настоятельно требуют перехода на инновационный путь развития, основанный на умении практически использовать современные технологии и научные знания.

Объективная востребованность Программы обусловлена:

жизненной необходимостью ускорения перехода России к инновационной модели развития;

необходимостью качественной модернизации экономики России и ее регионов в информационной сфере;

готовностью широкого спектра космических технологий, продуктов и услуг к практическому внедрению в реальные социально-экономические процессы.

Программа направлена на достижение приоритетных целей социально-экономического развития Республики Татарстан на основе:

эффективного использования результатов космической деятельности;

системной связи Программы и ее сопряжения с республиканской целевой программой «Развитие и использование информационных и коммуникационных технологий в Республике Татарстан «Электронный Татарстан» (2008 - 2010 годы)», Федеральной космической программой на 2006 – 2015 годы, федеральной целевой программой «Глобальная навигационная система», другими федеральными целевыми программами, а также с проектом федеральной целевой программы «Использование результатов космической деятельности в интересах социально-экономического развития Российской Федерации и ее регионов на 2010 - 2015 годы».

Правовую основу Программы составляют Конституция Российской Федерации, Конституция Республики Татарстан, Стратегия развития информационного общества в России, федеральные законы, законы Республики Татарстан и другие нормативные правовые акты, регламентирующие вопросы социально-экономического развития, развития и использования информационно-коммуникационных технологий.

Активный информационный рынок и эффективное его использование в хозяйственной деятельности обеспечивают создание информационной инфраструктуры государства, в которой значительное место отведено космическим системам и созданным на их основе услугам и продукции.

Космическая деятельность является определяющей во многих важных сферах хозяйственной деятельности, в том числе:

80 – 90% – в области навигационного и координатно-временного обеспечения;

90% – в системе единого времени;

70 – 80% – в развертывании и поддержании государственных геодезических сетей;

60 – 70% – в картографическом обеспечении страны;

50 – 60% – в создании геопространственных и географических информационных систем;

50% – в ведении кадастров земель и учета недвижимости;

40 – 50% – в обеспечении дистанционного мониторинга территорий и объектов, природных процессов и явлений, результатов хозяйствования человека.

Программа включает комплекс взаимосвязанных по целям, задачам, ресурсам и срокам выполнения научно-исследовательских, опытно-конструкторских, организационных и других работ, обеспечивающих эффективную интеграцию результатов космической деятельности с решением актуальных задач социально-экономического развития Республики Татарстан.

В Программе реализован подход, при котором работы по использованию результатов космической деятельности в социальной и экономической сферах направлены на их ускоренное внедрение в деятельность государственных органов власти различных уровней, расширение видов оказываемых услуг и, в конечном итоге, на повышение конкурентоспособности Республики Татарстан.

Предлагаемая Программа не имеет аналогов в российской и мировой практике.

## I. Характеристика проблемы, на решение которой направлена Программа

Расширение масштабов практического использования результатов космической деятельности обусловлено необходимостью использования ресурсов и резервов, способных придать дополнительный импульс современному динамичному развитию экономики Республики Татарстан.

За последние три года темпы роста экономического развития Республики Татарстан приближаются к предельным значениям. В силу этого одним из резервов, позволяющих обеспечить их требуемый уровень, является повышение эффективности экономической деятельности органов государственной власти и муниципального управления путем широкомасштабного использования результатов космической деятельности в области связи, строительства и изыскательских работ, управления, телерадиовещания, навигации, картографии, геодезии и других видов обеспечения.

Республика Татарстан реализует целый ряд информационно-технологических целевых программ и проектов, направленных на достижение социально-экономической самодостаточности республики, обеспечивающей качество жизни населения на уровне не ниже нормативного.

Достижение этой цели должно сопровождаться повышением эффективности функционирования системы органов государственной власти и органов муниципального управления Республики Татарстан. Важнейшей составной частью этой задачи является обеспечение поддержки принятия решений в сфере государственного и муниципального управления.

В Республике Татарстан имеется достаточный задел для реализации Программы.

Так, с целью повышения эффективности государственного управления с 2005 года ведется реализация комплексного проекта «Электронное Правительство Республики Татарстан». На его реализацию из бюджета Республики Татарстан в 2005 году выделено 157 млн.рублей, в 2006 году – 130 млн.рублей, в 2007 году – 217 млн.рублей. В рамках реализации этого комплексного проекта созданы:

- государственная интегрированная система телекоммуникаций, которая позволила включить в единую сеть все органы государственной власти Республики Татарстан, территориальные органы федеральных органов государственной власти по Республике Татарстан, органы местного самоуправления;
- Республиканский центр обработки данных, состоящий из 25 серверов для хранения, обработки информации;
- межведомственная система электронного документооборота;
- интегрированная система организационного управления;
- информационно-аналитическая система поддержки принятия управленческих решений органов государственной власти Республики Татарстан;
- Портал Правительства Республики Татарстан, порталы государственных услуг, портал органов местного самоуправления;
- система видеоконференцсвязи;
- другие системы.

Постановлением Кабинета Министров Республики Татарстан от 17 июля 2008г. № 513 утверждена республиканская целевая программа «Развитие и использование информационных и коммуникационных технологий в Республике Татарстан («Электронный Татарстан» 2008-2010 годы)». На ее реализацию, на развитие и использование информационных и коммуникационных технологий из бюджета Республики Татарстан выделены 975 млн.рублей, в том числе в 2008 году – 300 млн.рублей.

В рамках республиканской целевой программы «Развитие и использование информационных и коммуникационных технологий в Республике Татарстан («Электронный Татарстан» 2008-2010 годы)» предусмотрен ряд мероприятий, направленных на развитие и использование геоинформационных технологий и создание на их основе систем мониторинга и управления отдельных видов социально-экономической деятельности Республики Татарстан. Настоящая Программа расширяет и предусматривает использование космических технологий и результатов космической деятельности в интересах социально-экономического развития республики.

Министерством экологии и природных ресурсов Республики Татарстан с 1998 года осуществляется централизованный мониторинг природопользования и охраны окружающей среды с использованием специального программного обеспечения, инфокоммуникационных и космических технологий, в том числе дистанционное зондирование Земли. Создана информационно-аналитическая система, которая на основе базы данных формирует аналитические отчеты для Правительства Республики Татарстан и руководства Министерства экологии и природных ресурсов Республики Татарстан с целью поддержки принятия управленческих решений. Финансирование создания системы мониторинга природопользования и охраны окружающей среды осуществляется за счет средств, предусмотренных на реализацию республиканских целевых программ геологического изучения недр и воспроизводства минерально-сырьевой базы Республики Татарстан и природоохранных мероприятий Республики Татарстан. С 1998 года выделено более 160 млн.рублей на создание и развитие системы мониторинга природопользования и охраны окружающей среды.

При Министерстве транспорта и дорожного хозяйства Республики Татарстан создан диспетчерский центр мониторинга пассажирских автоперевозок и школьных автобусов с помощью спутниковой навигационной системы. Для этих целей из бюджета Республики Татарстан выделено в 2006 году 3 млн.рублей, в 2007 году – 7 млн.рублей. На сегодняшний день осуществляется мониторинг 500 междугородних автобусов и 100 школьных автобусов. Оказываются услуги более 50 транспортным предприятиям с парком около 500 автомобилей.

В области управления недвижимостью в Республике Татарстан в период 2006 - 2007 гг. создана автоматизированная система кадастрового учета объектов недвижимости. В рамках создания этой системы проведена аэрофотосъемка территории Республики Татарстан. На основе аэрофотосъемки созданы ортофотопланы всех муниципальных районов Республики Татарстан. Автоматизированная система кадастрового учета объектов недвижимости позволяет вести кадастровый учет земельных участков, а в качестве картографической подложки используется ортофотопланы. В рамках республиканской целевой программы «Создание автоматизированной системы ведения кадастрового земельного кадастра и государственного учета объектов недвижимости» из бюджета Республики Татарстан выделено в 2006 - 2007 гг.
195 млн.рублей, в том числе в 2007 году – 55 млн.рублей.

Кроме того, с целью изготовления топографических карт из федерального бюджета в 2007 году Управлению Федерального агентства кадастра объектов недвижимости по Республике Татарстан было выделено более 130 млн.рублей. Это позволило в 2007 и 2008 годах осуществить аэрофотосъемку всей территории Республики Татарстан. На основе полученных аэрофотоснимков в 2008-2010 годах планируется произвести их дешифрирование, создание ортофотопланов и изготовление карт на территорию населенных пунктов Республики Татарстан масштаба 1:2 000, на межселенную территорию Республики Татарстан масштаба 1:10 000. На эти цели из бюджета Республики Татарстан планируется выделить в 2009 году 196 млн.рублей, в 2010 году – 75 млн.рублей.

В период 2005-2007 годов создана геоинформационная система Нижнекамского муниципального образования. Из бюджета Республики Татарстан выделено 7 млн.рублей, а из бюджета Нижнекамского муниципального образования – 23 млн.рублей. Геоинформационная система Нижнекамского муниципального образования позволяет:

вести адресный реестр;

обеспечить районирование жилого фонда по году застройки;

вести учет и мониторинг землепользователей и собственников земельных участков;

вести учет закрепленных территорий саночистки за предприятиями;

совмещать кадастровые данные с космическими снимками;

выделять кадастровые участки по виду права и обременениям;

выделять санитарно-защитные зоны промышленных предприятий.

В муниципальном образовании г.Казани в 2007 году создана городская геоинформационная система (ГИС). Из городского бюджета выделено около 15 млн.рублей. В рамках ГИС г.Казани созданы единые справочники по строениям, организациям, населению. Осуществляется обновление карты г.Казани масштаба 1:2000 на основе космоснимков.

Постановлением Совета муниципального образования г.Казани утверждена программа «Электронная Казань» (2008-2010 годы)». В рамках этой программы из городского бюджета на развитие и использование информационных и коммуникационных технологий выделено 800 млн.рублей, в том числе в 2008 году – 250 млн.рублей.

Для повышения эффективности работы указанных систем необходимо обеспечить их непрерывную поддержку объективными и независимыми данными о состоянии и динамике развития различных процессов и явлений, влияющих на социально-экономическое развитие Республики Татарстан.

В этих условиях эффективное использование результатов космической деятельности и их интеграция с реальными процессами обеспечения жизнедеятельности органов государственной власти и населения приобретает значение стратегического фактора для дальнейшего ускорения социально-экономического развития республики.

В развитых странах мира результаты космических исследований широко используются в области навигации, дистанционного зондирования Земли, связи, картографического, гидрометеорологического и других видов обеспечения потребителей, приобрели массовый характер, стали нормой повседневной жизни органов государственного управления, коммерческих организаций и населения.

В таблице представлены основные области применения результатов космической деятельности в Республике Татарстан и направления, в которых ожидается повышение эффективности при реализации Программы.

| **Вид космической деятельности и его возможности** | **Сферы прикладного применения вида деятельности** | **Использование вида деятельности в Республике Татарстан в настоящее время** | **Параметры, которые улучшаются при реализации Программы** |
|---|---|---|---|
| Дистанционное зондирование поверхности Земли: получение космических снимков с различным разрешением от 50 см до 250 м и более | Геоинформационное картографирование Республики Татарстан | Создание и обновление топографических карт масштаба 1:500000–1:100000 | Позволяет сократить сроки обновления топографических карт на 50 % |
| | Городской и сельский кадастр | Создание и обновление кадастровых планов масштаба 1:2000 для населенных пунктов и масштаба 1:10000 для межселенной территории полевыми методами и с использованием аэросъемки | Создание и обновление кадастровых планов масштаба 1:10000 уменьшает сроки проведения работ в 3 раза и удешевляет кадастровые работы не менее чем в 1,5 раза |
| | Мониторинг состояния различных объектов, находящихся на поверхности Земли, и протекающих на ней процессов | Использование спектрозональных снимков в единичных сельских хозяйствах республики | Использование спектрозональных снимков в сельских хозяйствах республики для повышения эффективности земледелия |
| | Метеорология и мониторинг состояния атмосферы | Наблюдение за состоянием и изменением погодных процессов и выдача информации отдельным потребителям | Поставка информации о состоянии и изменении погодных процессов всем потребителям республики |

| | | | |
|---|---|---|---|
| | Использование космоснимков в Геоинформационной системе органов государственной власти Республики Татарстан и размещение их в Геопортале Правительства Республики Татарстан | Использование результатов зондирования отдельными министерствами, ведомствами и органами местного самоуправления | Повышение эффективности государственного управления и информационной открытости органов государственной власти и органов местного самоуправления |
| Высокоточная спутниковая навигация на основе систем ГЛОНАСС/GPS (с точностью до миллиметра) | Мониторинг состояния крупных, особо ценных и опасных инженерных сооружений | Начальный этап внедрения | Создание систем предупреждения техногенных угроз в реальном вре-мени, прогнозиро-вание неблагопри-ятных природных и техногенных явлений |
| | Высокоточное земледелие | Начальный этап внедрения | Снижение расходов удобрений, средств защиты, повышение их эффективности, урожайности на 10-20% |
| | Высокоточное определение координат при геодезических и прочих работах | Высокоточное определение координат отдельными предприятиями | Повышение производительности геодезических определений не менее чем в 2 раза |
| Мониторинг мобильных объектов | Мониторинг местоположения и состояния транспортных средств | Существующий центр Министерства транспорта и дорожного хозяйства Республики Татарстан осуществляет наблюдение за 500 междугородными и 100 школьными автобусами | Создание диспетчерского центра Правительства Республики Татарстан по спутниковому мониторингу автотранспортных средств |

Россия стоит на пороге взрывного роста рынка применения результатов космических исследований. Рынок уже разбужен и находится в динамичной стадии структурирования. В активную фазу вступает конкуренция между российскими и зарубежными фирмами.

В то же время как на внутреннем, так и на мировом рынке основной объем продаж результатов российской космической деятельности сегодня формируется преимущественно в сфере создания космической техники, а не оказания информационных услуг потребителям, который становится все масштабнее и динамичнее.

Мировой рынок навигационных систем за 2007 год вырос на 53%, рынок портативных навигационных устройств почти удвоился.

К 2011 году объем мирового рынка только спутниковой навигации может составить 40 млрд.долларов США (к 2015 году - 60 млрд.долларов США, а по некоторым прогнозам – до 300 млрд.долларов США).

Сегодня неудовлетворенный спрос только государственных структур страны в оснащении транспорта навигационными спутниковыми терминалами составляет более 700 тыс. штук.

По заявлению директора Департамента оборонно-промышленного комплекса Министерства промышленности и энергетики Российской Федерации Юрия Коптева, объем российского рынка спутниковой навигации в 2007г. составил около 30 млн. долларов США, в 2008г. прогнозируется удвоение его объема. По оценкам Министерства промышленности и энергетики Российской Федерации, объем российского рынка спутниковой навигационной аппаратуры составит 50-70 млн.долларов США в год. И в дальнейшем ожидается массовый спрос на разнообразные космические услуги (к 2010 году потенциальный спрос различных групп потребителей только на приемники систем ГЛОНАСС/GPS в России составит около 20 млн.штук). По данным тайваньского исследовательского центра Industrial Economics & Knowledge Center, к 2005 году ежегодный объем продаж GPS–приемников во всем мире составил 101,3 млн.штук. В 2006 году мировой рынок портативных GPS–приемников вырос на 41%, а его объем составил 1,68 млрд.долларов США. Глобальный рынок навигаторов всех типов ежегодно оценивается на сумму от 15 до 30 млрд.долларов США в год, при этом темпы его роста колеблются в последние годы в пределах 25 – 30%. Планируемый мировой доход от использования систем GPS и Galileo в совокупности составит в 2010 году 60 млрд.евро, а к 2013 году объемы рынка утроятся. По другим данным (прогноз федерального государственного унитарного предприятия «Научно-исследовательский институт космического приборостроения»), к 2009 – 2011 годам общий объем рынка навигации (включая и ГЛОНАСС) составит около 200 млрд.евро.

В России темпы роста продаж навигационных приборов еще выше. Можно сказать, что отечественный рынок спутниковой навигации находится на пороге бума. По оценкам корпорации Mobile Research Group, по итогам 2005 года выручка продавцов навигаторов составила 8 млн. долларов США, а по итогам 2006 года – уже 50 млн.долларов США. Российские эксперты оценивают утроение рынка продаж ежегодно. Потенциальный рынок приемников в России до конца десятилетия, по данным корпорации Mobile Research Group, составит около 10 млн.штук (в денежном выражении это не менее 2,7 млрд.долларов США), по другим оценкам – до 20 млн.штук. При этом, как считают специалисты Российского института радионавигации и точного времени (РИРВ), только госструктуры России нуждаются примерно в 7 млн.штук ГЛОНАСС–навигаторов.

Исключительно перспективными являются также услуги на рынке дистанционного зондирования Земли, связи и ретрансляции, создания цифровых карт местности, геоинформационных систем.

В настоящее время наземная сеть наблюдения охватывает только 30% территории Земли, поэтому космическим системам нет альтернативы в обеспечении глобального мониторинга земной поверхности.

Появившиеся в 2005 году геопорталы (или геоинтерфейсы) в течение 2 лет обогнали по популярности все классические геоинформационные системы (число загрузок клиентских приложений системы Google Earth превысило 200 миллионов). В развитых странах мира почти половина населения регулярно пользуется этими услугами.

Сумма предотвращенного с использованием космических систем гидрометеорологического обеспечения ущерба от чрезвычайных ситуаций природного характера в 10 – 15 и более раз превышает затраты на создание и эксплуатацию этих систем.

Эти примеры показывают, что рынок космических услуг и впредь будет развиваться высокими темпами, спектр оказываемых услуг – расширяться, все глубже проникая в область массового использования и интегрируясь с различными процессами повседневной жизни населения.

Из анализа организации использования результатов космической деятельности в Российской Федерации и ее регионах очевидно, что сегодня регионы страны как никогда нуждаются в построении экономики, основанной на знаниях и новых технологиях**.** При этом необходимо обеспечить рациональное сочетание традиционно сложившейся ориентации на приоритетное использование топливно-энергетических ресурсов с ускоренным развитием и эффективным использованием высоких технологий и научных знаний.

Интеграция космической и других видов информации с электронными картами, структурирование этой информации в рамках геопространственных и географических информационных систем и их интеграция с системами государственного и муниципального управления должны стать одним из инструментов повышения эффективности различных видов деятельности и функционирования органов управления любого уровня.

Однако в настоящее время в России, в том числе и в Республике Татарстан, отсутствуют или получили недостаточное развитие многие компоненты, необходимые для эффективного использования результатов космической деятельности. В их числе, прежде всего, элементы базовой инфраструктуры (центры приема космической информации, геоинформационные системы, высокоточное навигационное поле и т.д.), обеспечивающие инфраструктуры (система подготовки специалистов, система операторских услуг и т.д.), а также целевые системы в важнейших областях социально-экономической деятельности республики.

Существует острое противоречие между возможностями космического потенциала, накопленного в России и в мире, и недостаточными масштабами его использования для социально-экономического развития Российской Федерации и ее регионов.

Законодательно не определены механизмы использования результатов космической деятельности (оказания услуг), требования к этим услугам, ответственность за их качество.

Отсутствуют основные составляющие рыночных отношений в сфере использования результатов космической деятельности, в том числе:

не сформированы предложения по оказанию услуг различным группам потребителей;

спрос на услуги имеет хаотический и фрагментарный характер, в том числе вследствие отсутствия механизмов государственного стимулирования этого спроса, неразвитых систем маркетинга и информирования потенциальных потребителей;

не развита инфраструктура оказания услуг.

Значительной части государственных служащих в органах государственной власти, местного самоуправления и в организациях Республики Татарстан не предоставлен достаточный ассортимент услуг в сфере использования результатов космической деятельности для решения практических задач организации мониторинга и управления в различных социально-экономических сферах.

Не проведена инвентаризация и не создана автоматизированная база данных по результатам космической деятельности, включая перечень видов услуг, оказываемых с использованием результатов космической деятельности, а также перечень видов услуг, подлежащих лицензированию, а при необходимости – и обязательной сертификации.

Не организованы непрерывный мониторинг требований потенциальных потребителей к результатам космической деятельности и организации их использования, подготовка и реализация рекомендаций по их удовлетворению.

Отсутствуют методики оценки эффективности внедрения результатов космической деятельности, что не позволяет заинтересовать потенциальных потребителей услуг и инвесторов в реальной экономии финансов и ресурсов, повысить активность рынка услуг на базе космических исследований, включить в эту сферу механизмы страхования, государственно-частного партнерства, льготного кредитования и другие.

Это касается практически всех направлений использования результатов космической деятельности – создания картографической основы, ведения градостроительного и земельного кадастров, учета объектов недвижимости, мониторинга природных ресурсов, сельского, водного и лесного хозяйства, экологии, транспорта и других важнейших видов деятельности.

Практически отсутствует инфраструктура, непосредственно обеспечивающая оказание потребителям услуг на основе космических исследований – институт операторов и система маркетинга.

Вопрос об определении операторов услуг является ключевым в организации использования результатов космической деятельности как для государственных нужд, так и в коммерческих целях. Особую остроту этот вопрос приобретает в условиях нарастающей экспансии зарубежных фирм – производителей и операторов на отечественный рынок.

Отсутствует также целостная инновационно-внедренческая и образовательная инфраструктура в сфере использования результатов космической деятельности.

Органы исполнительной власти Республики Татарстан пытаются все более активно формировать инфраструктуру использования результатов космической деятельности, однако эти работы недостаточно связаны между собой и не всегда ориентированы на отечественных производителей и операторов услуг.

Таким образом, в организации эффективного использования результатов космической деятельности для предоставления государственных услуг и поддержки выполнения административных функций в Российской Федерации, в том числе и в Республике Татарстан, существует целый ряд проблем, требующих решения в рамках Программы.

Вышеуказанные проблемы использования результатов космической деятельности имеют системный и взаимосвязанный характер и являются общими для всех регионов России. Их решение возможно только на основе программно-целевого подхода, который будет реализован на примере одного или нескольких субъектов Российской Федерации, наиболее подготовленных для этого. В настоящее время в Республике Татарстан имеются все условия для успешной реализации такого проекта в формате республиканской целевой программы: прежде всего, высокий уровень технологического, информационного, экономического и культурного развития республики. При этом формат республиканской целевой программы позволяет обеспечить интеграцию усилий и ресурсов федерального, республиканского, муниципального уровня и внебюджетных средств.

На основе интеграции результатов выполнения Программы, результатов республиканской целевой программы «Развитие и использование информационных и коммуникационных технологий в Республике Татарстан («Электронный Татарстан» 2008-2010 годы)», а также ряда федеральных целевых программ будет сформирован совокупный информационный ресурс Республики Татарстан:

структурированный по основным видам социально-экономической деятельности;

интегрированный с современными электронными картами;

объединенный в системе информационно-аналитических центров управления;

позиционированный в пространстве и времени в единой системе координат.

В ходе разработки и выполнения Программы будут в комплексе исследованы и решены на практике имеющиеся проблемы в сфере использования результатов космической деятельности (как федерального, так и республиканского уровня).

Созданные базовые (типовые) системы, комплексы и информационные решения будут использованы в интересах внедрения результатов космической деятельности в масштабах всей России и международного сотрудничества.

Программу предлагается реализовать как пилотный инвестиционный проект федерального значения, направленный на отработку типовых организационных, технических и финансово-экономических решений и механизмов, обеспечивающих эффективное использование результатов космической деятельности.

Такой подход поддержан Федеральным космическим агентством, Министерством транспорта Российской Федерации, Федеральным агентством геодезии и картографии, Министерством образования и науки Российской Федерации, Министерством информатизации и связи Российской Федерации.

## II. Основные цели и задачи Программы, сроки, этапы ее реализации, индикаторы оценки результатов в разрезе целей и задач

Цели и задачи Программы сформированы на основе декомпозиции стратегических целей социально-экономического развития Республики Татарстан и выделения целей и задач, непосредственно связанных с использованием результатов космической деятельности для решения приоритетных социальных и экономических проблем.

### Цели Программы

Основными целями Программы являются:

повышение качества жизни населения Республики Татарстан за счет широкомасштабного использования результатов космической деятельности в социально-экономической сфере, в сфере обеспечения безопасности жизнедеятельности населения, а также в деятельности органов государственной власти Республики Татарстан;

рост экономики, ускорение инновационного развития, создание новых рабочих мест, повышение производительности труда, увеличение инвестиционной привлекательности и конкурентоспособности Республики Татарстан за счет использования современных космических технологий и услуг;

повышение эффективности системы государственного и муниципального управления в Республике Татарстан.

### Задачи Программы

Для достижения указанных целей необходимо решить комплекс взаимосвязанных основных задач Программы:

создание нормативно-правовых и организационно-технических условий, обеспечивающих эффективное использование результатов космической деятельности в Республике Татарстан;

создание и развертывание базовой навигационно-информационной инфраструктуры Республики Татарстан с использованием результатов космической деятельности;

создание и развертывание с использованием результатов космической деятельности геоинформационных систем мониторинга и управления важнейшими видами деятельности Республики Татарстан;

создание и развертывание обеспечивающей инфраструктуры использования результатов космической деятельности;

управление реализацией Программы.

Программа будет выполняться путем наращивания усилий и последовательного расширения функциональных возможностей разрабатываемых в ее рамках систем.

В течение первого года реализации Программы (2008г.) будут развернуты работы по развитию системы спутникового мониторинга мобильных объектов на основе космических систем ГЛОНАС/GPS, а также геоинформационной системы органов государственной власти Республики Татарстан с одновременным ведением работ по созданию необходимого базового картографического комплекта.

В 2009г. основные усилия по реализации Программы будут направлены на создание системы высокоточной спутниковой навигации на основе космических систем ГЛОНАСС/GPS, продолжены работы по созданию системы спутникового мониторинга мобильных объектов на основе космических систем ГЛОНАС/GPS, созданию и внедрению геоинформационной системы органов государственной власти Республики Татарстан, созданию и поддержанию в актуальном состоянии базового картографического комплекта, а также работы по формированию базовой республиканской инфраструктуры подготовки и повышения квалификации специалистов в области использования результатов космической деятельности.

В 2010г. будут завершены работы по развертыванию базовой информационно-навигационной, геоинформационной и обеспечивающей инфраструктуры, организовано оказание услуг с использованием результатов космической деятельности.

Начиная уже с 2009 года будут развернуты работы по формированию навигационно-информационных и геоинформационных систем межрегионального уровня, в первую очередь в рамках Приволжского федерального округа.

Важнейшим мероприятием образовательной составляющей Программы является создание в Казанском государственном университете им.В.И.Ульянова-Ленина базового республиканского образовательно-инновационного космического центра – Института космических инновационных технологий. Создание Института позволит обеспечить концентрацию интеллектуальных, кадровых и материальных ресурсов, а также координировать образовательную, исследовательскую и инновационную деятельность в сфере эффективного использования космических данных в Республике Татарстан.

Главной целью образовательной составляющей Программы должно стать формирование отвечающей требованиям международного уровня республиканской образовательной системы подготовки и повышения квалификации специалистов в сфере применения результатов космической деятельности.

Особенностью Программы является то, что она в процессе выполнения ее мероприятий будет реализовываться как подпрограмма республиканской целевой программы «Развитие и использование информационных и коммуникационных технологий в Республике Татарстан («Электронный Татарстан» 2008-2010 годы)». При этом Программа целевым образом ориентирована на разработку и внедрение космических и геоинформационных технологий в практику социально-экономического развития Республики Татарстан. Основу Программы составят уже принятые и обеспеченные финансированием работы из программы «Развитие и использование информационных и коммуникационных технологий в Республике Татарстан («Электронный Татарстан» 2008-2010 годы)» и ряда других действующих республиканских целевых программ, непосредственно связанных с использованием результатов космической деятельности и современных геоинформационных технологий. Объемы финансирования таких работ составляют около 80% объемов финансирования Программы. Объем дополнительно требуемых ассигнований составит около 116500 тыс.рублей на 2008-2010 годы.

Это позволит консолидировать ресурсы республиканских целевых программ в области разработки информационных технологий и коммуникаций.

## III. Перечень основных программных мероприятий, индикаторы оценки результатов реализации основных мероприятий

Реализация Программы предусматривает выполнение мероприятий по решению инфраструктурных и целевых задач по шести основным направлениям.

В каждом направлении выделены основные мероприятия и системы, реализация которых обеспечивает достижение конечных и измеряемых результатов, а в итоге позволит получить единую республиканскую информационно-навигационную систему, интегрированную с механизмами социально-экономического развития Республики Татарстан.

Реализация мероприятий Программы направлена на поэтапное достижение конечных результатов (индикаторов оценки результатов), прогнозируемые значения которых в разрезе целей и задач для каждого этапа указаны в приложении к Программе.

### Основные мероприятия Программы

Создание системы дифференциальной коррекции и мониторинга, формирующей высокоточное навигационное поле Республики Татарстан.

Развитие интегрированной системы позиционирования и мониторинга транспортных средств с использованием системы ГЛОНАСС/GPS.

Создание комплексной системы получения, обработки и предоставления потребителям базовых пространственных данных на основе материалов дистанционного зондирования Земли.

Создание геоинформационной системы органов государственной власти Республики Татарстан.

Создание и поддержание в актуальном состоянии базового картографического комплекта и навигационного дорожного графа Республики Татарстан.

Формирование базовой республиканской инфраструктуры подготовки и повышения квалификации специалистов в области использования результатов космической деятельности.

## IV. Обоснование ресурсного обеспечения Программы

Для финансирования Программы будут использованы средства бюджета Республики Татарстан (консолидированный бюджет Программы, а также средства, выделяемые органами государственной власти республики на информатизацию) и местных бюджетов.

Для софинансирования проектов Программы предполагается привлечь в установленном порядке средства федерального бюджета, предусмотренные в рамках Федеральной космической программы на 2006-2015гг., федеральной целевой программы «Глобальная навигационная система» и других целевых программ, содержащих мероприятия по развитию информационных и космических технологий и внедрению результатов космической деятельности, а также средства внебюджетных источников.

В 2008-2010гг. предусмотрено финансирование Программы из федерального бюджета в размере 22,0 млн.рублей, в том числе:

- в рамках федеральной целевой программы «Научные и научно-педагогические кадры инновационной России на 2009-2013 годы» Министерством образования и науки Российской Федерации Казанскому государственному университету им.В.И.Ульянова-Ленина в 2009 году будет выделено 2 млн.рублей;

- в рамках федеральной целевой программы «Глобальная навигационная система» будет выделено 15 млн.рублей на развитие Научно-образовательного центра «ГЛОНАСС» в Казанском государственном университете им.В.И.Ульянова-Ленина в 2009-2010 годах;

- в рамках федеральной целевой программы «Экология и природные ресурсы России (2002-2010гг.)» по подпрограмме «Воспроизводство минерально-сырьевой базы», в соответствии с приказом Министерства природных ресурсов Российской Федерации от 21 мая 2001 г. № 433 «Об утверждении Положения о порядке ведения государственного мониторинга состояния недр Российской Федерации» и приказом Министерства природных ресурсов Российской Федерации от 1 декабря 2003 г. № 1049 Республике Татарстан будет выделяться из федерального бюджета по 3 млн.рублей ежегодно.

Объемы бюджетного финансирования Программы будут определяться ежегодно в установленном порядке в процессе формирования бюджета Республики Татарстан и местных бюджетов, при этом отдельно должен определяться объем бюджетных средств, выделяемых на эксплуатацию созданных систем и средств.

В 2008-2010гг. предусмотрено финансирование Программы из федерального бюджета в размере 21,0 млн.рублей, в том числе:

- в рамках федеральной целевой программы «Научные и научно-педагогические кадры инновационной России на 2009-2013 годы» Министерством образования и науки Российской Федерации Казанскому государственному университету им.В.И.Ульянова-Ленина в 2009 году будет выделено 2 млн.рублей;

- в рамках федеральной целевой программы «Глобальная навигационная система» Федеральным космическим агентством будет выделено 10 млн.рублей на развитие Научно-образовательного центра «ГЛОНАСС» в Казанском государственном университете им.В.И.Ульянова-Ленина в 2009-2010 годах;

- в рамках федеральной целевой программы «Экология и природные ресурсы России (2002-2010гг.)» по подпрограмме «Воспроизводство минерально-сырьевой базы», в соответствии с приказом Министерства природных ресурсов Российской Федерации от 21 мая 2001 г. № 433 «Об утверждении Положения о порядке ведения государственного мониторинга состояния недр Российской Федерации» и приказом Министерства природных ресурсов Российской Федерации от 1 декабря 2003 г. № 1049 Республике Татарстан будет выделяться из федерального бюджета по 3 млн.рублей ежегодно.

В соответствии с объемом выделяемого бюджетного финансирования и финансирования за счет средств других источников, а также по результатам анализа выполнения Программы может осуществляться корректировка проектов и их ожидаемых результатов.

В начальный период реализации Программы (2008 год – первая половина 2009 года) основным источником финансирования будет бюджет Республики Татарстан. В 2009-2010 годах будет обеспечена интеграция результатов работ по Программе с профильными работами, выполняемыми в рамках Федеральной космической программы на 2006-2015 годы (опытно-конструкторская разработка «Регион-КТ»), федеральных целевых программ «Глобальная навигационная система», «Использование результатов космической деятельности в интересах социально-экономического развития Российской Федерации и ее регионов на 2010-2015 годы». Конкретные объемы финансирования из федерального бюджета и номенклатура работ будут уточнены в первом полугодии 2009 года.

Привлечение федеральных средств будет организовано по следующим основным направлениям:

на основе интеграции ресурсов, выделяемых на однотипные работы по другим федеральным целевым программам (например, создание базового картографического комплекта, базовой (типовой) геоинформационной системы);

реализация пилотных проектов использования результатов космической деятельности федерально-регионального значения – в первую очередь по созданию подобных систем и базовых элементов информационно-навигационной системы.

Выполнение мероприятий Программы требует совершенствования нормативно-правовой базы, активной работы с федеральными органами исполнительной власти, привлечения опытных специалистов и экспертов. Заметные результаты этой работы могут сформироваться уже на втором этапе выполнения Программы.

## V. Механизмы управления реализацией Программы

Управление реализацией Программы будет осуществляться в рамках управления республиканской целевой программы «Электронный Татарстан». При этом в составе рабочей группы по координации внедрения комплексного проекта

«Электронное Правительство Республики Татарстан» при Кабинете Министров Республики Татарстан будет создана подгруппа по реализации Программы.

Деятельность подгруппы по реализации Программы будет направлена на создание нормативно-правовых и организационно-технологических условий, позволяющих обеспечить гарантированное достижение поставленных целей и эффективность выполнения мероприятий Программы.

Задачи подгруппы по реализации Программы в составе рабочей группы по координации внедрения комплексного проекта «Электронное Правительство Республики Татарстан»:

координация работ по Программе и согласование интересов федеральных и республиканских органов исполнительной власти и органов муниципального управления, участвующих в разработке и реализации Программы;

выработка приоритетов, определение основных направлений и координация использования результатов космической деятельности в Республике Татарстан на федеративном, республиканском и муниципальном уровнях;

подготовка предложений по корректировке плана мероприятий Программы;

подготовка рекомендаций по определению необходимых объемов ежегодного бюджетного финансирования Программы;

оценка полученных результатов при выполнении мероприятий, осуществляемых в рамках Программы, и хода ее реализации;

рассмотрение ежегодного сводного доклада государственного заказчика Программы о ходе выполнения Программы.

## VI. Оценка социально-экономической эффективности реализации Программы

Реализация Программы имеет большое социально-экономическое значение для Республики Татарстан, так как формирует стратегические основы для создания условий динамичного развития различных хозяйственных сфер, а в конечном итоге – рост уровня качества жизни, что является одной из приоритетных задач органов исполнительной власти.

Реализация мероприятий Программы позволит обеспечить формирование единого космического потенциала сил и средств, способных в тесной взаимосвязи с другими системами обеспечить непрерывный, не зависящий от условий обстановки контроль и анализ различных штатных и чрезвычайных ситуаций в интересах Республики Татарстан в части мониторинга экологической ситуации, контроля лесо- и землепользования, мониторинга аварийноопасных ситуаций, мониторинга атмосферы земли и др. Вместе с тем реализация Программы позволит осуществлять эффективный контроль землепользования и сельскохозяйственного производства, контроль за естественными и возобновляемыми природными ресурсами, разведку полезных ископаемых, экологический мониторинг, мониторинг чрезвычайных ситуаций, обеспечение картографирования.

Так, например, интеграция элементов и инфраструктуры единой навигационно-информационной системы в хозяйственный механизм Республики Татарстан в результате реализации мероприятий Программы позволит:

- повысить точность навигационно-геодезического обеспечения потребителей, работающих в едином навигационно-информационном пространстве Республики Татарстан;

- повысить производительность труда при топогеодезическом обеспечении работ по учету, сохранению и расходованию земельных, лесных и других природных ресурсов в зонах обслуживания единой навигационно-информационной системы;

- увеличить пропускную способность транспортных магистралей, повысить безопасность и скорость грузоперевозок;

- сократить расходы горюче-смазочных материалов, ресурсов транспортных средств, эксплуатационные и ремонтные расходы.

Кроме того, успешное решение поставленных в Программе задач позволит укрепить престиж науки Республики Татарстан в области геоинформационных систем, осуществить качественный скачок в решении проблемы доведения космической информации до массового потребителя.

С учетом заявленных целей Программы и основных ее направлений представляется возможным оценить эффект реализации мероприятий Программы в 2008 – 2010 годах по основному показателю – рост бюджетной эффективности.

Ожидаемый рост доходов бюджета к 2010г. за счет повышения эффективности управления государственным имуществом на основе внедрения результатов космической деятельности в системы управления государственным имуществом и земельными ресурсами составит, согласно индикативному показателю, 5%, или 6385,0 млн.рублей, к 2010г. согласно инерционному сценарию развития экономики Республики Татарстан и 7399,0 млн.рублей – согласно реалистичному сценарию. Указанный результат достигается за счет повышения эффективности государственного и муниципального управления важнейшими видами социально-экономической деятельности и увеличения объема платных услуг.

Оценка бюджетной эффективности определяется по специально разработанной методике, построенной на факторном анализе влияния динамики индикаторов.

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**ЗАКОН УКРАЇНИ № 1342-VI**

**Про внесення змін до деяких законів України з питань космічної діяльності**

З метою забезпечення виконання Україною зобов'язань, які передбачені міжнародними договорами (угодами) України з питань космічної діяльності, Верховна Рада України постановляє:

I. Внести зміни до таких законів України:

1. Частину першу статті 19 Закону України «Про Єдиний митний тариф» (Відомості Верховної Ради України, 1992 р., № 19, ст. 259 із наступними змінами) доповнити пунктом «я» такого змісту:

«я) до 1 січня 2015 року ввізне мито не справляється при ввезенні на митну територію України товарів, які, у межах ратифікованих Верховною Радою України міжнародних договорів (угод) України з питань космічної діяльності щодо створення космічної техніки (включаючи агрегати, системи та їх комплектуючі для космічних комплексів, космічних ракет-носіїв, космічних апаратів та наземних сегментів космічних систем), імпортуються резидентами - суб'єктами космічної діяльності в Україну та класифікуються за такими кодами Української товарної номенклатури зовнішньоекономічної діяльності (УКТ ЗЕД):

281810, 2830200000, 2837, 2901, 2903, 2921, 2929, 2931009590, 29339020, 320720, 3208, 3209, 3214, 3403, 3506, 3602000000, 360300, 3604, 3701, 3703, 3707, 3810, 381400, 3901, 390300, 3906, 3907, 3908900000, 3909, 3911, 3917, 3919, 3920, 3921, 3926, 4002, 4005, 4008, 4016, 4017001100, 4823400000, 4901, 4906000000, 5208, 5407, 5607 5903, 5906, 5911909000, 681510, 6902, 7002, 7007119000, 7019, 7202 7211, 7214, 7215, 7217, 7219, 7220, 7222, 722300, 7224 - 7226, 7228 7229, 7304, 7407, 7409-7411, 741300, 7505, 7506, 7508, 7601, 7604 - 7608, 7616, 8101, 8102, 8104, 8105, 8108, 8112, 8307, 8412, 8414, 8421, 8471, 8473, 8479, 8482, 8483309000, 8501, 8504, 8506, 8507, 8517, 8524, 8526, 8529, 8532, 8533, 8536 - 8538, 8540 - 8544, 8547, 8803, 9014, 9015, 902300, 9026, 9027, 9030 - 9033, 9306901000.

Порядок і обсяги ввезення зазначених товарів визначаються Кабінетом Міністрів України».

2. Частину першу статті 12 Закону України «Про плату за землю» (Відомості Верховної Ради України, 1996 р., № 45, ст. 238; 2001 р., № 15, ст. 74; 2003 р., № 45, ст. 363; 2005 р., № 4, ст. 103, №№ 17-19, ст. 267; 2006 р., № 2-3, ст. 35; із змінами, внесеними Законом України від 5 березня 2009 року № 1104-VI) доповнити пунктом 26 такого змісту:

«26) протягом дії норм ратифікованих Верховною Радою України міжнародних договорів (угод) України з питань космічної діяльності щодо створення космічної техніки (включаючи агрегати, системи та їх комплектуючі для космічних комплексів, космічних ракет-носіїв, космічних апаратів та наземних сегментів космічних систем), але не пізніше 1 січня 2015 року, резиденти - суб'єкти космічної діяльності, які отримали ліцензію на право її здійснення та беруть участь у реалізації таких договорів (угод) - за земельні ділянки виробничого призначення згідно з переліком, який затверджується Кабінетом Міністрів України».

3. Статтю 11 Закону України «Про податок на додану вартість» (Відомості Верховної Ради України, 1997 р., № 21, ст. 156 із наступними змінами) доповнити пунктом 11.47 такого змісту:

«11.47. Протягом дії норм ратифікованих Верховною Радою України міжнародних договорів (угод) України з питань космічної діяльності щодо створення космічної техніки (включаючи агрегати, системи та їх комплектуючі для космічних комплексів, космічних ракет-носіїв, космічних апаратів та наземних сегментів космічних систем), але не пізніше 1 січня 2015 року, звільняються від сплати податку на додану вартість операції з:

а) поставки у митному режимі імпорту товарів, визначених у пункті «я» частини першої статті 19 Закону України «Про Єдиний митний тариф», у межах граничних обсягів, встановлених Кабінетом Міністрів України, за умови цільового використання таких товарів у виробництві космічної техніки (включаючи агрегати, системи та їх комплектуючі для космічних комплексів, космічних ракет-носіїв, космічних апаратів та наземних сегментів космічних систем), резидентами - суб'єктами космічної діяльності, які отримали ліцензію на право здійснення такої діяльності та беруть участь у реалізації таких договорів (угод). Перелік таких резидентів - суб'єктів космічної діяльності встановлюється спеціально уповноваженим центральним органом виконавчої влади, що реалізує державну політику в галузі космічної діяльності.

У разі порушення цільового використання товарів або перевищення граничних обсягів їх імпорту, встановлених Кабінетом Міністрів України, відповідний суб'єкт космічної діяльності, який фактично скористався правом на податкову пільгу, вважається таким, що умисно ухиляється від оподаткування та підпадає під дію підпункту 17.1.61 пункту 17.1 статті 17 Закону України «Про порядок погашення зобов'язань платників податків перед бюджетами та державними цільовими фондами»;

б) поставки на митній території України результатів науково-дослідних і дослідницько-конструкторських робіт, які виконуються платниками податку за рахунок кредитних коштів, залучених під гарантії Кабінету Міністрів України для фінансування ратифікованого Верховною Радою України Договору між Україною та Федеративною Республікою Бразилія про довгострокове співробітництво щодо використання ракети-носія «Циклон-4» на пусковому центрі Алкантара, на користь резидентів - суб'єктів космічної діяльності, які отримали ліцензію на право її здійснення та беруть участь у реалізації такого Договору. З метою застосування цієї пільги Кабінет Міністрів України встановлює порядок ведення реєстру зазначених науково-дослідних і дослідницько-конструкторських робіт.

У разі порушення умов звільнення від оподаткування результатів науково-дослідних і дослідницько-конструкторських робіт, а саме при їх поставці для цілей, не передбачених зазначеним Договором, платник податку, що фактично скористався правом на податкову пільгу, вважається таким, що умисно ухиляється від оподаткування та підпадає під дію підпункту 17.1.61 пункту 17.1 статті 17 Закону України «Про порядок погашення зобов'язань платників податків перед бюджетами та державними цільовими фондами».

4. Пункт 22.24 статті 22 Закону України «Про оподаткування прибутку підприємств» (Відомості Верховної Ради України, 1997 р., № 27, ст. 181; 2000 р., № 22, ст. 172) викласти в такій редакції:

«22.24. Протягом строку дії норм ратифікованих Верховною Радою України міжнародних договорів (угод) України з питань космічної діяльності щодо створення космічної техніки (включаючи агрегати, системи та їх комплектуючі для космічних комплексів, космічних ракет-носіїв, космічних апаратів та наземних сегментів космічних систем), але не пізніше 1 січня 2015 року, податковий період, за який визначаються податкові зобов'язання з податку на прибуток, дорівнює одному звітному календарному року для резидентів - суб'єктів космічної діяльності, які отримали ліцензію на право її здійснення та беруть участь у виконанні таких договорів (угод). При цьому норми амортизації, встановлені підпунктом 8.6.1 пункту 8.6 статті 8 цього Закону, застосовуються до балансової вартості основних фондів у розрахунку на такий звітний календарний рік.

Податковий облік приросту (убутку) балансової вартості запасів, що використовуються з метою здійснення космічної діяльності, встановлений пунктом 5.9 статті 5 цього Закону, провадиться за наслідками звітного податкового року, а решта запасів підлягає коригуванню в загальному порядку.

Якщо зазначені договори визнаються сторонами повністю виконаними до настання 1 січня 2015 року, то останній податковий період (у тому числі для визначення норм амортизаційних відрахувань) розраховується з початку календарного року до закінчення звітного кварталу такого року, на який припадає таке повне виконання договорів.

Протягом строку дії норм ратифікованих Верховною Радою України міжнародних договорів (угод) України з питань космічної діяльності щодо створення космічної техніки (включаючи агрегати, системи та їх комплектуючі для космічних комплексів, космічних ракет-носіїв, космічних апаратів та наземних сегментів космічних систем), але не пізніше 1 січня 2015 року, платники податку - суб'єкти космічної діяльності, які отримали ліцензію на право її здійснення, включають до складу валових доходів вартість товарів (робіт, послуг), фактично поставлених таким платником податку без урахування отриманих від платника податку - покупця авансових платежів, а до складу валових витрат - вартість товарів (робіт, послуг), фактично отриманих (оприбуткованих) платником податку - покупцем таких товарів (робіт, послуг) без урахування наданих платнику податку - продавцю авансових платежів.

Платники податку, які підпадають під дію цього пункту та при цьому здійснюють види діяльності інші, ніж космічна, ведуть окремий податковий облік за такими іншими видами діяльності за загальними правилами та у порядку, визначеному нормами пункту 7.20 статті 7 цього Закону».

5. Пункт 17.1 статті 17 Закону України «Про порядок погашення зобов'язань платників податків перед бюджетами та державними цільовими фондами» (Відомості Верховної Ради України, 2001 р., № 10, ст. 44; 2003 р., № 24, ст. 154) доповнити підпунктом 17.1.61 такого змісту:

«17.1.61. Платники податку (посадові особи платника податку), які використовують податкову пільгу не за призначенням та/або всупереч умовам чи цілям її надання згідно із законом з питань відповідного податку, збору (обов'язкового платежу), а також будь-які інші особи, що використовують податкову пільгу, яку для них не призначено, вважаються такими, що умисно ухиляються від оподаткування. У цьому випадку такі особи додатково до штрафів, визначених у підпунктах 17.1.1 - 17.1.5 цього пункту, за наявності підстав для їх накладення, сплачують суму податків, що підлягали нарахуванню без застосування податкової пільги, а також штраф у розмірі двохсот відсотків від такої суми. Сплата штрафу не звільняє таких осіб від юридичної відповідальності за умисне ухилення від оподаткування».

II. Прикінцеві положення

1. Цей Закон набирає чинності з 1 січня 2010 року.

2. Кабінету Міністрів України:

на період реалізації ратифікованих Верховною Радою України міжнародних договорів (угод) України з питань космічної діяльності щодо створення космічної техніки (включаючи агрегати, системи та їх комплектуючі для космічних комплексів, космічних ракет-носіїв, космічних апаратів та наземних сегментів космічних систем) при підготовці проектів закону про Державний бюджет України на черговий рік передбачати повну компенсацію відповідних втрат доходів місцевих бюджетів у розмірі пільг із сплати земельного податку, наданих суб'єктам космічної діяльності цим Законом;

до 1 жовтня 2009 року розробити та привести у відповідність із цим Законом свої нормативно-правові акти; забезпечити приведення міністерствами та іншими центральними органами виконавчої влади нормативно-правових актів у відповідність із цим Законом.

Президент України Віктор ЮЩЕНКО

19 травня 2009 року

***Про затвердження Рамкової угоди між Кабінетом Міністрів України та Урядом Республіки Білорусь про співробітництво у сфері дослідження і використання космічного простору в мирних цілях***

Кабінет Міністрів України
Постанови
за №1052 від 10/07/2009

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**КАБІНЕТ МІНІСТРІВ УКРАЇНИ**

**ПОСТАНОВА**

від 7 жовтня 2009 р. № 1052

Київ

**Про затвердження Рамкової угоди між Кабінетом Міністрів України та Урядом Республіки Білорусь про співробітництво у сфері дослідження і використання космічного простору в мирних цілях**

Кабінет Міністрів України постановляє:

Затвердити Рамкову угоду між Кабінетом Міністрів України та Урядом Республіки Білорусь про співробітництво у сфері дослідження і використання космічного простору в мирних цілях, підписану 12 червня 2009 р. у м. Києві.

**Прем’єр-міністр України**

**Ю. ТИМОШЕНКО**

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# Use of Google® Maps for display and promotion purposes

## 1 Introduction

A number of our customers have expressed interest in using Google Maps as their preferred backdrop to their business information on public-facing websites.

This brief question and answer (Q&A) paper should help answer certain questions you may have around the use of Google Maps for displaying your business information.

## 2 Frequently asked questions

**Q) Can my authority display data we have captured or created ourselves, without using Ordnance Survey data as a base, on top of a Google Maps backdrop?**

A) Since Ordnance Survey has no intellectual property (IP) interest in data that you have created without using our data as a base, naturally you can use Google in this way.

**Q) I want to pass information I have captured, which has been derived from Ordnance Survey data, onto Google for Google to display on Google Maps. Can I do this?**

A) Any use of Ordnance Survey data, or data derived from Ordnance Survey data, should be in accordance with the terms of your licence. You are only able to provide such data to a third party in limited circumstances, for example, to your contractor undertaking authority business on your behalf, and only provided that such contractor enters into a Contractor's Licence. (You should note that we believe the terms of the Contractor's Licence are wholly inconsistent with what we understand to be Google's standard terms and conditions.)

Therefore, you cannot pass such information to Google for display on Google Maps, and we must remind you that provision of data to Google in this way would be in breach of Crown copyright.

**Q) I want to pull Google Maps onto my system and host my Ordnance Survey derived business information on top, so that no data will pass to Google. Can I use this solution instead?**

A) No. Although you will not be passing any data directly to Google, by displaying such data on top of Google Maps in this way and making such mapping available to the public, it appears that you will be granting Google a licence to use such data. This is the case despite the fact that you will be hosting the data on your system. Google's terms and conditions appear to provide that any display of data on or through the Google services grants Google a perpetual, irrevocable, worldwide, royalty-free licence to reproduce, adapt, modify, translate, publish, publicly perform, publicly display and distribute such data.

The terms of your licence do not permit you to license Ordnance Survey data to a third party in these circumstances.

*NOTE: The answer to this question is based on our understanding of which of Google's standard terms and conditions we believe would apply.*

*In the event that Google is prepared to offer you terms and conditions which do not involve you purporting to grant Google a licence of Ordnance Survey base or derived data, we would have no objection to your hosting such data on top of Google Maps in this scenario.)*

**Q) What constitutes data 'derived' from Ordnance Survey data?**

A) Simply put, Ordnance Survey derived data is any data created using Ordnance Survey base data. For example, if you capture a polygon or a point or any other feature using any Ordnance Survey data, either in its data form or as a background context to the polygon/point/other feature capture, this would constitute derived data.

It should also be borne in mind that data from other suppliers may be based on Ordnance Survey material, and thus the above considerations may still apply. We therefore recommend that you verify whether any third-party mapping you use may have been created in some way from Ordnance Survey data before displaying it on Google Maps.

*NOTE: Again, the answer to this question is based on our understanding of which of Google's standard terms and conditions we believe would apply. In the event that Google is prepared to offer you terms and conditions which do not involve you purporting to grant Google a licence of Ordnance Survey base or derived data, we would have no objection to your hosting such data on top of Google Maps in this scenario.*

If you have any other questions or require further information, please contact the Mapping Services Agreement helpdesk on 023 8079 2706 or email them at msa@ordnancesurvey.co.uk

# 3 Control information

## 3.1 Responsibility for this document

Richard Mortara, Local Government and Emergency Services Contracts Manager is responsible for the content of this document.

## 3.2 Approved for issue

John Kimmance, Head of Sales: Public Sector and Utilities

## 3.3 Validity period

This document is valid until further notice

## 3.4 Trademarks

Ordnance Survey and the OS Symbol are registered trademarks of Ordnance Survey, the national mapping agency of Great Britain.

Google is a registered trademark of Google, Inc

S T A T U T O R Y I N S T R U M E N T S

# 2009 No. 1748
# INTERNATIONAL IMMUNITIES AND PRIVILEGES
## The European Organization for Astronomical Research in the Southern Hemisphere (Immunities and Privileges) Order 2009

*Made - - - - 8th July 2009*
*Coming into force - - 9th July 2009*
At the Court at Buckingham Palace, the 8th day of July 2009

Present,
The Queen's Most Excellent Majesty in Council

This Order is made in exercise of the powers conferred by section 1 of the International Organisations Act 1968(**a**) ("the Act").

A draft of this Order has been approved by a resolution of each House of Parliament pursuant to section 10 (1) of that Act.

Accordingly, Her Majesty is pleased, by and with the advice of Her Privy Council, to order, and it is ordered, as follows—

## PART 1
### General

**1.** This Order may be cited as the European Organization for Astronomical Research in the Southern Hemisphere (Immunities and Privileges) Order 2009. It shall come into force on the day after the day on which it is made.

**2.** In this Order—
(a) "the Organization" means the European Organization for Astronomical Research in the Southern Hemisphere;

_______
(**a**) 1968 c. 48; section 1 was amended by the International Organisations Act 1981 (c.9), section 1, and SI 2005/3542, article 2(1).

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Statutory Instruments

# 2009 No. 3157

Environmental Protection

Public Sector Information

# The INSPIRE Regulations 2009

Made: 1st December 2009

Laid before Parliament: 7th December 2009

Coming into force: 31st December 2009

The Secretary of State, who is designated for the purposes of section 2(2) of the European Communities Act 1972(1) in relation to the environment(2), makes the following Regulations in exercise of the powers conferred under section 2(2) of and paragraph 1A of Schedule 2(3) to the European Communities Act 1972.

These Regulations make provision for a purpose mentioned in section 2(2) of the European Communities Act 1972 and it appears to the Secretary of State that it is expedient for the references in these Regulations to the Regulation specified in paragraph (a), and to the provisions of the Directive specified in paragraph (b), to be construed as references to that Regulation or those provisions as amended from time to time—

(a) Commission Regulation (EC) No 1205/2008 regarding metadata(4), and

(b) Annexes I, II and III to Directive 2007/2/EC of the European Parliament and of the Council establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)(5).

## Citation and commencement

1. These Regulations may be cited as the INSPIRE Regulations 2009 and come into force on 31st December 2009.

## Interpretation

2.—(1) In these Regulations—

“the Act” means the Freedom of Information Act 2000(6);

“the Directive” means Directive 2007/2/EC of the European Parliament and of the Council establishing an Infrastructure for Spatial Information in the European Community (INSPIRE);

“discovery service” means a service described in regulation 7(2)(a);

“metadata” means information describing spatial data sets and spatial data services and making it possible to discover, inventory and use them;

“Metadata Regulation” means Commission Regulation (EC) No 1205/2008 regarding metadata;

“public authority” has the meaning given by regulation 3;

“Scottish public authority” means—

(a) a body referred to in section 80(2) of the Act, or
(b) in so far as not such a body, a Scottish public authority as defined in section 3 of the Freedom of Information (Scotland) Act 2002(7);

“Scottish third party” means—

(a) an individual whose address is in Scotland, or
(b) a body corporate, partnership or unincorporated association whose principal office is in Scotland,

but does not include a Scottish public authority;

“spatial data” means any data with a direct or indirect reference to a specific location or geographical area;

“spatial data service” means a service which consists of operations which may be performed, by invoking a computer application—

(a) on the spatial data contained in a spatial data set, or
(b) on the metadata related to a spatial data set;

“spatial data set” means an identifiable collection of spatial data which—

(a) are in electronic format,
(b) relate to one or more of the themes listed in Annex I, II or III to the Directive, and
(c) relate to—
(i) the United Kingdom,
(ii) Gibraltar,
(iii) the territorial sea of the United Kingdom(8),
(iv) an area of the continental shelf for the time being designated by an Order in Council under section 1(7) of the Continental Shelf Act 1964(9), or

(v) an area, outside the territorial sea of the United Kingdom, for the time being designated by an Order in Council under section 84(4) of the Energy Act 2004(10);

“third party” means (except as otherwise provided by regulation 9(7)) a person other than—

(a) a public authority or a Scottish public authority,
(b) a person holding a spatial data set or operating a spatial data service on behalf of a public authority or a Scottish public authority,
(c) a Scottish third party, or
(d) a person holding a spatial data set or operating a spatial data service on behalf of a Scottish third party.

(2) Other terms used in these Regulations that are also used in the Directive have the meaning they bear in the Directive.

(3) For the purposes of these Regulations—

(a) a public authority is responsible for a spatial data set if—

(i) that authority holds that data set (other than on behalf of another person), or

(ii) another person holds that data set on behalf of that authority;

(b) a public authority is responsible for a spatial data service if—

(i) that authority operates that data service (other than on behalf of another person), or

(ii) another person operates that data service on behalf of that authority;

(c) a third party is responsible for a spatial data set if—

(i) that third party holds that data set (other than on behalf of another person), or

(ii) another person holds that data set on behalf of that third party; and

(d) a third party is responsible for a spatial data service if—

(i) that third party operates that data service (other than on behalf of another person), or

(ii) another person operates that data service on behalf of that third party.

(4) In these Regulations—

(a) any reference to the Metadata Regulation is a reference to the Metadata Regulation as amended from time to time; and

(b) any reference to Annex I, II or III to the Directive is a reference to that Annex to the Directive as amended from time to time.

# Public authority

3.—(1) In these Regulations “public authority” means—

(a) a government department;

(b) any other public authority as defined in section 3(1) of the Act, disregarding for this purpose the exceptions in paragraph 6 of Schedule 1 to the Act, but excluding—

(i) any body or office-holder listed in Schedule 1 to the Act only in relation to information of a specified description, or

(ii) any person designated by order under section 5 of the Act;

(c) any other body or other person that carries out functions of public administration; or

(d) any other body or other person that is under the control of a person falling within sub-paragraph (a), (b) or (c) and has public responsibilities relating to the environment, exercises functions of a public nature relating to the environment, or provides public services relating to the environment.

(2) But in regulation 12 (data-sharing between public authorities etc.), “public authority” does not include the bodies or persons falling within paragraph (1)(d).

(3) Except as provided by regulation 9(7), a Scottish public authority is not a public authority for the purposes of these Regulations.

(4) These Regulations do not apply to any public authority to the extent that it is acting in a judicial or legislative capacity.

(5) These Regulations do not apply to either House of Parliament to the extent required for the purpose of avoiding an infringement of the privileges of either House.

(6) Each government department is to be treated as a person separate from any other government department for the purposes of these Regulations.

# Scope of application of the Regulations: spatial data sets and spatial data services

4.—(1) In so far as a provision of these Regulations concerns a spatial data set for which a public authority is responsible, that provision applies in relation to that spatial data set only if that data set is held—

(a) by a public authority which has produced or received that data set, or manages or updates that data set, within the scope of its public tasks; or

(b) by another person on behalf of a public authority which has produced or received that data set, or managed or updated that data set, within the scope of that authority's public tasks.

(2) But—

(a) that provision does not apply in relation to a spatial data set which is held by or on behalf of—

(i) in England, a parish council within the meaning of the Local Government Act 1972(11), or

(ii) in Wales, a community council within the meaning of that Act,

unless that body is subject to a legal requirement to collect or disseminate the data contained in that data set; and

(b) where multiple identical copies of the same spatial data set are held by or on behalf of various public authorities, that provision applies only in relation to the reference version from which the various copies are derived.

(3) Subject to paragraph (4), in so far as a provision of these Regulations concerns a spatial data set for which a third party is responsible, that provision applies in relation to that spatial data set only if that data set has been linked to a network of related spatial data sets following satisfaction of the conditions specified in regulation 8(3).

(4) The proviso specified in paragraph (3) does not apply to regulation 8(2).

(5) In so far as a provision of these Regulations concerns a spatial data service, that provision applies in relation to that spatial data service only if that provision applies in relation to the spatial data set to which that spatial data service relates.

# Intellectual property rights

5. Where—

(a) a public authority or a third party ("P") is responsible for a spatial data set; and

(b) a person other than P ("X") holds intellectual property rights in relation to that data set,

P must not take any action under these Regulations in relation to that data set unless P has X's consent to take that action.

# Metadata

6.—(1) A public authority or a third party must create metadata(12) in relation to any spatial data set or spatial data service for which that authority or third party is responsible.

(2) Metadata in relation to a spatial data set or a spatial data service must include the following information—

(a) the quality and validity of that data set or data service;

(b) the person responsible for the establishment, management, maintenance and distribution of that data set or data service;

(c) any limitations on public access to that data set or data service, and the reasons for such limitations;

(d) any conditions applying to access to, and use of, that data set or data service; and

(e) any charges payable in relation to access to, and use of, that data set or data service.

(3) Metadata must be complete and must be kept up to date.

(4) Metadata relating to—

(a) spatial data sets corresponding to the themes listed in Annex I or Annex II to the Directive; and

(b) spatial data services relating to those data sets,

must be created by 24th December 2010.

(5) Metadata relating to—

(a) spatial data sets corresponding to the themes listed in Annex III to the Directive; and

(b) spatial data services relating to those data sets,

must be created by 24th December 2013.

# Network services

7.—(1) A public authority or a third party must establish and operate the services(13) described in paragraph (2) in relation to any spatial data set or spatial data service—

(a) for which that authority or third party is responsible; and

(b) in relation to which metadata have been created in accordance with regulation 6 and the Metadata Regulation.

(2) The services are—

(a) discovery services—

(i) making it possible to search for spatial data sets and spatial data services on the basis of the content of the corresponding metadata and to display the content of the metadata, and

(ii) making it possible to search according to, as a minimum, the search criteria specified in paragraph (3) (used alone or in combination);

(b) view services making it possible, as a minimum, to display, navigate, zoom in and out, pan, or overlay viewable spatial data sets and to display legend information and any relevant content of metadata;

(c) download services, enabling copies of spatial data sets, or parts of such sets, to be downloaded and, where practicable, accessed directly;

(d) transformation services, enabling spatial data sets to be transformed with a view to achieving interoperability; and

(e) services allowing spatial data services to be invoked.

(3) The search criteria referred to in paragraph (2)(a)(ii) are—

(a) keywords;

(b) classification of spatial data and spatial data services;

(c) the quality and validity of spatial data sets;

(d) geographical location;

(e) conditions applying to the access to and use of spatial data sets and spatial data services; and

(f) the person responsible for the establishment, management, maintenance and distribution of spatial data sets and spatial data services.

(4) The services specified in paragraph (2) must—

(a) take into account relevant user requirements;

(b) be easy to use; and

(c) subject to regulation 9, be available to the public and accessible via the internet or any other appropriate means of telecommunication.

(5) In paragraph (2) “interoperability” means the possibility for spatial data sets to be combined, and for services to interact, without repetitive manual intervention, in such a way that the result is coherent and the added value of the data sets and services is enhanced.

## Linking to a network

8.—(1) The Secretary of State must enable a public authority to link any spatial data set or spatial data service for which that authority is responsible to a network of related spatial data sets or spatial data services, provided that the conditions specified in paragraph (3) are satisfied in relation to that data set or data service.

(2) The Secretary of State must enable a third party to link any spatial data set or spatial data service for which that third party is responsible to a network of related spatial data sets or spatial data services, provided that—

(a) the third party makes a request to that effect; and

(b) the conditions specified in paragraph (3) are satisfied in relation to that data set or data service.

(3) The conditions are—

(a) metadata have been created in accordance with regulation 6 and the Metadata Regulation; and

(b) services have been established and are operated in accordance with regulation 7.

## Public access to spatial data sets and spatial data services

9.—(1) Subject to paragraph (6), access by the public to a spatial data set or spatial data service by means of a service specified in regulation 7(2) may be limited only if—

(a) a limitation is permitted or required under paragraph (2), (3) or (4); and

(b) except in the case of a limitation under paragraph (2)(a), the public interest in limiting or placing conditions on public access outweighs the public interest in providing full access, in all the circumstances of the case.

(2) A public authority or a third party must not provide public access to personal data included in a spatial data set for which that authority or third party is responsible, if the provision of public access to that personal data otherwise than under these Regulations would contravene—

(a) any of the data protection principles; or

(b) section 10 of the Data Protection Act 1998(14) (right to prevent processing likely to cause damage or distress), and in this paragraph “personal data” and “the data protection principles” have the same meanings as in the Data Protection Act 1998.

(3) A public authority or a third party may, in relation to a spatial data set or spatial data service for which that authority or third party is responsible, limit public access to that data set or data service through a discovery service if such access would adversely affect international relations, public security or national defence.

(4) A public authority or a third party may, in relation to a spatial data set or spatial data service for which that authority or third party is responsible—

(a) limit public access to that data set or data service through a service described in regulation 7(2)(b), (c), (d) or (e); or

(b) limit public access to the e-commerce services referred to in regulation 10(4) which relate to that data set or data service,

if such access would adversely affect any matter specified in paragraph (5).

(5) The matters are—

(a) international relations, defence, national security or public safety;

(b) the course of justice, the ability of a person to receive a fair trial or the ability of a public authority to conduct an inquiry of a criminal or disciplinary nature;

(c) intellectual property rights;

(d) the confidentiality of the proceedings of that or any other public authority or third party where such confidentiality is provided by law;

(e) the confidentiality of commercial or industrial information where such confidentiality is provided by law to protect a legitimate economic interest;

(f) the interests or protection of the person who provided the spatial data in question where that person—

(i) was not under, and could not have been put under, any legal obligation to supply that data to that or any other public authority or third party,

(ii) did not provide that data in circumstances such that that or any other public authority or third party is entitled apart from these Regulations to provide public access to that data, and

(iii) has not consented to the public being provided with access to that data; and

(g) the protection of the environment to which the spatial data set or spatial data service in question relates.

(6) A public authority or a third party may not limit public access to a spatial data set or spatial data service which contains information on emissions into the environment, on a ground specified in paragraph (5)(d), (e), (f) or (g).

(7) For the purposes of paragraph (5)(b), (d) and (f), “public authority” includes a Scottish public authority, and for the purposes of paragraph (5)(d) and (f), “third party” includes a Scottish third party.

# Charges for public access

10.—(1) Except as provided by paragraph (2), a public authority or a third party must not charge the public for a discovery service or a view service which that authority or third party operates in relation to a spatial data set or spatial data service for which that authority or third party is responsible.

(2) A public authority or a third party may charge the public for a view service where that charge secures the maintenance of spatial data sets and spatial data services, especially in cases involving very large volumes of frequently updated data.

(3) A public authority or a third party may charge the public a reasonable sum for a service described in regulation 7(2)(c), (d) or (e) which that authority or third party operates in relation to a spatial data set or spatial data service for which that authority or third party is responsible.

(4) Where a public authority or a third party charges the public for a view service or a service described in regulation 7(2)(c) or (e), that authority or third party must ensure that e-commerce services are available in relation to that service.

(5) Spatial data made available through a view service may be in a form preventing their re-use for commercial purposes.

(6) In this regulation “view service” means a service described in regulation 7(2)(b).

# Enforcement and appeals in relation to public access

11.—(1) The enforcement and appeals provisions of the Act apply for the purposes of regulations 7(4)(c) and 9 as they apply for the purposes of the Act, but with the modifications specified in paragraphs (3) to (11) of this regulation.

(2) In this regulation “the enforcement and appeals provisions of the Act” means—

(a) section 50 (application for decision by Commissioner);

(b) section 51 (information notices);

(c) section 52 (enforcement notices);

(d) section 54 (failure to comply with notice);

(e) section 55 and Schedule 3 (powers of entry and inspection);

(f) section 56 (no action against public authority);

(g) section 57 (appeal against notices served under Part IV);

(h) section 58 (determination of appeals);

(i) section 59 (appeals from decision of Tribunal); and

(j) section 61 (appeal proceedings), and paragraphs 3 and 4 of Schedule 4 (appeal proceedings: amendments of Schedule 6 to Data Protection Act 1998).

(3) In the enforcement and appeals provisions of the Act—

(a) after each reference to "public authority" or "authority", insert "or third party";

(b) any reference to "public authority" or "authority" is a reference to a public authority as defined in these Regulations; and

(c) any reference to "third party" is a reference to a third party as defined in these Regulations.

(4) In section 50 of the Act—

(a) in subsection (1), for "a request for information" to the end, substitute "a public authority or a third party has acted or is acting in a way which is not compatible with regulation 7(4)(c) or 9 of the INSPIRE Regulations 2009.";

(b) for paragraph (a) of subsection (2) substitute—

"(a) that the complainant has not exhausted the complaints procedure provided by the public authority or third party under regulation 13 of the INSPIRE Regulations 2009,";

(c) for subsection (4) substitute—

"(4) Where the Commissioner decides that a public authority or a third party has acted or is acting in a way which is not compatible with regulation 7(4)(c) or 9 of the INSPIRE Regulations 2009, the decision notice must specify the steps which must be taken by the authority or third party for rectifying the incompatibility, and the period within which they must be taken."; and

(d) omit subsection (7).

(5) In section 51 of the Act—

(a) in subsection (1)—

(i) for paragraph (b)(i) substitute—

"(i) for the purpose of determining whether a public authority or a third party has acted or is acting in a way which is not compatible with regulation 7(4)(c) or 9 of the INSPIRE Regulations 2009,",

(ii) omit paragraph (b)(ii), and

(iii) in the tailpiece, for "application" to the end substitute "application, or to the purpose specified in paragraph (b), as is so specified."; and

(b) in paragraph (b)(i) of subsection (2), for "either of the purposes" substitute "the purpose".

(6) In section 52 of the Act—

(a) for subsection (1) substitute—

"(1) If the Commissioner is satisfied that a public authority or a third party has acted in a way which is not compatible with regulation 7(4)(c) or 9 of the INSPIRE Regulations 2009, the Commissioner may serve the authority or third party with a notice (in this Act referred to as "an enforcement notice") requiring the authority or third party to take, within such time as may be specified in the notice, such steps as may be so specified to rectify that incompatibility.";

(b) for subsection (2)(a) substitute—

"(a) a statement of the provision of the INSPIRE Regulations 2009 with which the Commissioner is satisfied that the public authority or third party's actions are not compatible and his reasons for reaching that conclusion, and"; and

(c) omit subsection (5).

(7) In section 56(1) of the Act, for "failure to comply with any duty imposed by or under this Act" substitute "action which is not compatible with regulation 7(4)(c) or 9 of the INSPIRE Regulations 2009".

(8) In section 57 of the Act, omit subsection (3).

(9) In Schedule 3 to the Act—

(a) for sub-paragraph (1) of paragraph 1 (issue of warrants) substitute—

“(1) If a circuit judge or a District Judge (Magistrates’ Courts) is satisfied by information on oath supplied by the Commissioner that there are reasonable grounds for suspecting that a public authority or a third party—

(a) has acted or is acting in a way which is not compatible with regulation 7(4)(c) or 9 of the INSPIRE Regulations 2009,

(b) has failed or is failing to comply with so much of a decision notice as requires steps to be taken, or

(c) has failed or is failing to comply with an information notice or an enforcement notice,

and that evidence of such actions or such a failure to comply is to be found on any premises specified in the information, the circuit judge or District Judge may, subject to paragraph 2, grant a warrant to the Commissioner.”; and

(b) in paragraph 8 (matters exempt from inspection and seizure), for “information which is exempt information by virtue of section 23(1) or 24(1)” (bodies and information relating to national security) substitute “information to which public access may be limited under regulation 9(5)(a) of the INSPIRE Regulations 2009 on the ground that such access would adversely affect national security”.

(10) In paragraph 4 of Schedule 4 to the Act (rules of procedure), in the words in sub-paragraph (1)(a)(ii) of paragraph 7 of Schedule 6 to the Data Protection Act 1998 substituted by sub-paragraph (2), omit “and section 60(1) and (4)”.

(11) Section 76(1) of the Act (disclosure of information between Commissioner and ombudsmen) applies to any information obtained by, or furnished to, the Information Commissioner under or for the purposes of regulation 7(4)(c) or 9.

(12) A person found guilty of an offence under paragraph 12 of Schedule 3 to the Act (offences relating to obstruction of the execution of a warrant) is liable on summary conviction to a fine not exceeding level 5 on the standard scale.

(13) A government department or the Welsh Assembly Government is not liable to prosecution in relation to an offence under paragraph 12 of Schedule 3 to the Act, but that provision applies to a person in the public service of the Crown and to a person acting on behalf of either House of Parliament, the Northern Ireland Assembly or the National Assembly for Wales as it applies to any other person.

# Data-sharing between public authorities etc.

12.—(1) A public authority (“P”) must, in relation to a spatial data set or spatial data service for which P is responsible—

(a) enable another public authority or a relevant body to gain access to that data set or data service; and

(b) enable another public authority or a relevant body to exchange and use that data set or data service,

where that authority or body requires that data set or data service for the purpose of its public tasks that may have an impact on the environment.

(2) But a public authority may limit sharing of the kind described in paragraph (1) when this would compromise the course of justice, public security, national defence or international relations.

(3) Subject to paragraphs (4), (5) and (6), a public authority which supplies a spatial data set or spatial data service to another public authority or a relevant body may impose conditions on the access to or exchange or use of that data set or data service, for example by doing either or both of the following—

(a) providing that access to that data set or data service, or exchange or use of that data set or data service, is subject to terms and conditions imposed by a licence;

(b) making a charge for the access to, or exchange or use of, that data set or data service.

(4) But any such conditions must be compatible with the aim of facilitating the sharing of spatial data sets and spatial data services among public authorities and between public authorities and relevant bodies, and must avoid creating practical obstacles, occurring at the point of use, to such sharing.

(5) Where a public authority makes a charge as described in paragraph (3)(b), the charge must be kept to the minimum required to ensure the necessary quality and supply of spatial data sets and spatial data services together with a reasonable return on investment, and any requirement on an authority to be self-financing is to be respected.

(6) Where, under EU legislation relating to the environment, a public authority is required to report a matter to an institution or body of the EU, that authority must not charge that body in relation to the provision to that body of a spatial data set or spatial data service in satisfaction of that requirement.

(7) In this regulation “relevant body” means—

(a) a Scottish public authority;

(b) a public body in another member State;

(c) an institution or body of the EU; or

(d) a body established by an international agreement to which the EU and the United Kingdom are parties.

# Internal complaints procedure

13.—(1) A public authority or a third party must establish an internal complaints procedure for dealing with a complaint relating to the performance of its functions under these Regulations.

(2) A complaint relating to the performance by a public authority or a third party of its functions under these Regulations—

(a) must be pursued according to the complaints procedure established by that authority or third party under paragraph (1); and

(b) must be made in writing.

(3) A public authority or a third party must determine a complaint within a reasonable time, and must notify the complainant of its determination without delay.

(4) Notification under paragraph (3) must be in writing and give reasons for the determination.

# Coordination and monitoring

14.—(1) The Secretary of State is designated in accordance with Article 18 of the Directive (mechanism for coordinating the contributions of all those with an interest in the infrastructure for spatial information), and accordingly has the coordination functions referred to in that Article.

(2) The Secretary of State is designated in accordance with Article 19 of the Directive (contact point with the Commission in relation to implementation of the Directive).

(3) The Secretary of State has the following further functions in relation to the Directive—

(a) enforcing the requirements of—

(i) regulation 6 (metadata), and

(ii) regulation 7 (network services), except regulation 7(4)(c); and

(b) monitoring the implementation and use of the infrastructure for spatial information and making the findings available to the public and to the European Commission(15).

(4) The Secretary of State must issue guidance to public authorities and third parties which are responsible for spatial data sets or spatial data services regarding their implementation of the Directive.

(5) Guidance issued under paragraph (4) must include provision relating to the internal complaints procedure which authorities and third parties are required to establish under regulation 13.

(6) In performing their functions under these Regulations, public authorities and third parties must have regard to guidance issued under paragraph (4).

(7) Public authorities and third parties must provide such information to the Secretary of State as the Secretary of State may require in order to perform the functions described or referred to in paragraphs (1), (3) and (4).

(8) In this regulation "infrastructure for spatial information" means metadata, spatial data sets and spatial data services; network services and technologies; agreements on sharing, access and use; and coordination and monitoring mechanisms, processes and procedures, established, operated or made available in accordance with the Directive.

Huw Irranca-Davies

Parliamentary Under Secretary of State

Department for Environment, Food and Rural Affairs

1st December 2009

(1)1972 c. 68. Back [1]
(2)S.I. 2008/301. Back [2]
(3)Paragraph 1A of Schedule 2 was inserted by section 28 of the Legislative and Regulatory Reform Act 2006 (c. 51). Back [3]
(4)OJ No L 326, 4.12.2008, p 12. Back [4]
(5)OJ No L 108, 25.4.2007, p 1. Back [5]
(6)2000 c. 36. Back [6]
(7)2002 asp 13. Back [7]
(8)See section 1 of the Territorial Sea Act 1987 (c. 49). Back [8]
(9)1964 c. 29. Back [9]
(10)2004 c. 20. Back [10]
(11)1972 c. 70. Back [11]
(12)See Commission Regulation (EC) No 1205/2008. Back [12]
(13)See Commission Regulation (EC) No 976/2009, OJ No L 274, 20.10.2009, p 9. Back [13]
(14)1998 c. 29. Back [14]
(15) See Commission Decision 2009/442/EC, OJ No L 148, 11.6.2009, p 18. Back [15]

Scottish Statutory Instruments

# 2009 No. 440

Environmental Protection
Public Sector Information

# The INSPIRE (Scotland) Regulations 2009

Made: 10th December 2009
Laid before the Scottish Parliament: 14th December 2009
Coming into force: 31st December 2009

The Scottish Ministers make the following Regulations, in exercise of the powers conferred by section 2(2) of, and paragraph 1A of Schedule 2 to, the European Communities Act 1972(1) and all other powers enabling them to do so.

These Regulations make provision for a purpose mentioned in section 2(2) of that Act and it appears to the Scottish Ministers that it is expedient for any reference in these Regulations to—

(a) Commission Regulation (EC) No 1205/2008 regarding metadata(2) to be construed as a reference to that Regulation as amended from time to time, and

(b) Annexes I, II and III to Directive 2007/2/EC of the European Parliament and of the Council establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)(3) to be construed as a reference to those provisions as amended from time to time.

## Citation, commencement and extent

1.—(1) These Regulations may be cited as the INSPIRE (Scotland) Regulations 2009 and come into force on 31st December 2009.

(2) These Regulations extend to Scotland only.

## Interpretation

2.—(1) In these Regulations—

“the Act” means the Freedom of Information (Scotland) Act 2002(4);

“the Directive” means Directive 2007/2/EC of the European Parliament and of the Council of 14th March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE);

“discovery service” means a service described in regulation 8(2)(a);

“metadata” means information describing spatial data sets and spatial data services and making it possible to discover, inventory and use them;

“Metadata Regulation” means Commission Regulation (EC) No. 1205/2008 regarding metadata;

“Scottish public authority” has the meaning given by regulation 3;

“spatial data” means any data with a direct or indirect reference to a specific location or geographical area;

“spatial data service” means a service which consists of operations which may be performed, by invoking a computer application—

(a) on the spatial data contained in a spatial data set, or
(b) on the metadata related to a spatial data set; “spatial data set” means an identifiable collection of spatial data which—
(c) are in electronic format,
(d) relate to one or more of the themes listed in Annex I, II or III to the Directive, and
(e) relate to—

(i) the United Kingdom,
(ii) Gibraltar,
(iii) the territorial sea of the United Kingdom(5),
(iv) an area of the continental shelf for the time being designated by an Order in Council under section 1(7) of the Continental Shelf Act 1964(6), or
(v) an area, outside the territorial sea of the United Kingdom, for the time being designated by an Order in Council under section 84(4) of the Energy Act 2004(7);

“third party” has the meaning given by regulation 4.

(2) Other terms used in these Regulations that are also used in the Directive have the meaning they bear in the Directive.

(3) For the purposes of these Regulations—

(a) a Scottish public authority is responsible for a spatial data set if—

(i) that authority holds that data set (other than on behalf of another person), or

(ii) another person holds that data set on behalf of that authority;

(b) a Scottish public authority is responsible for a spatial data service if—

(i) that authority operates that data service (other than on behalf of another person), or

(ii) another person operates that data service on behalf of that authority;

(c) a third party is responsible for a spatial data set if—

(i) that third party holds that data set (other than on behalf of another person), or

(ii) another person holds that data set on behalf of that third party; and

(d) a third party is responsible for a spatial data service if—

(i) that third party operates that data service (other than on behalf of another person), or

(ii) another person operates that data service on behalf of that third party.

(4) In these Regulations—

(a) any reference to the Metadata Regulation is a reference to the Metadata Regulation as amended from time to time; and

(b) any reference to Annex I, II or III to the Directive is a reference to that Annex to the Directive as amended from time to time.

# Meaning of "Scottish public authority"

3.—(1) In these Regulations, "Scottish public authority" means—

(a) a public authority as defined in section 3(1) of the Act, but excluding any body, person or office-holder listed in schedule 1 to that Act only in relation to information of a specified description, or

(b) any other body or other person that is under the control of a person falling within sub-paragraph (a) and has public responsibilities relating to the environment, exercises functions of a public nature relating to the environment, or provides public services relating to the environment.

(2) But in regulation 13 "Scottish public authority" does not include the bodies or persons falling within paragraph (1)(b).

(3) These Regulations shall not apply to any Scottish public authority to the extent that it is acting in a judicial or legislative capacity.

# Meaning of "third party"

4.—(1) In these Regulations, "third party" means a person who—

(a) is—

(i) an individual whose address is in Scotland; or

(ii) a body corporate, partnership or unincorporated association whose principal office is in Scotland; and

(b) is not a person falling within paragraph (2).

(2) A person falls within this paragraph if that person—

(a) is a public authority in the United Kingdom;

(b) holds a spatial data set or operates a spatial data service on behalf of such a public authority; or

(c) holds a spatial data set or operates a spatial data service on behalf of—

(i) an individual whose address is in England, Wales or Northern Ireland; or

(ii) a body corporate, partnership or unincorporated association whose principal office is in England, Wales or Northern Ireland.

# Scope of application of the Regulations: spatial data sets and spatial data services

5.—(1) In so far as a provision of these Regulations concerns a spatial data set for which a Scottish public authority is responsible, that provision applies in relation to that spatial data set only if that data set is held—

(a) by a Scottish public authority which has produced or received that data set, or manages or updates that data set, within the scope of its public tasks; or

(b) by another person on behalf of a Scottish public authority which has produced or received that data set, or managed or updated that data set, within the scope of that authority's public tasks.

(2) But where multiple identical copies of the same spatial data set are held by or on behalf of various Scottish public authorities, that provision applies only in relation to the reference version from which the various copies are derived.

(3) Subject to paragraph (4), in so far as a provision of these Regulations concerns a spatial data set for which a third party is responsible, that provision applies in relation to that spatial data set only if that data set has been linked to a network of related spatial data sets following satisfaction of the conditions specified in regulation 9(3).

(4) The proviso specified in paragraph (3) does not apply to regulation 9(2).

(5) In so far as a provision of these Regulations concerns a spatial data service, that provision applies in relation to that spatial data service only if that provision applies in relation to the spatial data set to which that spatial data service relates.

# Intellectual property rights

6. Where a Scottish public authority or a third party is responsible for a spatial data set, it must not take any action under these Regulations in relation to that data set unless it has the consent of any other person who holds intellectual property rights in relation to that data set.

# Metadata

7.—(1) A Scottish public authority or a third party must create metadata(8) in relation to any spatial data set or spatial data service for which that authority or third party is responsible.

(2) Metadata in relation to a spatial data set or a spatial data service must include the following information—

(a) the quality and validity of that data set or data service;

(b) the person responsible for the establishment, management, maintenance and distribution of that data set or data service;

(c) any limitations on public access to that data set or data service, and the reasons for such limitations;

(d) any conditions applying to access to, and use of, that data set or data service; and

(e) any charges payable in relation to access to, and use of, that data set or data service.

(3) Metadata must be complete and must be kept up to date.

(4) Metadata relating to—

(a) spatial data sets corresponding to the themes listed in Annex I or Annex II to the Directive, and

(b) spatial data services relating to those data sets,

must be created by 24th December 2010.

(5) Metadata relating to—

(a) spatial data sets corresponding to the themes listed in Annex III to the Directive, and

(b) spatial data services relating to those data sets,

must be created by 24th December 2013.

# Network services

8.—(1) A Scottish public authority or a third party must establish and operate the services(9) described in paragraph (2) in relation to any spatial data set or spatial data service—

(a) for which that authority or third party is responsible, and

(b) in relation to which metadata have been created in accordance with regulation 7 and the Metadata Regulation.

(2) The services are—

(a) discovery services—

(i) making it possible to search for spatial data sets and spatial data services on the basis of the content of the corresponding metadata and to display the content of the metadata, and

(ii) making it possible to search according to, as a minimum, the search criteria specified in paragraph (3) (used alone or in combination);

(b) view services making it possible, as a minimum, to display, navigate, zoom in and out, pan, or overlay viewable spatial data sets and to display legend information and any relevant content of metadata;

(c) download services, enabling copies of spatial data sets, or parts of such sets, to be downloaded and, where practicable, accessed directly;

(d) transformation services, enabling spatial data sets to be transformed with a view to achieving interoperability; and

(e) services allowing spatial data services to be invoked.

(3) The matters referred to in paragraph (2)(a)(ii) are—

(a) keywords;

(b) classification of spatial data and spatial data services;

(c) the quality and validity of spatial data sets;

(d) geographical location;

(e) conditions applying to the access to and use of spatial data sets and spatial data services; and

(f) the person responsible for the establishment, management, maintenance and distribution of spatial data sets and spatial data services.

(4) The services specified in paragraph (2) must—

(a) take into account relevant user requirements;

(b) be easy to use; and

(c) subject to regulation 10, be available to the public and accessible via the internet or any other appropriate means of telecommunication.

(5) In paragraph (2), "interoperability" means the possibility for spatial data sets to be combined, and for services to interact, without repetitive manual intervention, in such a way that the result is coherent and the added value of the data sets and services is enhanced.

# Linking to a network

9.—(1) The Scottish Ministers must enable a Scottish public authority to link any spatial data set or spatial data service for which that authority is responsible to a network of related spatial data sets or spatial data services, provided that the conditions specified in paragraph (3) are satisfied in relation to that data set or data service.

(2) The Scottish Ministers must enable a third party to link any spatial data set or spatial data service for which that third party is responsible to a network of related spatial data sets or spatial data services, provided that—

(a) the third party makes a request to that effect; and

(b) the conditions specified in paragraph (3) are satisfied in relation to that data set or data service.

(3) The conditions are—

(a) metadata have been created in accordance with regulation 7 and the Metadata Regulation; and

(b) services have been established and are operated in accordance with regulation 8.

# Public access to spatial data sets and spatial data services

10.—(1) Subject to paragraph (6), access by the public to a spatial data set or spatial data service by means of a service specified in regulation 8(2) may be limited only if—

(a) a limitation is permitted or required under paragraph (2), (3) or (4); and

(b) except in the case of a limitation under paragraph (2)(a), the public interest in limiting or placing conditions on public access outweighs the public interest in providing full access, in all the circumstances of the case.

(2) A Scottish public authority or a third party must not provide public access to personal data included in a spatial data set for which that authority or third party is responsible, if the provision of public access to that personal data otherwise than under these Regulations would contravene—

(a) any of the data protection principles, or

(b) section 10 of the Data Protection Act 1998(10) (right to prevent processing likely to cause damage or distress),

and in this paragraph "personal data" and "the data protection principles" have the same meanings as in that Act.

(3) A Scottish public authority or a third party may, in relation to a spatial data set or spatial data service for which that authority or third party is responsible, limit public access to that data set or data service through a discovery service if such access would adversely affect international relations, public security or national defence.

(4) A Scottish public authority or a third party may, in relation to a spatial data set or spatial data service for which that authority or third party is responsible—

(a) limit public access to that data set or data service through a service described in regulation 8(2)(b), (c), (d) or (e), or

(b) limit public access to the e-commerce services referred to in regulation 11(4) which relate to that data set or data service,

if such access would adversely affect any matter specified in paragraph (5).

(5) The matters are—

(a) international relations, defence, national security or public safety;

(b) the course of justice, the ability of a person to receive a fair trial or the ability of a public authority to conduct an inquiry of a criminal or disciplinary nature;

(c) intellectual property rights;

(d) the confidentiality of the proceedings of any body where such confidentiality is provided by law;

(e) the confidentiality of commercial or industrial information where such confidentiality is provided by law to protect a legitimate economic interest;

(f) the interests or protection of the person who provided the spatial data in question where that person—

(i) was not under, and could not have been put under, any legal obligation to supply that data to any other person,

(ii) did not provide that data in circumstances such that any person is entitled apart from these Regulations to provide public access to that data, and

(iii) has not consented to the public being provided with access to that data; and

(g) the protection of the environment to which the spatial data set or spatial data service in question relates.

(6) A Scottish public authority or a third party may not limit public access to a spatial data set or spatial data service which contains information on emissions into the environment, on a ground specified in paragraph (5)(d), (e), (f) or (g).

# Charges for public access

11.—(1) Except as provided by paragraph (2), a Scottish public authority or a third party must not charge the public for a discovery service or a view service which that authority or third party operates in relation to a spatial data set or spatial data service for which that authority or third party is responsible.

(2) A Scottish public authority or a third party may charge the public for a view service where that charge secures the maintenance of spatial data sets and spatial data services, especially in cases involving very large volumes of frequently updated data.

(3) A Scottish public authority or a third party may charge the public a reasonable sum for a service described in regulation 8(2)(c), (d) or (e) which that authority or third party operates in relation to a spatial data set or spatial data service for which that authority or third party is responsible.

(4) Where a Scottish public authority or a third party charges the public for a view service or a service described in regulation 8(2)(c) or (e), that authority or third party must ensure that e-commerce services are available in relation to that service.

(5) Spatial data made available through a view service may be in a form preventing their re-use for commercial purposes.

(6) In this regulation, “view service” means a service described in regulation 8(2)(b).

## Enforcement and appeals in relation to public access

12.—(1) The provisions of the Act specified in paragraph (2) apply for the purposes of regulations 8(4)(c) and 10 as they apply for the purposes of the Act, but with the modifications specified in the Schedule to these Regulations.

(2) Those provisions are—

(a) section 47 (application for decision by Commissioner);

(b) section 48 (when application excluded);

(c) section 49 (Commissioner's decision);

(d) section 50 (information notices);

(e) section 51 (enforcement notices);

(f) section 53 (failure to comply with notice);

(g) section 54 and schedule 3 (powers of entry and inspection);

(h) section 55 (no civil right of action against Scottish public authority); and

(i) section 56 (appeal against notices)

(3) Section 63 of the Act applies to any information obtained by, or furnished to, the Scottish Information Commissioner under or for the purposes of regulation 8(4)(c) or 10.

## Data-sharing between public authorities etc.

13.—(1) A Scottish public authority must, in relation to a spatial data set or spatial data service for which it is responsible—

(a) enable any other Scottish public authority or a relevant body to gain access to that data set or data service, and

(b) enable any other Scottish public authority or a relevant body to exchange and use that data set or data service,

where that authority or body requires that data set or data service for the purpose of its public tasks that may have an impact on the environment.

(2) But a Scottish public authority may limit sharing of the kind described in paragraph (1) when this would compromise the course of justice, public security, national defence or international relations.

(3) Subject to paragraphs (4), (5) and (6), a Scottish public authority which supplies a spatial data set or spatial data service to another such authority or a relevant body may impose conditions on the access to or exchange or use of that data set or data service, for example by doing either or both of the following—

(a) providing that access to that data set or data service, or exchange or use of that data set or data service, is subject to terms and conditions imposed by a licence;

(b) making a charge for the access to, or exchange or use of, that data set or data service.

(4) But any such conditions must be compatible with the aim of facilitating the sharing of spatial data sets and spatial data services among Scottish public authorities and between such public authorities and relevant bodies, and must avoid creating practical obstacles, occurring at the point of use, to such sharing.

(5) Where a Scottish public authority makes a charge as described in paragraph (3)(b), the charge must be kept to the minimum required to ensure the necessary quality and supply of spatial data sets and spatial data services together with a reasonable return on investment, and any requirement on an authority to be self-financing is to be respected.

(6) Where, under EU legislation relating to the environment, a Scottish public authority is required to report a matter to an institution or body of the EU, that authority must not charge that body in relation to the provision to that body of a spatial data set or spatial data service in satisfaction of that requirement.

(7) In this regulation "relevant body" means—

(a) a public authority in the United Kingdom (other than a Scottish public authority),

(b) a public body in another member State,

(c) an institution or body of the EU, or

(d) United Kingdom are parties.

# Internal complaints procedure

14.—(1) A Scottish public authority or a third party must establish an internal complaints procedure for dealing with a complaint relating to the performance of its functions under these Regulations.

(2) A complaint relating to the performance by a Scottish public authority or a third party of its functions under these Regulations—

(a) must be pursued according to the complaints procedure established by that authority or third party under paragraph (1); and

(b) must be made in writing.

(3) A Scottish public authority or a third party must determine a complaint within a reasonable time, and must notify the complainant of its determination without delay.

(4) Notification under paragraph (3) must be in writing and give reasons for the determination.

# Enforcement and monitoring

15.—(1) The Scottish Ministers have the following functions in relation to the Directive—

(a) enforcing the requirements of—

(i) regulation 7, and

(ii) regulation 8, except paragraph (4)(c); and

(b) monitoring the implementation and use of the infrastructure for spatial information and making the findings available to the public.

(2) The Scottish Ministers must issue guidance to Scottish public authorities and third parties which are responsible for spatial data sets or spatial data services regarding their implementation of the Directive.

(3) Guidance issued under paragraph (2) must include provision relating to the internal complaints procedure which authorities and third parties are required to establish under regulation 14.

(4) In performing their functions under these Regulations, Scottish public authorities and third parties must have regard to guidance issued under paragraph (2).

(5) Scottish public authorities and third parties must provide such information to the Scottish Ministers as they may require in order to perform the functions described or referred to in paragraphs (1) and (2).

(6) In this regulation, “infrastructure for spatial information” means metadata, spatial data sets and spatial data services; network services and technologies; agreements on sharing, access and use; and coordination and monitoring mechanisms, processes and procedures, established, operated or made available in accordance with the Directive.

JOHN SWINNEY

A member of the Scottish Executive

St Andrew’s House

Edinburgh

10th December 2009

# SCHEDULE MODIFICATIONS OF PROVISIONS OF THE FREEDOM OF INFORMATION (SCOTLAND) ACT SPECIFIED IN REGULATION 12(2)

1.—(1) In the provisions specified in regulation 12(2), after each reference to “Scottish public authority” or “authority” insert “or third party”.

(2) In those provisions as modified by this Schedule—

(a) any reference to “Scottish public authority” or “authority” is a reference to a Scottish public authority as defined in these Regulations;

(b) any reference to “third party” is a reference to a third party as defined in these Regulations; and

(c) “the 2009 Regulations” means these Regulations.

2. In section 47—

(a) for subsection (1), substitute—

“(1) A person may make application to the Commissioner for a decision whether, in any respect specified in the application, a Scottish public authority or third party has acted or is acting in a way which is not compatible with regulation 8(4)(c) or 10 of the 2009 Regulations.”;

(b) omit paragraph (c) of subsection (2); and

(c) omit subsections (4) to (7).

3. In section 48—

(a) for “a request for review made to” substitute “an act of”; and

(b) for “information requested is held”, substitute “act was carried out”.

4. In section 49—

(a) at the end of subsection (1), insert—

“; or

(c) the applicant has not exhausted the complaints procedure provided by the Scottish public authority or third party under regulation 14 of the 2009 Regulations”;

(b) in subsection (6)—

(i) for the words from “that authority” to “Act”, substitute “a Scottish public authority or third party has acted or is acting in a way which is not compatible with regulation 8(4)(c) or 10 of the 2009 Regulations”; and

(ii) for paragraphs (a) and (b), substitute—

“(a) the steps which must be taken by the Scottish public authority or third party for rectifying the incompatibility;” and

(c) subsection (9) is omitted.

5. In section 50(1)—

(a) for sub-paragraphs (i) and (ii) of paragraph (b), substitute “for the purpose of determining whether a Scottish public authority or a third party has acted or is acting in a way which is not compatible with regulation 8(4)(c) or 10 of the 2009 Regulations” and

(b) for “to compliance with this Act or to conformity with the code of practice”, substitute “or to the purpose specified in paragraph (b),”.

6. In section 51—

(a) in subsection (1), for “failed to comply with a provision of Part 1 of this Act” substitute “acted in a way which is not compatible with regulation 8(4)(c) or 10 of the 2009 Regulations”;

(b) in subsection (2)(a), for the words after “provision” substitute “of the 2009 Regulations with which the Commissioner is satisfied that the actions of the authority or third party are not compatible and the reasons for reaching that conclusion”; and

(c) omit subsection (5).

7. In section 53(1)(a), for “(6)(b)” substitute “(6)(a)”.

8. In section 55(1), for the words after "in respect of" substitute "action which is not compatible with regulation 8(4)(c) or 10 of the 2009 Regulations".

9. In Schedule 3—

(a) for paragraph 1(1), substitute—

"(1) If a sheriff is satisfied by evidence on oath supplied by the Commissioner that there are reasonable grounds for suspecting that a Scottish public authority or a third party—

(a) has acted or is acting in a way which is not compatible with regulation 8(4)(c) or 10 of the 2009 Regulations;

(b) has failed or is failing to comply with so much of a decision notice as requires steps to be taken; or

(c) has failed or is failing to comply with an information notice or an enforcement notice,

and that evidence of such actions or such a failure to comply is to be found on any premises specified as part of that evidence, the sheriff, subject to paragraph 2, may grant to the Commissioner such warrant as is mentioned in sub-paragraph (2)."; and

(b) in paragraph 7, for "which is exempt information by virtue of section 31(1)" substitute "to which public access may be limited under regulation 10(5)(a) of the 2009 Regulations on the ground that such access would adversely affect national security".

# EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations implement Directive 2007/2/EC (O.J. L 108, 25.4.2007, p. 1) ("the Directive") which concerns the creation and operation of national and Community infrastructures relating to spatial information for the purposes of Community environmental policies and other policies or activities which may have an impact on the environment.

Certain provisions of the Directive are dependent on the adoption by the European Commission of further implementing rules, and where those rules have not yet been adopted, those provisions are not implemented in these Regulations.

These Regulations apply in relation to Scottish public authorities and certain third parties.

Regulation 2 contains definitions, including a definition of "spatial data set" which refers to the spatial data themes listed in Annex I, II or III to the Directive.

Regulation 3 defines "Scottish public authority" and regulation 4 defines "third party".

Regulation 5 provides for the scope of application of the Regulations to spatial data sets and spatial data services.

Regulation 7 requires authorities to create and update metadata relating to their spatial data sets and services, by dates specified in that regulation.

Regulation 8 provides that authorities must establish and operate network services, including discovery and view services, in relation to their spatial data sets and services, and regulation 9 provides for the linking of such services to a network.

Regulation 10 permits certain limitations on the right of public access to spatial data sets and services through the services described in regulation 8, and regulation 11 relates to charging for the provision of those services.

Regulation 12 and the Schedule make provision in connection with applications to the Scottish Information Commissioner concerning public access under regulation 10.

Regulation 13 relates to data-sharing among Scottish public authorities for the purposes of public tasks relating to the environment, and to sharing between public authorities and public bodies in the rest of the UK or in other member States, or EU or international bodies.

Regulation 14 requires authorities to establish an internal complaints procedure for dealing with complaints relating to the performance of their functions under these Regulations.

Regulation 15 gives the Scottish Ministers certain enforcement and monitoring functions. They are required to issue guidance to authorities and third parties regarding their implementation of the Directive.

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(1) 1972 c.68; paragraph 1A of Schedule 2 was inserted by section 28 of the Legislative and Regulatory Reform Act 2006 (c.51). Back [1]
(2) O.J. No. L 326, 4.12.2008, p 12. Back [2]
(3) O.J. No. L 108, 25.4.2007, p 1. Back [3]
(4) 2002 asp 13. Back [4]
(5) See section 1 of the Territorial Sea Act 1987 (c.49). Back [5]
(6) 1964 c.29. Back [6]
(7) 2004 c.20. Back [7]
(8) See Commission Regulation (EC) No. 1205/2008. Back [8]
(9) See Commission Regulation (EC) No. 976/2009, O.J. No. L 274, 20.10.2009, p.9. Back [9]
(10) 1998 c. 29. Back [10]

**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**50 CFR Part 216**

**[Docket No. 090218189–9910–02]**

**RIN 0648–AX29**

## Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Missile Launch Activities at San Nicolas Island, CA

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Final rule.

**SUMMARY:** NMFS, upon application from the U.S. Navy (Navy), is issuing regulations to govern the unintentional taking of marine mammals, by harassment, incidental to missile launch operations from San Nicolas Island (SNI), California, for a 5–yr period. The Navy's activities are considered military readiness activities pursuant to the Marine Mammal Protection Act (MMPA), as amended by the National Defense Authorization Act of 2004 (NDAA). These regulations, which allow for the issuance of ''Letters of Authorization'' (LOAs) for the incidental take of marine mammals during the described activities and specified time frames, prescribe the permissible methods of taking and other means of effecting the least practicable adverse impact on marine mammal species and their habitat, as well as requirements pertaining to the monitoring and reporting of such taking.

**DATES:** Effective June 2, 2009 through June 2, 2014.

**ADDRESSES:** A copy of the Navy's application, which contains a list of references used in this document, and NMFS' Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) may be obtained by writing to P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3225, by telephoning the contact listed under **FOR FURTHER INFORMATION CONTACT**, or on the Internet at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications*. Documents cited in this final rule may also be viewed, by appointment, during regular business hours at the above address.

**FOR FURTHER INFORMATION CONTACT:** Candace Nachman, Office of Protected Resources, NMFS, (301) 713–2289, ext. 156, or Monica DeAngelis, Southwest Regional Office, (562) 980–3232.

**SUPPLEMENTARY INFORMATION:**

### Background

Sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (Secretary) to allow, upon request, the incidental, but not intentional taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, notice of a proposed authorization is provided to the public for review.

Authorization for incidental takings may be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for certain subsistence uses, and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking are set forth.

NMFS has defined ''negligible impact'' in 50 CFR 216.103 as:

> an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

The NDAA (Public Law 108–136) removed the ''small numbers'' and ''specified geographical region'' limitations and amended the definition of ''harassment'' as it applies to a ''military readiness activity'' to read as follows (Section 3(18)(B) of the MMPA):

> (i) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild [Level A Harassment]; or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered [Level B Harassment].

**Summary of Request**

On September 3, 2008, NMFS received an application from the Navy requesting authorization for the take of three species of marine mammals incidental to missile launches conducted by the Naval Air Warfare Center Weapons Division (NAWCWD) from the western part of SNI, which would impact pinnipeds hauled out on the island. Aircraft and helicopter flights between the Point Mugu airfield on the mainland, the airfield on SNI, and the target sites in the Point Mugu Sea Range will be a routine part of a planned launch operation. These activities are classified as military readiness activities. The Navy states that these activities may have both acoustic and non-acoustic effects on pinnipeds. The Navy requested authorization to take three pinniped species by Level B Harassment.

**Measurement of Airborne Sound Levels**

The following section is provided to facilitate understanding of airborne and impulsive noise characteristics. In its application, the Navy references both pressure and energy measurements for sound levels. For pressure, the sound pressure level (SPL) is described in terms of decibels (dB) re µPa, and for energy, the sound exposure level (SEL) is described in terms of dB re $Pa^2\bullet$ s. In other words, SEL is the squared instantaneous sound pressure over a specified time interval, where the sound pressure is averaged over 5 percent to 95 percent of the duration of the sound (in this case, one second).

Airborne noise measurements are usually expressed relative to a reference pressure of 20 Pa, which is 26 dB above the underwater sound pressure reference of 1 µPa. However, the conversion from air to water intensities is more involved than this and is beyond the scope of this document. NMFS recommends interested readers review NOAA's tutorial on this issue: *http://www.pmel.noaa.gov/vents/acoustics/tutorial/tutorial.html*. Also, airborne sounds are often expressed as broadband A-weighted (dBA) or C-weighted (dBC) sound levels. A-weighting refers to frequency-dependent weighting factors applied to sound in accordance with the sensitivity of the human ear to different frequencies. With A-weighting, sound energy at frequencies below 1 kHz and above 6 kHz are de-emphasized and approximates the human ear's response to sounds below 55 dB. C-weighting corresponds to the relative response to the human ear to sound levels above 85 dB. C-weight scaling is useful for analyses of sounds having predominantly low-frequency sounds, such as sonic booms.

**Description of the Specified Activity**

The NAWCWD is the Navy's full-spectrum research, development, test, and evaluation center of excellence for weapons systems associated with air warfare, aircraft weapons integration, missiles and missile subsystems, and assigned airborne electronic warfare systems. NAWCWD is a multi-site organization that includes the Point Mugu Sea Range (Sea Range) and is responsible for environmental compliance for this Sea Range and SNI. NAWCWD plans to continue a launch program for missiles from several launch sites on SNI. The purpose of these launches is to support test and training activities associated with operations on the Sea Range. Figure 1 in the Navy's application provides a regional site map of the Range and SNI. A more detailed description of the island and proposed launch activities are provided in the Point Mugu Sea Range Final Environmental Impact Statement/Overseas Environmental Impact Statement (NAWCWD, 2002) and in reports on previous vehicle launch monitoring periods (e.g., Holst *et al.*, 2005a, 2008). The Sea Range is used by the U.S. and allied military services to test and evaluate sea, land, and air weapon systems; to provide realistic training opportunities; and to maintain operational readiness of these forces. Some of the SNI launches are used for practicing defensive drills against the types of weapons simulated by these vehicles. Some launches may be conducted for the related purpose of testing new types of missiles, to verify that they are suitable for operational use.

The vehicles are launched from one of several fixed locations on the western end of SNI and fly generally westward through the Sea Range. Launches are expected to involve supersonic and subsonic vehicles. Some vehicles are launched from the Alpha Launch Complex located 190 m (623.4 ft) above sea level on the west-central part of SNI (see Figure 2 in the Navy's application). The Building 807 Launch Complex, used for most launches of smaller vehicles, as well as some large ones, is at the western end of SNI at approximately 11 m (36 ft) above sea level.

The Navy may launch as many as 200 vehicles from SNI over a 5–yr operations program, with up to 40 launches per year, but this number can vary depending on operational requirements. Launch timing will be determined by operational, meteorological, and logistical factors. Up to 10 launches per year may occur at night. Nighttime launches will only take place when required by the test objectives, e.g., when testing the Airborne Laser system (ABL). For this system, missiles must be launched at night when the laser is visible. Some launch events involve a single vehicle, while others involve the launch of multiple vehicles either in quick succession or at intervals of a few hours.

The Coyote Supersonic Sea-skimming Target (SSST) is anticipated to be the primary launch vehicle. However, the Navy states that it may become necessary to substitute similar vehicles or different equipment in some cases. While other vehicles may be launched in the future, the largest contemplated in the Navy's application and this **Federal Register** notice is 23,000 kg (50,706 lb). These larger vehicles would be launched up to 3 times per year. A detailed description of the activities to be conducted by the Navy, including details on the types of vehicles to be launched, was included in the proposed rule (74 FR 11891, March 20, 2009) and may also be found in the Navy's application (see ADDRESSES). The description of the Coyote SSST has been left in this **Federal Register** document with some added information regarding the Vandal missile (which was formerly the primary launch vehicle) on SNI for comparison of the two missiles.

*Coyote*

The Coyote, designated GQM–163A, is an expendable SSST powered by a ducted-rocket ramjet. It has replaced the Vandal, which was used as the primary vehicle during launches from 2001–2005. The Coyote is similar in size and performance to the Vandal. The Vandal was 7.7 m (25.2 ft) in length, not including the booster rocket. It had a diameter of 71 cm (28 in), excluding fins, with a total span of 2.9 m (9.5 ft). The Vandal could reach a maximum speed of Mach 2.125 in sea-skimming mode.

The Coyote is capable of flying at low altitudes (4 m [13 ft] cruise altitude) and supersonic speeds (Mach 2.5) over a flight range of 83 km (51.6 mi). This vehicle is designed to provide a ground launched aerial target system to simulate a supersonic, sea-skimming Anti-Ship Cruise Missile threat. The SSST assembly consists of two primary subsystems: MK 70 solid propellant booster and the GQM–163A target vehicle. The solid-rocket booster is approximately 46 cm (18 in) in diameter and is of the type used to launch the Navy's ''Standard'' surface-to-air missile. The GQM–163A target vehicle is 5.5 m (18 ft) long and 36 cm (14 in) in diameter, exclusive of its air intakes. It consists of a solid-fuel Ducted Rocket (DR) ramjet subsystem, Control and Fairing Subassemblies, and the Front End Subsystem (FES). Included in the FES is an explosive destruct system to terminate flight if required.

The Coyote utilizes the Vandal launcher, currently installed at the Alpha Launch Complex on SNI with a Launcher Interface Kit. A modified AQM–37C Aerial Target Test Set is utilized for target checkout, mission programming, verification of the vehicle's ability to perform the entire mission, and homing updates while the vehicle is in flight.

During a typical launch, booster separation occurs approximately 5.5 s after launch and approximately 2.6 km (1.6 mi) downrange, at which time the vehicle has a speed of approximately Mach 2.35 (Orbital Sciences Corp; *www.orbital.com*). Following booster separation, the GQM–163A's DR ramjet ignites, the vehicle reaches its apogee, and then dives to 5 m (16.4 ft) altitude while maintaining a speed of Mach 2.5. During launches from SNI, the low-altitude phase occurs over water west of the island. The target performs pre-programmed maneuvers during the cruise and terminal phases, as dictated by the loaded mission profile, associated waypoints, and mission requirements. During the terminal phase, the Coyote settles down to an altitude of 4 m (13 ft) and Mach 2.3 until DR burnout.

During 2003–2007, Coyotes were launched from SNI at azimuths of 270–300° and elevation angles of 14–22° (Holst *et al.*, 2005a, 2008). Coyotes produced flat-weighted SPLs (SPL-f) of 125–134 decibels reference 20 µPa (dB re 20 µPa) at distances of 0.8–1.7 km (0.5–1.1 mi) from the three-dimensional (3–D) closest point of approach (CPA) of the vehicle, and 82–93 dB at CPAs of 2.4–3.2 km (1.5–2 mi) (Holst *et al.*, 2005a, 2008). Flat-weighted SELs (SEL-f) ranged from 87 to 119 dB re 20 $\mu Pa^2 \bullet$ s. SELs M-weighted for pinnipeds in air (Mpa) ranged from 60 to 114 dB re 20 $\mu Pa^2 s$, and peak pressures ranged from 100 to 144 dB re 20 µPa. The reference sound pressure (20 µPa) used here and throughout the document, is standard for airborne sounds.

**Description of Habitat and Marine Mammals Affected by the Activity**

A detailed description of the Channel Islands/southern California Bight ecosystem and its associated marine mammals can be found in several documents (Le Boeuf and Brownell, 1980; Bonnell *et al.*, 1981; Lawson *et al.*, 1980; Stewart, 1985; Stewart and Yochem, 2000; Sydeman and Allen, 1999) and is not repeated here.

Many of the beaches in the Channel Islands provide resting, molting or breeding places for several species of pinnipeds including: northern elephant seals (*Mirounga angustirostri*s), harbor seals (*Phoca vitulina*), California sea lions (*Zalophus californianus*), northern fur seals (*Callorhinus ursinus*), Guadalupe fur seals (*Arctocephalus townsendi*), and Steller sea lions (*Eumetopias jubatus*). On SNI, three of these species, northern elephant seals, harbor seals, and California sea lions, can be expected to occur on land in the area of the proposed activity either regularly or in large numbers during certain times of the year.

Northern fur seals, Guadalupe fur seals, and Steller sea lions are far less common on SNI. The northern fur seal is occasionally sighted on SNI in small numbers (Stewart and Yochem, 2000); a single female with a pup was sighted on the island in July 2007 (NAWCWD, 2008). It is also possible that individual Guadalupe fur seals may be sighted on the beaches. The Guadalupe fur seal is an occasional visitor to the Channel Islands, but breeds mainly on Guadalupe Island, Mexico, which is approximately 463 km (288 mi) south of the Sea Range. The last sighting was of a lone individual seen ashore in the summer of 2007 (NAWCWD, 2008). The Steller sea lion was once abundant in these waters, but numbers have declined since 1938. No adult Steller sea lions have been sighted on land in the Channel Islands since 1983 (Stewart *et al.*, 1993c in NMFS 2008). Recently, there have been sightings of two to three Steller sea lions in Southern California along the mainland, but there have still been no recent sightings out on any of the Channel Islands (M. DeAngelis, NMFS, Southwest Regional Office, 2009, pers. comm.). Thus, it is very unlikely that Steller sea lions will be seen on or near SNI beaches.

Additional information on the biology, distribution, and abundance of the marine mammal species likely to be affected by the launch activities on SNI can be found in the Navy's application (see **ADDRESSES**) and the NMFS Stock Assessment Reports, which can be found at: *http://www.nmfs.noaa.gov/pr/pdfs/sars/po2008.pdf*. Please refer to those documents for information on those species.

**Comments and Responses**

On September 16, 2008, NMFS published a notice of receipt of application for an LOA in the **Federal Register** (73 FR 53408) and requested comments and information from the public for 30 days. NMFS received comments from the Marine Mammal Commission (Commission). NMFS' response to the Commission's comments are addressed in the proposed rule **Federal Register** notice (74 FR 11891, March 20, 2009). On March 20, 2009, NMFS published a notice of proposed rulemaking (74 FR 11891) on the Navy's request to take marine mammals incidental to missile launch activities on SNI and requested comments, information, and suggestions concerning the request. During the 30–day public comment period, NMFS received comments from the Commission and one private citizen. The comment from the private citizen opposed the issuance of an authorization without any specific substantiation for why such an authorization should not be issued. For the reasons set forth in this preamble, NMFS believes issuance of the authorization is appropriate. The following are the comments from the Commission and NMFS' responses.

*Comment 1:* The Commission recommends that NMFS adopt a general policy of providing a 60–day comment period for all proposed regulations issued under section 101(a)(5)(A), and in no case less than a 45–day comment period, absent a showing of good cause that such a comment period is impractical, unnecessary, or contrary to the public interest, as provided for under section 553(b)(3)(B) of the Administrative Procedure Act (APA).

*Response:* When practical, NMFS may provide 45 days for public comment on proposed rulemakings. However, in this particular case, a 30–day comment period was reasonable. The Missile Defense Agency (MDA), a customer of the Navy range at SNI, has proposed to launch a series of four small missile targets beginning as soon as possible after publication of this final rule. These launches are critical steps in a larger development and testing program for the ABL, a new weapon system being developed by MDA as part of its national security mission to improve military readiness and protect homeland security. A delay in implementing the regulations would result in a delay of testing and development of this critical program. (Further explanation is provided in the ''Classification'' section of this **Federal Register** document.) In all circumstances, NMFS attempts to balance the prevailing conditions with the complexity of the rule when setting a comment period. Additionally, section 553(b)(3)(B) of the APA does not specify a time requirement for comment periods on proposed rulemaking but rather that notice must be given if good cause exists that a comment period itself is impractical, unnecessary, or contrary to the public interest.

NMFS has been issuing MMPA authorizations to the Navy to conduct these activities on SNI since 2001, which has allowed NMFS to develop relatively standard mitigation and monitoring requirements for these activities, so rarely more than one or two public comments are received. The public was afforded a 30–day comment period to submit information and suggestions on the preparation of proposed regulations beginning on September 16, 2008 with the publication of the notice of receipt of application (73 FR 53408). NMFS received only one comment letter at that time. Only two organizations or members of the public commented on the proposed rule. NMFS did not receive any other requests to extend the comment period. In this particular case, NMFS believes that the 30–day comment period afforded the public on the proposed rulemaking was reasonable.

*Comment 2:* The Commission recommends that NMFS make the Navy's interim report on 2009–2010 monitoring activities (to be submitted in 2010), which is called for under the proposed rule, available to the Commission and others for review and comment before authorizing any changes to the monitoring program.

*Response:* NMFS concurs. NMFS will provide a copy of the Navy's interim report submitted in 2010 to the Commission and others for review and comment before authorizing any changes to the monitoring program.

*Comment 3:* The Commission recommends that NMFS require the Navy to investigate any injury or death of a marine mammal if the animal's death could be associated with the Navy's activities to determine the cause, assess the full impact of the activity, determine how the activity should be modified to avoid future injuries or deaths, and ascertain if additional taking authority is needed.

*Response:* The Navy is not authorized to investigate or handle marine mammal carcasses. This must be done by a member of the Marine Mammal Stranding Network. However, the Navy must notify the NMFS Office of Protected Resources and NMFS Southwest Regional Office within 48 hours of the discovery of an injured or dead marine mammal. Additionally, the Stranding Network must be notified immediately. The regulations also contain a requirement that if an injurious or lethal take of a marine mammal has occurred, the launch procedure and monitoring methods must be reviewed, in cooperation with NMFS, and, if necessary, appropriate changes will be made to an LOA prior to conducting the next launch of the same vehicle under the LOA. No serious injury or mortality is anticipated as a result of the Navy's activities.

*Comment 4:* The Commission recommends that NMFS require the Navy to halt an activity if a marine mammal species other than those covered by the authorization is observed within the operating area.

*Response:* This requirement is already part of the general conditions contained in LOAs issued by NMFS. Conditions contained in current and previous LOAs for this and other actions generally state the type of taking that is permitted and also identify the species that are authorized for taking. The condition then goes on to state that the taking by harassment, injury, or death of any other species of marine mammal is prohibited and may result in the modification, suspension or revocation of the LOA. Additionally, the taking of any marine mammal in a manner prohibited under the LOA must be reported to NMFS within 48 hours of the taking. Therefore, if the Navy sighted a marine mammal not covered by the LOA in the area of a launch where taking might occur and still went forward with the launch, then the Navy would be operating in violation of the LOA and the MMPA.

## Potential Effects of Specified Activities on Marine Mammals

As outlined in previous NMFS documents, the effects of noise on marine mammals are highly variable, and can be categorized as follows (based on Richardson *et al.*, 1995):

(1) The noise may be too weak to be heard at the location of the animal (i.e., lower than the prevailing ambient noise level, the hearing threshold of the animal at relevant frequencies, or both);

(2) The noise may be audible but not strong enough to elicit any overt behavioral response;

(3) The noise may elicit reactions of variable conspicuousness and variable relevance to the well being of the marine mammal; these can range from temporary alert responses to active avoidance reactions, such as stampedes into the sea from terrestrial haul-out sites;

(4) Upon repeated exposure, a marine mammal may exhibit diminishing responsiveness (habituation), or disturbance effects may persist; the latter is most likely with sounds that are highly variable in characteristics, infrequent and unpredictable in occurrence (as are vehicle launches), and associated with situations that a marine mammal perceives as a threat;

(5) Any anthropogenic noise that is strong enough to be heard has the potential to reduce (mask) the ability of a marine mammal to hear natural sounds at similar frequencies, including calls from conspecifics, and underwater environmental sounds such as surf noise;

(6) If mammals remain in an area because it is important for feeding, breeding, or some other biologically important purpose even though there is chronic exposure to noise, it is possible that there could be noise-induced physiological stress; this might in turn have negative effects on the well-being or reproduction of the animals involved; and

(7) Very strong sounds have the potential to cause temporary or permanent reduction in hearing sensitivity. In terrestrial mammals, and presumably marine mammals, received sound levels must far exceed the animal's hearing threshold for there to be any temporary threshold shift (TTS) in its hearing ability. For transient sounds, the sound level necessary to cause TTS is inversely related to the duration of the sound. Received sound levels must be even higher for there to be risk of permanent hearing impairment.

Potential impacts of the planned missile launch operations at SNI on marine mammals involve both acoustic and non-acoustic effects. Acoustic effects relate to sound produced by the engines of all launch vehicles, and, in some cases, their booster rockets. Potential non-acoustic effects could result from the physical presence of personnel during placement of video and acoustical monitoring equipment. However, careful deployment of monitoring equipment is not expected to result in any disturbance to pinnipeds hauled out nearby. Any visual disturbance caused by passage of a vehicle overhead is likely to be minor and brief as the launch vehicles are relatively small and move at great speed. Information regarding behavioral reactions of pinnipeds to launches, hearing impairment of pinnipeds from launches, and non-auditory physiological responses to launches is contained in the Navy's application and the proposed rulemaking (74 FR 11891, March 20, 2009). The potential effects described in the proposed rule are the same as those that would occur under the final rule.

NMFS does not anticipate a significant impact on any of the species or stocks of marine mammals from missile launches on SNI. While the reactions of the different species are variable and can involve occasional stampedes or other abrupt movements by some individuals, biological impacts of these responses appear to be limited. The responses are not likely to result in significant injury or mortality or long-term negative consequences to individuals or pinniped populations on SNI. Based on measurements of received sound levels during previous launches at SNI (e.g., Holst *et al.*, 2005a,b; 2008), the Navy and NMFS expect that there may be some effects on hearing sensitivity (TTS) for a few of the pinnipeds present, but these effects are expected to be mild and reversible. Although it is possible that some launch sounds as measured close to the launchers may exceed the permanent threshold shift (PTS) criteria, it is unlikely that any pinnipeds would be close enough to the launchers to be exposed to sounds strong enough to cause PTS. Therefore, NMFS anticipates that pinnipeds hauled out during launches on SNI will only incur short-term, minimal Level B harassment.

**Numbers of Marine Mammals Estimated to be Taken**

The marine mammal species NMFS believes likely to be taken by Level B harassment incidental to vehicle launch operations from SNI are harbor seals, California sea lions, and northern elephant seals. All of these species are protected under the MMPA, and none are listed under the Endangered Species Act (ESA). Any takes are most likely to result from operational noise as launch vehicles pass near haul-out sites and/or associated visual cues. As noted earlier and in the proposed rule (74 FR 11891, March 20, 2009), sightings of northern fur seals, Steller sea lions, and Guadalupe fur seals have been extremely rare or low on SNI. Therefore, no takes are anticipated for these three species incidental to the proposed activities.

The Navy provisionally estimates that the following numbers of pinnipeds may be taken by Level B harassment annually: 474 elephant seals; 467 harbor seals; and 1,606 California sea lions. The animals affected may be the same individual animals or may be different individuals, depending on site fidelity. Based on the results of the marine mammal monitoring conducted by the Navy during the 2001–2007 launch program, the estimated number of potential Level B harassment takes would actually be less than estimated or previously authorized. The criteria used by the Navy to estimate take numbers for the 2009–2014 program were developed specifically for the launches identified in the specified activity and are based on monitoring data collected during the 2001–2007 launch program at the same location and involving the same rocket types. Section 7.7 of the Navy's application contains a full description of how they developed their take numbers (see **ADDRESSES**).

With the incorporation of mitigation measures described later in this document, the Navy and NMFS expect that only Level B incidental harassment may occur as a result of the proposed activities and that these events will result in no detectable impact on marine mammal species or stocks or on their habitats.

**Potential Effects of Specified Activities on Marine Mammal Habitat**

Impacts on marine mammal habitat are part of the consideration in making a finding of negligible impact on the species and stocks of marine mammals. Habitat includes, but is not necessarily limited to, rookeries, mating grounds, feeding areas, and areas of similar significance. The proposed rule (74 FR 11891, March 20, 2009) contained a full description of the potential effects of the missile launch activities on marine mammal habitat. Only short-term disturbance of marine mammals is expected as a result of the proposed activities. The Navy's launch activity is not expected to cause significant impacts on habitats used by pinnipeds on SNI or on the food sources that these pinnipeds utilize.

**Potential Effects of Specified Activities on Subsistence Needs**

NMFS has determined that the issuance of an LOA for Navy missile launch activities on SNI would not have an unmitigable adverse impact on the availability of the affected species or stocks for subsistence uses since there are no such uses for these pinniped species in California.

**Mitigation**

To avoid additional harassment to the pinnipeds on beach haul-out sites and to avoid any possible sensitizing and/or predisposing pinnipeds to greater responsiveness to the sights and sounds of a launch, the Navy will limit activities near the beaches in advance of launches. Existing safety rules for vehicle launches provide a built-in mitigation measure of this type: personnel are not normally allowed near any of the pinniped haul-out beaches that are located close to the flight track on the western end of SNI within several hours prior to launch. Also, because of the presence of colonies of sensitive seabirds (as well as pinniped haul-out sites) on western SNI, there are already special restrictions on personnel movements near beaches on which pinnipeds haul out. Furthermore, most of these beaches are closed to personnel year-round.

The following mitigation measures have been incorporated into the regulations: (1) The Navy must avoid launch activities during harbor seal pupping season (February through April), unless constrained by factors including, but not limited to, human safety, national security, or for launch trajectory necessary to meet mission objectives; (2) the Navy must limit launch activities during other pinniped pupping seasons, unless constrained by factors including, but not limited to, human safety, national security, or for launch trajectory necessary to meet mission objectives; (3) the Navy must not launch missiles from the Alpha Complex at low elevation (less than 305 m [1,000 ft]) on launch azimuths that pass close to pinniped haul-out site(s) when occupied; (4) the Navy must avoid multiple vehicle launches in quick succession over haul-out sites when occupied, especially when young pups are present, except when required by mission objectives; and (5) the Navy must limit launch activities during nighttime hours, except when required by mission objectives (e.g., up to 10 nighttime launches for ABL testing per year).

Additionally, for 2 hr prior to, during, and approximately 30 mins following each launch, personnel are not allowed near any of the pinniped haul-out beaches that are close to the flight track on the western end of SNI. Lastly, associated fixed-wing and rotary aircraft will maintain an altitude of at least 305 m (1,000 ft) when traveling near beaches on which pinnipeds are hauled out, except in emergencies or for real-time security incidents (e.g., search-and-rescue, fire-fighting, adverse weather conditions), which may require approaching pinniped haul-outs and rookeries closer than 305 m (1,000 ft).

If post-launch surveys determine that an injurious or lethal take of a marine mammal has occurred or there is an indication that the distribution, size, or productivity of the potentially affected pinniped populations has been affected, the launch procedure and the monitoring methods must be reviewed, in cooperation with NMFS, and, if necessary, appropriate changes must be made through modification to an LOA, prior to conducting the next launch of the same vehicle under that LOA.

## Monitoring

As part of its application, the Navy provided a proposed monitoring plan, similar to that adopted for previous Incidental Harassment Authorizations and regulations (see 66 FR 41834, August 9, 2001; 67 FR 56271, September 3, 2002; 68 FR 52132, September 2, 2003), for assessing impacts to marine mammals from missile launch activities from SNI. This monitoring plan is described in detail in the Navy's application (see **ADDRESSES**). The Navy will conduct the following monitoring during the first year under an LOA and the regulations.

*Land-based Monitoring*

In conjunction with a biological contractor, the Navy will continue its land-based monitoring program to assess effects on the three common pinniped species on SNI: northern elephant seals, harbor seals, and California sea lions. This monitoring will occur at three different sites of varying distance from the launch site before, during, and after each launch. The monitoring will be via autonomous video cameras. Pinniped behavior on the beach will be documented prior to, during, and following the launch. Additionally, new video equipment capable of obtaining video during night launches will be acquired for the ABL program.

During the day of each missile launch, the observer will place three digital video cameras overlooking chosen haul-out sites. Each camera will be set to record a focal subgroup within the haul-out aggregation for a maximum of 4 hr or as permitted by the videotape capacity. Following a launch, video records will be made for up to 1 hr. Observers will return to the observing sites as soon as it is safe to record the numbers and types of pinnipeds that are on the haul-out(s).

Following each launch, all digital recordings will be transferred to DVDs for analysis. A DVD player/computer with high-resolution freeze-frame and jog shuttle will be used to facilitate distance estimation, event timing, and characterization of behavior. Additional details of the field methods and video and data analysis can be found in the Navy's application.

*Acoustical Measurements*

During each launch, the Navy will obtain calibrated recordings of the levels and characteristics of the received launch sounds. Acoustic data will be acquired using three Autonomous Terrestrial Acoustic Recorders (ATARs) at three different sites of varying distances from the missile's flight path. ATARs can record sounds for extended periods (dependent on sampling rate) without intervention by a technician, giving them the advantage over traditional digital audio tape recorders should there be prolonged launch delays. To the extent possible, acoustic recording locations will correspond with the sites where video monitoring is taking place. The collection of acoustic data will provide information on the magnitude, characteristics, and duration of sounds that pinnipeds may be exposed to during a launch. In addition, the acoustic data can be combined with the behavioral data collected via the land-based monitoring program to determine if there is a dose-response relationship between received sound levels and pinniped behavioral reactions. Once collected, sound files will be sent to the acoustical contractor for sound analysis. Additional details regarding the installation and calibration of the acoustic instruments and analysis methods are provided in the Navy's application.

## Reporting

An interim technical report will be submitted to NMFS 60 days prior to the expiration of each annual LOA issued under these regulations, along with a request for a follow-on annual LOA. This interim technical report will provide full documentation of methods, results, and interpretation pertaining to all monitoring tasks for launches during the period covered by the LOA. However, only preliminary information will be available to be included for any launches during the 60–day period immediately preceding submission of the interim report to NMFS.

If a freshly dead or seriously injured pinniped is found during post-launch monitoring, the incident must be reported within 48 hours to the NMFS Office of Protected Resources and the NMFS Southwest Regional Office.

The 2009–2010 launch monitoring activities will constitute the eighth year of formal, concurrent pinniped and acoustical monitoring during launches from SNI. Following submission in 2010 of the interim report on the first phase of monitoring under an LOA, the Navy and NMFS will discuss the scope for any additional launch monitoring work on SNI subsequent to the first LOA issued under these regulations. Some biological or acoustic parameters may be documented adequately prior to or during the first LOA (2009–2010), and it may not be necessary to continue all aspects of the monitoring work after that period. Prior to making any changes to the monitoring plan for years two through five of the regulations, NMFS would provide a copy of the Navy's interim report submitted in 2010 to the Commission and others for review and comment. Any modifications to the monitoring program will be documented through publication in the **Federal Register**.

In addition to annual LOA reports, NMFS is requiring the Navy to submit a draft comprehensive final technical report to NMFS 180 days prior to the expiration of the regulations. This technical report will provide full documentation of methods, results, and interpretation of all monitoring tasks for launches during the first four LOAs, plus preliminary information for launches during the first 6 months of the final LOA. A revised comprehensive final technical report, including all monitoring results during the entire period of the LOA will be due 90 days after the end of the period of effectiveness of the regulations.

## ESA

No species listed under the ESA are expected to be affected by these activities. Therefore, NMFS has determined that a section 7 consultation under the ESA is not required. It should be noted however that SNI is the location to which southern sea otters have been translocated in an attempt to establish a population separate from that in central California. This experimental population may be affected by the missile launch activities at SNI. Sea otters are under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). Under Public Law 99–625, this experimental population of sea otters is treated as a proposed species for purposes of Section 7 when the action (as here) is defense related. Proposed species require an action agency to confer with NMFS or the USFWS under Section 7 of the ESA when the action is likely to jeopardize the continued existence of the species. The information available for the Navy's activities described in this document or for NMFS' action of promulgating 5–yr regulations and the subsequent issuance of LOAs to the Navy for those activities does not indicate that sea otters are likely to be jeopardized. Therefore, a consultation is not required.

## National Environmental Policy Act

NMFS prepared a Draft EA analyzing the potential issuance of regulations and annual LOAs to the Navy for the period 2009–2014 and made it available for public comment concurrently with the proposed rule. NMFS has finalized the EA and issued a FONSI for this action.

Therefore, preparation of an Environmental Impact Statement is not necessary for this action. NMFS' EA and FONSI are available upon request (see **ADDRESSES**).

**Coastal Zone Management Act Consistency**

On February 14, 2001, by a unanimous vote, the California Coastal Commission (CCC) concluded that, with the monitoring and mitigation commitments the Navy has incorporated into their various testing and training activities on the Point Mugu Sea Range, including activities on SNI, and including the commitment to enable continuing CCC staff review of finalized monitoring plans and ongoing monitoring results, the activities are consistent with the marine resources, environmentally sensitive habitat, and water quality policies (Sections 30230, 30240, and 30231) of the California Coastal Act. The activities described in these regulations are analogous to those reviewed by the CCC in 2001.

**National Marine Sanctuaries Act**

According to the Navy, except for aircraft and vessel traffic transiting the area, none of the Navy's proposed activities would take place within the Channel Islands National Marine Sanctuary. On December 8, 2008, NMFS consulted with the National Ocean Service's Office of National Marine Sanctuaries (ONMS) regarding NMFS' action of promulgating regulations and issuing LOAs for the Navy activities described in the Navy's application and this document to determine whether or not NMFS' action is likely to destroy, cause the loss of, or injure any sanctuary resources. On December 12, 2008, the ONMS determined that no further consultation with NMFS was required on its proposed action as this action is not likely to destroy, cause the loss of, or injure any national marine sanctuary resources.

**Determinations**

Based on the information provided in the Navy's application, NMFS' EA, this document, the public comments submitted on the application and proposed rule, and the Navy's comprehensive report of the activities through 2008, NMFS has determined that missile launch activities and aircraft and helicopter operations from SNI will result in no more than Level B harassment of Pacific harbor seals, California sea lions, and northern elephant seals. The effects of these military readiness activities from SNI will be limited to short term and localized changes in behavior, including temporarily vacating haul-outs, and possible TTS in the hearing of any pinnipeds that are in close proximity to a launch pad at the time of a launch. NMFS has also determined that any takes will have no more than a negligible impact on the affected species and stocks. No take by injury and/or death is anticipated, and the potential for permanent hearing impairment is unlikely. Harassment takes will be at the lowest level practicable due to incorporation of the mitigation measures mentioned previously in this document. NMFS' regulations for these exercises prescribe the means of effecting the least practicable adverse impact on marine mammals and their habitat and set forth requirements pertaining to the monitoring and reporting of that taking. Additionally, the vehicle launch activities and aircraft and helicopter operations will not have an unmitigable adverse impact on the availability of marine mammal stocks for subsistence use, as there are no subsistence uses of these three pinniped species in California waters.

**Classification**

The Office of Management and Budget has determined that this rule is not significant for purposes of Executive Order 12866.

Good cause exists to waive the 30–day delay in effectiveness for this rule pursuant to 5 U.S.C. 553(d). The mitigation measures contained in this final rule are substantially similar to the measures contained in the 5–yr rule that expired on October 2, 2008. The MDA, a customer of the Navy range at SNI, has proposed to launch a series of four small missile targets beginning as soon as possible after publication of this final rule. These launches are critical steps in a larger development and testing program for the ABL, a new weapon system being developed by MDA as part of its national security mission to improve military readiness and protect homeland security. A delay in implementing the regulations would result in a delay of testing and development of this critical program. Delay in implementing the regulations would result in unnecessary additional cost to the government related to maintaining the launch facilities, missiles, and personnel in a ready condition. Due to delays in getting critical application materials from the Navy, NMFS could not process the MMPA authorization request any sooner. By waiving the 30–day delay in effectiveness for the final rule, the Navy would be able to minimize conflicts with other testing programs scheduled for SNI, allowing MDA to proceed with an already tight schedule for testing and development. The NAWCWD is the only entity regulated by this rule. The NAWCWD expressly requested that NMFS issue the rule and regulations and is both willing and able to comply with the requirements of NMFS' final regulations and LOA, as it was during the course of the previous rules and regulations issued to the NAWCWD by NMFS to conduct these activities, within the 30–day window.

At the proposed rule stage, the Chief Counsel for Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration that this rule, if adopted, would not have a significant economic impact on a substantial number of small entities since it would apply only to the NAWCWD, Navy, and would have no effect, directly or indirectly, on small businesses. Because of this certification, a regulatory flexibility analysis is not required, and none has been prepared.

**Changes from the Proposed Rule**

In addition to minor edits to the rule for clarification, NMFS has made the following changes to the rule:

1. The title of the subpart now reads: ''Subpart N--Taking Of Marine Mammals Incidental To Missile Launch Activities from San Nicolas Island, CA.'' The word ''target'' was removed from the title and other places in the preamble and regulations in order to eliminate confusion, since a target is a type of missile.

2. Modified § 216.150(c) to remove extraneous detail (i.e., the names of the building complexes).

3. Modified § 216.155(a) to include e-mail as a notification method for upcoming activities and that notification should occur at least 1 week prior to activities possibly involving the taking of marine mammals instead of 2 weeks prior. The procedures used by the Navy for finalizing launch schedules usually only allow for notice 1 week prior to the activity instead of 2 weeks prior.

4. Combined § 216.155(d)(1)(ii) and (iii) from the proposed rule since it seemed redundant to include both as separate conditions. Additionally, the time required for video recordings prior to the launch was changed from 2 hrs to 1 hr since it is not practical to have monitoring occur for at least 2 hrs prior to a launch. This is due to the fact that if several delays occur, the tape could run out before the launch happens, and then there would be no recordings taken during and after the launch, or someone would need to get to the recording site

and reset the videotape, which could then lead to additional delays.

5. Modified § 216.155(d)(2)(ii) to clarify when acoustic recordings will be supplemented by the use of radar and telemetry systems.

6. Added § 216.155(e)(2)(iv).

**List of Subjects in 50 CFR Part 216**

Exports, Fish, Imports, Indians, Labeling, Marine mammals, Penalties, Reporting and recordkeeping requirements, Seafood, Transportation.

Dated: May 28, 2009.

**Samuel D. Rauch III,**

*Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.*

■ For reasons set forth in the preamble, 50 CFR part 216 is amended as follows:

## PART 216—REGULATIONS GOVERNING THE TAKING AND IMPORTING OF MARINE MAMMALS

■ 1. The authority citation for part 216 continues to read as follows:

**Authority:** 16 U.S.C. 1361 *et seq.*

■ 2. Subpart N, consisting of §§ 216.150 through 216.159, is added to part 216 to read as follows:

### Subpart N—Taking Of Marine Mammals Incidental To Missile Launch Activities from San Nicolas Island, CA

Sec.



### Subpart N—Taking Of Marine Mammals Incidental To Missile Launch Activities from San Nicolas Island, CA

#### § 216.150 Specified activity and specified geographical region.

(a) This subpart applies only to the incidental taking of marine mammals specified in paragraph (b) of this section by the Naval Air Warfare Center Weapons Division, U.S. Navy, and those persons it authorizes to engage in missile launch activities and associated aircraft and helicopter operations at the Naval Air Warfare Center Weapons Division facilities on San Nicolas Island, California.

(b) The incidental take of marine mammals under the activity identified in paragraph (a) of this section is limited to the following species: northern elephant seals (Mirounga angustirostris), harbor seals (Phoca vitulina), and California sea lions (Zalophus californianus).

(c) This Authorization is valid only for activities associated with the launching of a total of 40 Coyote (or similar sized and smaller) missiles per year from San Nicolas Island, California.

#### § 216.151 Effective dates.

This subpart is effective June 2, 2009 through June 2, 2014.

#### § 216.152 Permissible methods of taking.

(a) Under Letters of Authorization issued pursuant to §§ 216.106 and 216.157, the U.S. Navy, its contractors, and clients, may incidentally, but not intentionally, take marine mammals by harassment, within the area described in § 216.150, provided the activity is in compliance with all terms, conditions, and requirements of the regulations in this subpart and the appropriate Letter of Authorization.

(b) The taking of marine mammals is authorized for the species listed in § 216.150(b) and is limited to Level B Harassment.

#### § 216.153 Prohibitions.

Notwithstanding takings contemplated in § 216.150 and authorized by a Letter of Authorization issued under §§ 216.106 and 216.157, no person in connection with the activities described in § 216.150 may:

(a) Take any marine mammal not specified in § 216.150(b);

(b) Take any marine mammal specified in § 216.150(b) other than by incidental, unintentional harassment, as discussed in § 216.152;

(c) Take a marine mammal specified in § 216.150(b) if such taking results in more than a negligible impact on the species or stocks of such marine mammal; or

(d) Violate, or fail to comply with, the terms, conditions, and requirements of this subpart or a Letter of Authorization issued under §§ 216.106 and 216.157.

#### § 216.154 Mitigation.

(a) The activity identified in § 216.150 must be conducted in a manner that minimizes, to the greatest extent practicable, adverse impacts on marine mammals and their habitats. When conducting operations identified in § 216.150(c), the mitigation measures contained in the Letter of Authorization issued under §§ 216.106 and 216.157 must be implemented. These mitigation measures include (but are not limited to):

(1) The holder of the Letter of Authorization must prohibit personnel from entering pinniped haul-out sites below the missile's predicted flight path for 2 hours prior to planned missile launches.

(2) The holder of the Letter of Authorization must avoid launch activities during harbor seal pupping season (February through April), unless constrained by factors including, but not limited to, human safety, national security, or for launch trajectory necessary to meet mission objectives.

(3) The holder of the Letter of Authorization must limit launch activities during other pinniped pupping seasons, unless constrained by factors including, but not limited to, human safety, national security, or for launch trajectory necessary to meet mission objectives.

(4) The holder of the Letter of Authorization must not launch missiles from the Alpha Complex at low elevation (less than 1,000 feet (305 m)) on launch azimuths that pass close to pinniped haul-out sites when occupied.

(5) The holder of the Letter of Authorization must avoid launching multiple missiles in quick succession over haul-out sites, especially when young pups are present, except when required by mission objectives.

(6) The holder of the Letter of Authorization must limit launch activities during nighttime hours, except when required by mission objectives.

(7) Aircraft and helicopter flight paths must maintain a minimum altitude of 1,000 feet (305 m) from pinniped haul-outs and rookeries, except in emergencies or for real-time security incidents (e.g., search-and-rescue, fire-fighting, adverse weather conditions), which may require approaching pinniped haul-outs and rookeries closer than 1,000 feet (305 m).

(8) If post-launch surveys determine that an injurious or lethal take of a marine mammal has occurred or there is an indication that the distribution, size, or productivity of the potentially affected pinniped populations has been affected, the launch procedure and the monitoring methods must be reviewed, in cooperation with NMFS, and, if necessary, appropriate changes must be made through modification to a Letter of Authorization, prior to conducting the next launch of the same vehicle under that Letter of Authorization.

(9) Additional mitigation measures as contained in a Letter of Authorization.

(b) [Reserved]

**§ 216.155 Requirements for monitoring and reporting.**

(a) Holders of Letters of Authorization issued pursuant to §§ 216.106 and 216.157 for activities described in § 216.150 are required to cooperate with NMFS, and any other Federal, state or local agency with authority to monitor the impacts of the activity on marine mammals. Unless specified otherwise in the Letter of Authorization, the Holder of the Letter of Authorization must notify the Administrator, Southwest Region, NMFS, by letter, e-mail, or telephone, at least 1 week prior to activities possibly involving the taking of marine mammals. If the authorized activity identified in § 216.150 is thought to have resulted in the mortality or injury of any marine mammals or in any take of marine mammals not identified in § 216.150(b), then the Holder of the Letter of Authorization must notify the Director, Office of Protected Resources, NMFS, or designee, by telephone (301–713–2289), and the Administrator, Southwest Region, NMFS, or designee, by telephone (562–980–3232), within 48 hours of the discovery of the injured or dead animal.

(b) The National Marine Fisheries Service must be informed immediately of any changes or deletions to any portions of the proposed monitoring plan submitted, in accordance with the Letter of Authorization.

(c) The holder of the Letter of Authorization must designate biologically trained, on-site individual(s), approved in advance by the National Marine Fisheries Service, to record the effects of the launch activities and the resulting noise on pinnipeds.

(d) The holder of the Letter of Authorization must implement the following monitoring measures:

(1) *Visual Land-Based Monitoring.* (i) Prior to each missile launch, an observer(s) will place 3 autonomous digital video cameras overlooking chosen haul-out sites located varying distances from the missile launch site. Each video camera will be set to record a focal subgroup within the larger haul-out aggregation for a maximum of 4 hours or as permitted by the videotape capacity.

(ii) Systematic visual observations, by those individuals, described in paragraph (c) of this section, on pinniped presence and activity will be conducted and recorded in a field logbook or recorded on digital video for subsequent analysis for no less than 1 hour prior to the estimated launch time and for up to 1 hour immediately following each missile launch.

(iii) Documentation, both via autonomous video camera and human observer, will consist of:

(A) Numbers and sexes of each age class in focal subgroups;

(B) Description and timing of launch activities or other disruptive event(s);

(C) Movements of pinnipeds, including number and proportion moving, direction and distance moved, and pace of movement;

(D) Description of reactions;

(E) Minimum distances between interacting and reacting pinnipeds;

(F) Study location;

(G) Local time;

(H) Substratum type;

(I) Substratum slope;

(J) Weather condition;

(K) Horizontal visibility; and

(L) Tide state.

(2) *Acoustic Monitoring.* (i) During all missile launches, calibrated recordings of the levels and characteristics of the received launch sounds will be obtained from 3 different locations of varying distances from the missile's flight path. To the extent practicable, these acoustic recording locations will correspond with the haul-out sites where video monitoring is done.

(ii) Acoustic recordings will be supplemented by the use of radar and telemetry systems to obtain the trajectory of missiles in three dimensions, whenever data coverage allows.

(iii) Acoustic equipment used to record launch sounds will be suitable for collecting a wide range of parameters, including the magnitude, characteristics, and duration of each missile.

(e) The holder of the Letter of Authorization must implement the following reporting requirements:

(1) For each missile launch, the lead contractor or lead observer for the holder of the Letter of Authorization must provide a status report to the National Marine Fisheries Service, Southwest Regional Office, providing reporting items found under the Letter of Authorization, unless other arrangements for monitoring are agreed in writing.

(2) An initial report must be submitted to the Office of Protected Resources, and the Southwest Regional Office at least 60 days prior to the expiration of each annual Letter of Authorization. This report must contain the following information:

(i) Timing and nature of launch operations;

(ii) Summary of pinniped behavioral observations;

(iii) Estimate of the amount and nature of all takes by harassment or by other means; and

(iv) Evidence of compliance with mitigation measures.

(3) A draft comprehensive technical report will be submitted to the Office of Protected Resources and Southwest Regional Office, National Marine Fisheries Service, 180 days prior to the expiration of the regulations in this subpart, providing full documentation of the methods, results, and interpretation of all monitoring tasks for launches to date plus preliminary information for missile launches during the first 6 months of the final Letter of Authorization.

(4) A revised final comprehensive technical report, including all monitoring results during the entire period of the Letter of Authorization will be due 90 days after the end of the period of effectiveness of the regulations in this subpart.

(5) Both the 60–day and final reports will be subject to review and comment by the National Marine Fisheries Service. Any recommendations made by the National Marine Fisheries Service must be addressed in the final comprehensive report prior to acceptance by the National Marine Fisheries Service.

(f) Activities related to the monitoring described in paragraphs (c) and (d) of this section, or in the Letter of Authorization issued under §§ 216.106 and 216.157, including the retention of marine mammals, may be conducted without the need for a separate scientific research permit.

(g) In coordination and compliance with appropriate Navy regulations, at its discretion, the National Marine Fisheries Service may place an observer on San Nicolas Island for any activity involved in marine mammal monitoring either prior to, during, or after a missile launch in order to monitor the impact on marine mammals.

**§ 216.156 Applications for Letters of Authorization.**

(a) To incidentally take marine mammals pursuant to the regulations contained in this subpart, the U.S. citizen (as defined by § 216.103) conducting the activity identified in § 216.150 (Naval Air Warfare Center Weapons Division, U.S. Navy) must apply for and obtain either an initial Letter of Authorization in accordance with § 216.157 or a renewal under § 216.158.

(b) The application must be submitted to NMFS at least 30 days before the activity is scheduled to begin.

(c) Applications for a Letter of Authorization and for renewals of Letters of Authorization must include the following:

(1) Name of the U.S. citizen requesting the authorization,

(2) A description of the activity, the dates of the activity, and the specific location of the activity, and

(3) Plans to monitor the behavior and effects of the activity on marine mammals.

(d) A copy of the Letter of Authorization must be in the possession of the persons conducting activities that may involve incidental takings of pinnipeds.

**§ 216.157 Letters of Authorization.**

(a) A Letter of Authorization, unless suspended or revoked, will be valid for a period of time not to exceed the period of validity of this subpart, but must be renewed annually subject to annual renewal conditions in § 216.158.

(b) Each Letter of Authorization will set forth:

(1) Permissible methods of incidental taking;

(2) Means of effecting the least practicable adverse impact on the species, its habitat, and on the availability of the species for subsistence uses (i.e., mitigation); and

(3) Requirements for mitigation, monitoring and reporting.

(c) Issuance and renewal of the Letter of Authorization will be based on a determination that the total number of marine mammals taken by the activity as a whole will have no more than a negligible impact on the affected species or stock of marine mammal(s).

**§ 216.158 Renewal of Letters of Authorization.**

(a) A Letter of Authorization issued under §§ 216.106 and 216.157 for the activity identified in § 216.150 will be renewed annually upon:

(1) Notification to NMFS that the activity described in the application submitted under § 216.156 will be undertaken and that there will not be a substantial modification to the described work, mitigation or monitoring undertaken during the upcoming 12 months;

(2) Timely receipt of the monitoring reports required under § 216.155(e), and the Letter of Authorization issued under § 216.157, which has been reviewed and accepted by NMFS; and

(3) A determination by NMFS that the mitigation, monitoring and reporting measures required under §§ 216.154 and 216.155 and the Letter of Authorization issued under §§ 216.106 and 216.157, were undertaken and will be undertaken during the upcoming annual period of validity of a renewed Letter of Authorization.

(b) If a request for a renewal of a Letter of Authorization issued under § 216.106 and this section indicates that a substantial modification to the described work, mitigation or monitoring undertaken during the upcoming season will occur, NMFS will provide the public a period of 30 days for review and comment on the request. Review and comment on renewals of Letters of Authorization are restricted to:

(1) New cited information and data indicating that the determinations made in this document are in need of reconsideration, and

(2) Proposed changes to the mitigation and monitoring requirements contained in these regulations or in the current Letter of Authorization.

(c) A notice of issuance or denial of a renewal of a Letter of Authorization will be published in the **Federal Register**.

**§ 216.159 Modifications of Letters of Authorization.**

(a) Except as provided in paragraph (b) of this section, no substantive modification (including withdrawal or suspension) to the Letter of Authorization by NMFS, issued pursuant to §§ 216.106 and 216.157 and subject to the provisions of this subpart shall be made until after notification and an opportunity for public comment has been provided. For purposes of this paragraph, a renewal of a Letter of Authorization under § 216.158, without modification (except for the period of validity), is not considered a substantive modification.

(b) If the Assistant Administrator determines that an emergency exists that poses a significant risk to the well-being of the species or stocks of marine mammals specified in § 216.150(b), a Letter of Authorization issued pursuant to §§ 216.106 and 216.157 may be substantively modified without prior notification and an opportunity for public comment. Notification will be published in the **Federal Register** within 30 days subsequent to the action.

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**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**RIN 0648–XR49**

## Incidental Takes of Marine Mammals During Specified Activities; Harbor Activities Related to the Delta IV/Evolved Expendable Launch Vehicle at Vandenberg Air Force Base, CA

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice; issuance of incidental harassment authorization.

**SUMMARY:** In accordance with the provisions of the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to United Launch Alliance (ULA) to take small numbers of marine mammals, by Level B harassment only, incidental to harbor activities related to the Delta IV/Evolved Expendable Launch Vehicle (EELV) at south Vandenberg Air Force Base, CA (VAFB).

**DATES:** This authorization is effective from September 4, 2009, through September 3, 2010.

**ADDRESSES:** A copy of the IHA and the application are available by writing to P. Michael Payne, Chief, Permits, Conservation, and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3225, or by telephoning the contact listed here. A copy of the application may be obtained by writing to this address, by telephoning the contact listed here (**FOR FURTHER INFORMATION CONTACT**) or online at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications*. Documents cited in this notice may be viewed, by appointment, during regular business hours, at the aforementioned address.

**FOR FURTHER INFORMATION CONTACT:** Jeannine Cody or Candace Nachman, (301) 713–2289 or Monica DeAngelis, NMFS Southwest Region, (562) 980–3232.

**SUPPLEMENTARY INFORMATION:**

### Background

Section 101(a)(5)(D) of the MMPA (16 U.S.C. 1371 (a)(5)(D)) directs the Secretary of Commerce (Secretary) to allow, upon request, the incidental, but not intentional, taking of marine mammals, for periods of not more than one year, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Authorization for incidental taking of small numbers of marine mammals shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses. The authorization must set forth the permissible methods of taking, other means of effecting the least practicable adverse impact on the species or stock and its habitat and monitoring and reporting of such takings. NMFS has defined ''negligible impact'' in 50 CFR 216.103 as ''...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.''

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Except with respect to certain activities not pertinent here, the MMPA defines ''harassment'' as:

> any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [''Level A harassment'']; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [''Level B harassment''].

Section 101(a)(5)(D) of the MMPA establishes a 45–day time limit for NMFS' review of an application followed by a 30–day public notice and comment period on any proposed authorizations for the incidental harassment of small numbers of marine mammals. Not later than 45 days after the close of the public comment period, if the Secretary makes the findings set forth in Section 101(a)(5)(D)(i) of the MMPA, the Secretary shall issue or deny issuance of the authorization with appropriate conditions to meet the requirements of clause 101(a)(5)(D)(ii) of the MMPA.

### Summary of Request

On June 5, 2009, NMFS received an application from ULA requesting an authorization for the harassment of small numbers of Pacific harbor seals (Phoca vitulina richardsi) and California sea lions (Zalophus californianus) and northern elephant seals (Mirounga angustirostris) incidental to harbor activities related to the Delta IV/EELV, including: transport vessel operations, cargo movement activities, harbor maintenance dredging, and kelp habitat mitigation operations. These activities will support Delta IV/EELV launch activities from the Space Launch Complex at VAFB. NMFS outlined the purpose of the program in a previous notice for the proposed IHA (74 FR 32565, July 8, 2009). The activities to be conducted have not changed between the proposed IHA notice and this final notice announcing the issuance of the IHA.

### Description of the Specified Activity

NMFS has issued Incidental Harassment Authorizations (IHAs) to The Boeing Company, now ULA, on May 15, 2002 (67 FR 36151, May 23, 2002), May 20, 2003 (68 FR 36540, June 18, 2003), May 20, 2004 (69 FR 29696, May 25, 2004), May 23, 2005 (70 FR 30697, May 27, 2005), June 20, 2006 (71 FR 36321, June 26, 2006), June 21, 2007 (72 FR 34444, June 22, 2007), and August 19, 2008 (73 FR 49649, August 22, 2008) each for a one-year period. ULA did not conduct any dredging activities between 2003 and 2008, and accordingly, was not required to conduct any monitoring activities.

### Specified Activities

*Delta Mariner* off-loading operations and associated cargo movements will occur a maximum of three times per year. The activities will take place within the harbor located within the VAFB, approximately 2.5 miles (mi) (4.02 kilometers (km) south of Point Arguello, CA and approximately 1 mi (1.61 km) south of the nearest marine mammal pupping site (i.e., Rocky Point).

**Delta Mariner Operations**

The *Delta Mariner* is a 312–feet (ft) (95.1–meter (m)) long, 84–ft (25.6–m) wide steel hull ocean-going vessel capable of operating at an 8–ft (2.4–m) draft. The vessel will enter the harbor stern first, during daylight hours at high tide, approaching the wharf at less than 0.75 knot. At least one tugboat will always accompany the *Delta Mariner* during visits to the VAFB harbor. Departure will occur under the same conditions.

Sources of noise from the *Delta Mariner* include ventilating propellers used for maneuvering the vessel into position and a brief sound from the cargo bay door when it becomes disengaged.

**Harbor Maintenance Dredging**

To accommodate the *Delta Mariner*, the harbor will need to be dredged, removing up to 5,000 cubic yards of sediment per dredging. Dredging will involve the use of heavy equipment, including a clamshell dredge, dredging crane, a small tug, dredging barge, dump trucks, and a skip loader. ULA estimates that the noise levels emanating from within 50 ft of the dredging and construction equipment would range from 56 to 93 decibels (dB) (A-weighted) (re 20 FPascals at 1–m). Thus, there is the potential that an animal hauled out on the beach or breakwater could hear the dredging activities. Dredge operations, from set-up to tear-down, would continue 24–hours a day for three to five weeks. Sedimentation surveys have shown that initial dredging indicates that maintenance dredging should be required annually or twice per year, depending on the hardware delivery schedule.

A more detailed description of the work proposed for 2009–2010 is contained in the application, which is available upon request (see ADDRESSES), and in the Final U.S. Air Force Environmental Assessment for Harbor Activities Associated with the Delta IV Program at Vandenberg Air Force Base (ENSR International, 2001).

**Cargo Movement Activities**

The Delta IV/EELV launch vehicle is comprised of a common booster core (CBC) and other mechanical elements. Removal of the CBC from the vessel requires the use of an elevating platform transporter (EPT). ULA measured the EPT's sound levels within 20 ft of the exhaust pipe with the engine running at mid-speed and observed sound levels of 85 dB (re 20 FPascals at 1–m) (Acentech, 1998). The removal procedure requires two short (approximately 1/3 second) beeps of the horn prior to starting the ignition. The sound level of the EPT horn ranged from 62 to 70 dB A-weighted at 200 ft (60.9 m) away, and 84 to 112 dB A-weighted at 25 ft (7.6 m) away.

For cargo other than the CBC, ULA will use a standard diesel truck tractor to offload containers containing flight hardware items from the *Delta Mariner*. The tractor would generate a sound level of approximately 87 dB A-weighted at 50 ft (15.2 m) while in operational mode. Total docking and cargo movement activities is estimated to last approximately no more than 18 hours in good weather.

A more detailed description of the work proposed for 2008 is contained in the application which is available upon request (see ADDRESSES) and in the Final U.S. Air Force Environmental Assessment for Harbor Activities Associated with the Delta IV Program at Vandenberg Air Force Base (ENSR International, 2001).

**Comments and Responses**

NMFS published a notice of receipt of the ULA application and proposed IHA in the **Federal Register** on July 8, 2009 (74 FR 32565). During the 30–day public comment period, NMFS received one comment from the public and comments from the Marine Mammal Commission (Commission). Following are the comments from the Commission and the public commenter and NMFS' responses.

*Comment 1:* The Commission recommends that NMFS approve the request provided that all reasonable measures will be taken to ensure the least practicable impact on the subject species and the required mitigation and monitoring activities are carried out as described in the July 8, 2009 **Federal Register** notice and the IHA application.

*Response:* NMFS agrees with the Commission's recommendation, and all monitoring and mitigation measures described in the previous **Federal Register** notices (67 FR 36151, May 23, 2002), (68 FR 36540, June 18, 2003), (69 FR 29696, May 25, 2004), (70 FR 30697, May 27, 2005), (71 FR 36321, June 26, 2006), (72 FR 34444, June 22, 2007), and (73 FR 49649, August 22, 2008) are required in the current IHA.

*Comment 2:* One commenter opposed the project on the grounds that it would cause injury or mortality.

*Response:* As described in detail in the **Federal Register** notice of receipt of the application (74 FR 32565, July 8, 2009), no marine mammal will be killed or injured as a result of the operations by ULA. The project would only result Level B behavioral harassment of a small number of. No take by Level A harassment (injury) or death is anticipated nor authorized from this project.

**Marine Mammals Affected by the Activity**

The marine mammal species likely to be harassed incidental to harbor activities at south VAFB are the Pacific harbor seal, California sea lion, and northern elephant seal, which haul out in the area where these activities are conducted. None of the haul-out areas near these activities are used for breeding, molting, or mating. A more detailed discussion of the status of these stocks and their occurrence at VAFB, as well as other marine mammal species that occur at VAFB, was included in the notice of the proposed IHA (74 FR 32565, July 8, 2009).

**Potential Effects of Activities on Marine Mammals**

Acoustic and visual stimuli generated by the use of heavy equipment during the *Delta Mariner* off-loading operations, dredging, and kelp habitat mitigation and the increased presence of personnel, may cause short-term disturbance to harbor seals and California sea lions hauled out on the beach and rocks near south VAFB harbor. This disturbance from acoustic and visual stimuli is the principal means of marine mammal taking associated with these activities. NMFS anticipates that no injury will result from these actions. A discussion of the sound levels produced by the equipment, behavioral reactions of marine mammals to loud noises or looming visual stimuli, and some specific observations of the response of marine mammals to this activity gathered during previous monitoring were presented in the notice of proposed IHA (74 FR 32565, July 8, 2009) and is not repeated here. For a further discussion of anticipated effects of the planned activities on pinnipeds in the area, refer to the application, NMFS' 2005 Environmental Assessment (EA) and ENSR International's 2001 Final EA.

**Numbers of Marine Mammals Expected to be Harassed**

ULA estimates that a maximum of 43 harbor seals per day may be hauled out near the south VAFB harbor, with a daily average of 21 seals sighted when tidal conditions were favorable during previous harbor dredging operations. Considering the maximum and average number of seals hauled out per day, assuming that the seals may be seen twice a day, and using a maximum total of 73 operating days in 2009–2010, NMFS estimates that a maximum of 767 to 1,570 Pacific harbor seals may be subject to Level B harassment out of a total estimated population of 31,600. These numbers are small relative to this population size (2.4 - 5 percent).

During wharf modification activities, a maximum of six California sea lions were seen hauling out in a single day. Based on the above-mentioned calculation, NMFS believes that a maximum of 219 California sea lions may be subject to Level B harassment out of a total estimated population of 238,000. These numbers are small relative to this population size (less than 0.1 percent).

Up to 10 northern elephant seals (because they may be present in nearby waters) may be subject to Level B harassment out of a total estimated population of 124,000 in 2005. These numbers are small relative to this population size (less than 0.01 percent).

**Possible Effects of Activities on Marine Mammal Habitat**

ULA does not anticipate any loss or modification to the habitat used by Pacific harbor seals or California sea lions that haul out near the south VAFB harbor. The harbor seal and sea lion haul-out sites near south VAFB harbor are not used as breeding, molting, or mating sites; therefore, it is not expected that the activities in the harbor will have any impact on the ability of Pacific harbor seals or California sea lions in the area to reproduce.

ULA anticipates unavoidable kelp removal during dredging. This habitat modification will not affect the marine mammal habitat. However, ULA will mitigate for the removal of kelp habitat by placing 150 tons of rocky substrate in a sandy area between the breakwater and the mooring dolphins to enhance an existing artificial reef. This type of mitigation was implemented by the U.S. Army Corps of Engineers following the 1984 and 1989 dredging.

The anticipated negative effects of dredging and kelp mitigation (short-term increase in noise and sedimentation) will be short-term and are not expected to result in a loss or modification to the habitat used by Pacific harbor seals, California sea lions, or northern elephant seals that haul out near the south VAFB harbor. Additional details were provided in the notice of proposed IHA (74 FR 32565, July 8, 2009).

**Mitigation**

To reduce the potential for disturbance from visual and acoustic stimuli associated with the activities, ULA and/or its designees will undertake the following marine mammal mitigating measures:

(1) If activities occur during nighttime hours, lighting will be turned on before dusk and left on the entire night to avoid startling pinnipeds at night.

(2) Activities will be initiated before dusk.

(3) Construction noises will be kept constant (i.e., not interrupted by periods of quiet in excess of 30 minutes) while pinnipeds are present.

(4) If activities cease for longer than 30 minutes and pinnipeds are in the area, start-up of activities will include a gradual increase in noise levels.

(5) A NMFS-qualified marine mammal observer will visually monitor the pinnipeds on the beach adjacent to the harbor and on rocks for any flushing or other behaviors as a result of ULA's activities (see Monitoring).

(6) To the extent possible, the *Delta Mariner* and accompanying vessels will enter the harbor only when the tide is too high for harbor seals to haul-out on the rocks. The vessel will reduce speed 1.5 to 2 knots (2.8–3.7 km/hr) once the vessel is within 3 mi (4.83 km) of the harbor. The vessel will enter the harbor stern first, approaching the wharf and mooring dolphins at less than 0.75 knot (1.4 km/hr).

(7) As alternate dredge methods are explored, the dredge contractor may introduce quieter techniques and equipment.

**Monitoring**

As part of its 2002 application, Boeing, now ULA, provided a proposed monitoring plan for assessing impacts to harbor seals from the activities at south VAFB harbor and for determining when mitigation measures should be employed. NMFS is requiring the same plan for this IHA.

A NMFS-qualified and VAFB-designated biologically trained observer will monitor the area for pinnipeds during all harbor activities. During nighttime activities, the harbor area will be illuminated, and the monitor will use a night vision scope. Monitoring activities will consist of:

(1) Conducting baseline observation of pinnipeds in the project area prior to initiating project activities.

(2) Conducting and recording observations on pinnipeds in the vicinity of the harbor for the duration of the activity occurring when tides are low enough for pinnipeds to haul out (2 ft, 0.61 m, or less).

(3) Conducting post-construction observations of pinniped haul-outs in the project area to determine whether animals disturbed by the project activities return to the haul-out.

Monitoring results from previous years of these activities have been reviewed and incorporated into the analysis of potential effects in this document, as well as the take estimates.

**Reporting**

ULA will notify NMFS two weeks prior to initiation of each activity. ULA will submit a draft report on all activities, 120 days prior to the expiration of this Authorization if a new Authorization will be requested for 2010–2011, and a final report within 120 days after the expiration of this Authorization, regardless of whether or not a new Authorization will be requested. The report will provide dates, times, durations and locations of specific activities, details of pinniped behavioral observations, and estimates of numbers of affected pinnipeds and impacts (behavioral or other). In addition, the report will include information on the weather, tidal state, horizontal visibility, and composition (species, gender, and age class) and locations of haul-out group(s). In the unanticipated event that any cases of pinniped injury or mortality are judged to result from these activities, ULA or its designee shall cease operations immediately and report the incident to NMFS immediately.

**Endangered Species Act (ESA)**

This action will not affect species listed under the ESA that are under the jurisdiction of NMFS. VAFB formally consulted with U.S. Fish and Wildlife Service in 1998 on the possible take of southern sea otters during Boeing's, now ULA, harbor activities at south VAFB. A Biological Opinion was issued in August 2001, which concluded that the EELV Program is not likely to jeopardize the continued existence of the southern sea otter and no injury or mortality is expected. The activities covered by this IHA are analyzed in that Biological Opinion, and this IHA does not modify the action in a manner that was not previously analyzed.

**National Environmental Policy Act**

In 2001, the United States Air Force (USAF) prepared an EA for harbor activities associated with the Delta IV Program at VAFB. In 2005, NMFS prepared an EA supplementing the information contained in the USAF EA and issued a Finding of No Significant Impact (FONSI) on the issuance of an IHA for Boeing's, now ULA, harbor activities in accordance with section 6.01 of the National Oceanic and Atmospheric Administration

Administrative Order 216–6 (Environmental Review Procedures for Implementing the National Environmental Policy Act, May 20, 1999). ULA's activities and impacts for 2008–2009 are expected to be within the scope of NMFS' 2005 EA and FONSI.

**Determinations**

NMFS has determined that the impact of harbor activities related to the Delta IV/EELV at VAFB (transport vessel operations, cargo movement activities, harbor maintenance dredging, and kelp habitat mitigation) will result in the Level B Harassment of small numbers of Pacific harbor seals, California sea lions, and northern elephant seals. The effects of ULA's harbor activities are expected to be in the form of short-term and localized behavioral changes, and no take by injury or death is anticipated or authorized. NMFS has further determined that these takes will have a negligible impact on the affected marine mammal species and stocks.

While the number of incidental harassment takes will depend on the distribution and abundance of marine mammals in the vicinity of the activity, the number of potential harassment takings is estimated to be small (less than five percent of any of the estimated population sizes) and has been mitigated to the lowest level practicable through incorporation of the measures mentioned previously in this document.

The provision requiring that the activity not have an unmitigable adverse impact on the availability of the affected species or stock for subsistence uses is not implicated by this action.

Northern fur seals, Guadalupe fur seals, and Steller sea lions are unlikely to be found in the area and, therefore, will not be affected. No rookeries, mating grounds, areas of concentrated feeding, or other areas of special significance for marine mammals occur within or near south VAFB harbor.

**Authorization**

As a result of these determinations, NMFS has issued an IHA to ULA to take marine mammals, by Level B harassment, incidental to conducting harbor activities at VAFB for a one-year period, provided that the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: September 4, 2009.

**James H. Lecky,**

*Director, Office of Protected Resources, National Marine Fisheries Service.*

[FR Doc. E9–21961 Filed 9–10–09; 8:45 am]

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**Army Regulation 900–1**

**Army Space Activities**

# Department of the Army Space Policy

**Headquarters**
**Department of the Army**
**Washington, DC**
**23 January 2009**

**UNCLASSIFIED**

# *SUMMARY*

AR 900–1
Department of the Army Space Policy

This new Department of the Army Regulation, dated 23 January 2009--

- o Prescribes responsibilities for implementing Department of the Army Space Policy (chap 1, sec II).

- o Establishes the Army Space Council (para 1-20).

- o Establishes Department of the Army Space Policy (chap 2).

**Headquarters**
**Department of the Army**
**Washington, DC**
**23 January 2009**

# Army Regulation 900–1

**Effective 23 February 2009**

## Army Space Activities

# Department of the Army Space Policy

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
*General, United States Army*
*Chief of Staff*

Official:

JOYCE E. MORROW
*Administrative Assistant to the Secretary of the Army*

**History.** This publication is a new Department of the Army Regulation.

**Summary.** This regulation implements policies and procedures contained in DODD 3100.10 and DODD 5101.2. This regulation establishes U.S. Army policy and the responsibilities and authorities for the development of Army space capabilities.

**Applicability.** This regulation applies to the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve, unless otherwise stated.

**Proponent and exception authority.** The proponent of this regulation is the Deputy Chief of Staff, G–3/5/7. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25–30 for specific guidance.

**Army management control process.** This regulation contains management control provisions, but does not identify key management controls that must be evaluated.

**Supplementation.** Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from the Deputy Chief of Staff, G–3/5/7 (DAMO–ZA), 400 Army Pentagon, Washington, DC 20310–0400.

**Suggested improvements.** Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Deputy Chief of Staff, G–3/5/7 (DAMO–SSS), 400 Army Pentagon, Washington, DC 20310–0400.

**Committee Continuance Approval.** The Department of the Army committee management official concurs in the establishment and/or continuance of the committee(s) outlined herein, in accordance with AR 15–1. Army Regulation 15–1 requires the proponent to justify establishing/continuing committee(s), coordinate draft publications, and coordinate changes in committee status with the Department of the Army Committee Management Office (AARP–ZA), 2511 Jefferson Davis Highway, Taylor Building, 13th Floor, Arlington, VA 22202–3926. Further, if it is determined that an established "group" identified within this regulation, later takes on the characteristics of a committee, the proponent will follow all AR 15-1 requirements for establishing and continuing the group as a committee.

**Distribution.** This publication is available in electronic media only and is intended for command levels C, D, and E for the Active Army, Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

**Contents** (Listed by paragraph and page number)

**Contents—Continued**

# Chapter 1
# General

## Section I
## Introduction

### 1–1. Purpose
This regulation prescribes policy, establishes objectives, and assigns responsibility for space related planning and programming, combat development, and materiel development. It assigns responsibilities and membership to the Army Space Council (ASC).

### 1–2. References
Required and related publications and prescribed and referenced forms are listed in appendix A.

### 1–3. Explanation of abbreviation and terms
Abbreviations and special terms used in this regulation are explained in the glossary.

## Section II
## Responsibilities
Space is a critical enabler of land force operations today and grows in importance as the Future Force matures. This policy assigns Army level space related responsibilities, and it is important to recognize how their execution differs from that of traditional land force systems. The difference is in the relationship between combat development (CBTDEV) and materiel development (MATDEV). The Army bases all capabilities on requirements. CBTDEV shapes and validates the Army's requirements. Material development brings these requirements to a materiel solution. While the Army, like other military, national, and civil space users, develops its own requirements, the Army's space MATDEV focuses on user equipment. Typically, the Air Force, Navy, and other agencies will be responsible for MATDEV of future space-based systems. Developing effective space capabilities requires collaboration between the Army's space experts and various functional subject matter experts. Army space requirements based on solid analysis are the seed and foundation of space capabilities relevant to land force operations. Along these lines, two factors make executing Army Space Policy responsibilities especially challenging. The first involves the Joint Capabilities Integration and Development System (JCIDS). The institutionalized JCIDS process places increased emphasis on CBTDEV and holds requirements approval authority at the Joint Staff level. The best opportunity to influence MATDEV of space systems is by developing compelling requirements through JCIDS. The second factor is the Army's functional proponency alignment. There are five dominant Army stakeholder communities that influence space related CBTDEV and MATDEV. The Chief Information Officer/G–6 (CIO/G–6) represents the Network and Communications community. The Deputy Chief of Staff, G–2 (DCS, G–2) represents the Army's Intelligence community. The Deputy Chief of Staff, G–3/5/7 (DCS, G–3/5/7) represents the electronic warfare community. The Commanding General (CG), U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command (USASMDC/ARSTRAT) represents the Army Space community. Finally, the CG, U.S. Army Training and Doctrine Command (TRADOC) represents the land force CBTDEV community. The Army will overcome the space related development process challenges through collaborative cross-proponent efforts centered on the operational and tactical needs of land forces. This chapter outlines and clarifies roles and responsibilities for implementation of DA Space Policy.

### 1–4. Secretary of the Army
The Secretary of the Army (SA) will—

*a.* Serve as senior official for space related activities.

*b.* Accomplish missions and functions prescribed in DOD Directive (DODD) 3100.10 and DODD 5101.2.

### 1–5. Chief of Staff, Army
The Chief of Staff, Army (CSA) will—

*a.* Serve as senior military leader of the Army for space related activities

*b.* Assist the SA in space related public communications.

*c.* Ensure all missions and functions prescribed in DODD 3100.10 and DODD 5101.2 are completed.

### 1–6. Under Secretary of the Army
The Under Secretary of the Army (USA) will—

*a.* Oversee space related acquisition comptroller, financial management, and information management functions.

*b.* Oversee space related manpower and personnel; operations and plans; requirements and programs; intelligence; command, control, communications, computers, and information technology; and readiness matters.

*c.* Represent the Army with the Office of the Secretary of Defense (OSD) and the Department of Defense (DOD) Executive Agent for Space in space related areas.

*d.* Advocate Army space related policies, programs, and budgets outside Army.

## 1–7. Vice Chief of Staff, Army

The Vice Chief of Staff, Army (VCSA) will—

*a.* Advise and assist the CSA on space related matters.

*b.* Represent the Army at the Joint Staff in space related areas.

*c.* Advocate Army space related capabilities, requirements, plans, and programs in Joint forums.

## 1–8. Assistant Secretary of the Army (Acquisition, Logistics and Technology)

The Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)) will—

*a.* Serve as the Army Acquisition Executive (AAE), the Senior Procurement Executive, the Science Advisor to the Secretary of the Army, and as the senior research and development official for the Department of the Army.

*b.* As the AAE, administer space acquisition programs in accordance with DOD policies and guidelines.

*c.* As the AAE, appoint, supervise, and evaluate assigned Program Executive Officers and direct-reporting Program, Project, and Product Managers.

*d.* As the AAE, have principal responsibility for all DA matters and policy related to acquisition, logistics, technology, procurement, the industrial base, and security cooperation.

*e.* Administer and oversee research, development, test, evaluation, and acquisition programs, to include the execution of data/information exchange programs, cooperative research and development memoranda of understanding, and participation in international forums concerning the aforementioned subjects.

*f.* Oversee planning, budget and transition activities for space-related science and technology efforts.

*g.* Oversee Integrated Logistics Support for space related systems.

*h.* Organize and staff a program office to execute the Army's Tactical Exploitation of National Capabilities (TENCAP) program in accordance with the Charter of the United States Army Space Program Office.

*i.* Designate the Army representative to the Defense Space Acquisition Board when convened by the Undersecretary of Defense (Acquisition, Technology & Logistics) or the DOD Executive Agent for Space.

*j.* Provide a participant to the ASC.

## 1–9. Assistant Secretary of the Army (Financial Management and Comptroller)

The Assistant Secretary of the Army (Financial Management and Comptroller) (ASA(FM&C)) will—

*a.* Direct and manage the Department of the Army's space related financial management activities and operations.

*b.* Execute the Army's space related Planning, Programming, Budgeting, and Execution (PPBE) process according to the functions specified for the Under Secretary of Defense (Comptroller) in Section 135, Title 10, United States Code (10 USC 135).

*c.* Align and provide Army resources to support space related programs in coordination with ASA(ALT).

*d.* Oversee Armywide cost and economic analysis functions and activities. Supervise, direct, and develop space related cost estimates in support of systems acquisition and PPBE.

## 1–10. The Chief Information Officer/G–6

The Chief Information Officer/G–6 (CIO/G-6) will—

*a.* Serve as military advisor to the SA and CSA on space related command, control, communications, computers, and information technology (C4IT).

*b.* Advocate and oversee space related C4IT and battle command capabilities development, gaps, and documentation as the senior member an Army space stakeholder community.

*c.* Pursue and advocate the Army's communications network architecture with integrated solutions. Submit applicable portions of architecture to the National Security Space communications architecture.

*d.* Serve as the Army Staff (ARSTAF) lead for satellite communications (SATCOM) and position, navigation, and timing (PNT) integration. Support seamless integration of capabilities for operations in all terrain.

*e.* Provide guidance to USASMDC/ARSTRAT, and Network Enterprise Technology Command (NETCOM) on the optimal mix of commercial and military SATCOM resources.

*f.* Oversee an Army SATCOM roadmap and strategy that explains space related C4IT needs.

*g.* Advocate space concepts that support net-centric warfare. Work with TRADOC to develop supporting doctrine, organization, training, materiel, leadership, education, personnel, and facilities (DOTMLPF) solutions. Oversee an Army SATCOM roadmap and strategy that explains space related C4IT needs.

*h.* Represent Army C4IT interests in Joint and DOD space programs. Coordinate with DCS, G–3/5/7 and other Army stakeholders.

*i.* Lead Army interaction with the National Security Space Office (NSSO) (specifically, the Communications Functional Integration Office) to develop a space communications architecture.

*j.* Support the National Reconnaissance Office (NRO) Army Coordination Team.

*k.* Provide a participant to the ASC.

### 1–11. Deputy Chief of Staff, G–1

The Deputy Chief of Staff, G–1 (DCS, G–1) will—

*a.* Serve as military advisor to the CSA for space related human resources.

*b.* Create plans, policies, and programs to develop the Army's military and civilian space cadre.

*c.* Coordinate with the Army Space Cadre Office (ASCO) to collect and report Army Space Cadre information.

*d.* Review various documents, Manpower and Personnel Integration management plans, and draft Basis of Issue Plans to coordinate workers support actions and Army space plans.

*e.* Develop policies that govern space related position approvals, arrangement, grade, and staff supervision.

*f.* Review Manpower Requirement Criteria space related studies. Determine issues dealing with Army ability to support and afford it workforce.

*g.* Provide a participant to the ASC.

### 1–12. Deputy Chief of Staff, G–2

The Deputy Chief of Staff, G–2 (DCS, G–2) will—

*a.* Serve as military advisor to the CSA for space related intelligence, surveillance, and reconnaissance (ISR).

*b.* Advocate Army interests in the Intelligence Community (IC). Leverage IC assets in support of the Army.

*c.* Serve as ARSTAF lead to review, assess, and integrate ISR, geospatial and weather capabilities to support land forces.

*d.* Advocate and oversee space related ISR capabilities development, gaps, and documentation as the senior member of an Army space stakeholder community.

*e.* Oversee, coordinate, and direct intelligence aspects of the Army TENCAP program.

*f.* Formulate and manage the Army portion of the National Intelligence Program and other national and Joint-level programs.

*g.* Represent Army interests to the NRO Deputy Director for Mission Support.

*h.* Represent Army interests in DOD Space Reconnaissance Program forums.

*i.* Lead Army efforts for Joint Staff intelligence and space related special projects.

*j.* Lead Army interaction with the NRO through the Army Coordination Team.

*k.* Provide a participant to the ASC.

### 1–13. Deputy Chief of Staff, G–3/5/7

The Deputy Chief of Staff, G–3/5/7 (DCS, G–3/5/7) will—

*a.* Serve as principal military advisor to the CSA for space related policy, plans, and strategies.

*b.* Serve as the ARSTAF focal point for space. Synchronize and coordinate space related strategies, concepts, requirements, priorities, plans, programs, force structure, and capabilities with the DOD Executive Agent for Space and other external agencies.

*c.* Develop Army space positions, policies, plans, and strategies. Develop, coordinate, and update DA Space Policy. Serve as the lead for space related input to the Army Strategic Planning Guidance, Army Planning Priorities Guidance, and Army Campaign Plan.

*d.* Represent Army space positions, policies, plans, and strategies external to the Army. Act as the single point of contact for space related topics and issues to the DOD Executive Agent for Space, the NSSO, Joint organizations, and other agencies. Provide program information to integrate with the Army Space Master Plan, National Security Space Plan (NSSP), and other space related documents that support DOD planning, programming, and acquisition processes.

*e.* Direct collaboration among ARSTAF, TRADOC, and USASMDC/ARSTRAT to determine space related concepts and requirements in support of land forces.

*f.* Oversee Army policy for implementing JCIDS.

(1) Lead ARSTAF efforts to staff space related JCIDS documents.

(2) Organize recommendations for validation or approval.

(3) Prepare subjects for briefing to the Army Requirements Oversight Council (AROC) and transmittal to Joint Staff.

*g.* Provide the chairperson of the ASC and its subordinate groups. Serve as the Executive Secretariat for the ASC. Prepare, approve, and maintain the ASC charter.

*h.* Lead and oversee analytic efforts that support key Army leadership space related decisions. Lead and develop coordinated Army positions for all space related activities when required by Congress, the Government Accountability Office, or other government agencies.

*i.* Advocate and oversee space related electronic warfare capabilities development, gaps, and documentation as the senior member of an Army space stakeholder community.

*j.* Support Army space related strategy, planning and policy formulation.

(1) Monitor and assess the ability of the Army to support space related planning, programming, acquisition, and operations.

(2) Monitor and assess the readiness of space forces.

*k.* Support the NRO Army Coordination Team.

### 1–14. Deputy Chief of Staff, G–4

The Deputy Chief of Staff, G–4 (DCS, G–4) will—

*a.* Serve as principal military logistics advisor to the CSA for space related plans and programs.

*b.* Advise TRADOC and ASA(ALT) on space related policy to meet sustainment needs.

*c.* Provide space related system sustainment to program and life–cycle managers.

*d.* Support space related JCIDS, Capabilities Based Assessments, acquisition and sustainment plans.

*e.* Provide participant to the ASC.

### 1–15. Deputy Chief of Staff, G–8

The Deputy Chief of Staff, G–8 (DCS, G–8) will—

*a.* Serve as principal military advisor to the ASA(FM&C) for space related plans and programs.

*b.* Serve the CSA as principal advisor on space related Joint materiel requirements, and materiel program execution. Coordinate space related matters under Joint Requirements Oversight Council consideration.

*c.* Actively support the JCIDS review with DCS, G–3/5/7. Represent Army interests in Joint Staff boards and councils. Program the fielding of campaign quality space enabled Army capabilities to the Joint Force.

*d.* Maintain program, budget, and fielding data for current and planned Army space related programs of record (POR). Recommend planning and programming guidance for Army space related POR for use by OSD.

*e.* Synchronize resourcing and equipping solutions for Army space related capabilities with ASA(ALT) and proponents. Develop and defend Program Objective Memorandum (POM) positions for validated Army space related programs.

*f.* Serve as the lead for space related input to the Army Modernization Plan.

*g.* Participate in space program reviews with the NSSO. Serve as Army lead for the National Security Space Program Assessment (NSSPA). Share approved POM with the DOD Executive Agent for Space.

*h.* Track and submit Army space related program, budget, and fielding data for integration with major space programs. Submit data through the USA to the DOD Executive Agent for Space.

*i.* Compile Army input for the Virtual Major Force Program for space in accordance with DODD 5101.2. Submit Army input to the DOD Executive Agent for Space.

*j.* Provide participant to the ASC.

### 1–16. Director, Army National Guard

The Director, Army National Guard will—

*a.* Serve the CSA as principal military advisor for space related activities within the Army National Guard.

*b.* Coordinate with the functional proponents to capture Army National Guard space related needs in JCIDS documents.

*c.* Submit information to USASMDC/ARSTRAT about the Army Space Cadre as needed for tracking.

*d.* Provide participant to the ASC.

### 1–17. Chief, Army Reserve

The Chief, Army Reserve will—

*a.* Serve the CSA as principal military advisor for space related activities within the Army Reserve.

*b.* Coordinate with the functional proponents to capture Army Reserve space related needs in JCIDS documents.

*c.* Submit information to USASMDC/ARSTRAT about the Army Space Cadre as needed for tracking.

*d.* Provide participant to the ASC.

### 1–18. Commanding General, Training and Doctrine Command

The Commanding General, Training and Doctrine Command (TRADOC) will—

*a.* Serve as the architect of the future Army. Serve as the combat and training developer for Army space related efforts.

*b.* Develop and approve the Army Capstone Concept, operating concepts, functional concepts, and concept capability plans that support space related operations.

*c.* Develop, endorse, and submit Army space related capability documents to Headquarters Department of the Army (HQDA) DCS, G–3/5/7 for AROC and Joint Staff approval, as required.

*d.* Determine and integrate force requirements. Synchronize the development of space related DOTMLPF solutions across the Army.

*e.* Provide participant to the ASC.

### 1–19. Commanding General, U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command

The Commanding General, U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command (USASMDC/ARSTAT) will—

*a.* Serve as Army proponent for space and space related capabilities per DA General Order (DAGO) 2006–37 and Army Regulation (AR) 5-22.

*b.* Serve as Army Service Component Command to U.S. Strategic Command per AR 10–87.

*c.* Participate in Joint space operations, training, exercises, and experiments.

*d.* Conduct space related CBTDEV in accordance with JCIDS—

(1) Document Army space required capabilities, capability gaps and DOTMLPF solutions. Coordinate documentation with other combat developers, U.S. Strategic Command, U.S. Joint Forces Command, and other Services.

(2) Review non-Army space related JCIDS documents to ensure Army equities and land force operational requirements are addressed, when appropriate. Coordinate awareness and support with functional proponents and Army stakeholders.

*e.* In coordination with TRADOC—

(1) Develop space operating concepts, conduct space related assessments, and prepare implementing plans.

(2) Integrate space related concepts, architectures, requirements, and DOTMLPF solutions.

(3) Serve as Army lead for all space related training and integration actions required in addition to that provided by TRADOC through its Army proponents.

(4) Develop and provide space related training required in addition to that provided by TRADOC through its Army proponents.

(5) Develop the Space appendix to the annual Army Concepts and Capability Development Plan.

*f.* Conduct space related MATDEV for assigned programs in accordance with AR 70-1, DOD Instruction (DODI) 5000.2, and other acquisition regulations and policies.

*g.* Serve as Army proponent for space operations officers.

*h.* Organize and staff ASCO that will—

(1) Coordinate Army representation on the DOD Space Professional Oversight Board and other space cadre forums.

(2) Coordinate with HQDA DCS, G–1 to track and report status of Army Space Cadre.

(3) Serve as Coordination Point for proponents with Space Enabler positions in accordance with AR 600-3. Advise and assist proponents with career field life-cycle management.

*i.* Synchronize and integrate Army space related capabilities with joint, interagency, intergovernmental, and multinational architectures.

*j.* Pursue and advocate space and missile defense related technologies and capabilities that meet documented capability gaps and requirements for land forces.

*k.* Support ARSTAF coordination with NSSO that identifies and resolves space related issues. Support ARSTAF participation in preparing an annual NSSP and NSSPA.

*l.* Submit space and missile defense needs through TRADOC to integrate with strategies, plans and policies.

*m.* Support the NRO Army Coordination Team.

*n.* Provide a participant to the ASC.

### 1–20. Army Space Council

The Army Space Council will—

*a.* Provide recommendations through the VCSA to the Executive Office of the Headquarters regarding space activities.

*b.* Develop and maintain an approved charter. Revise and revalidate charter as needed. Charter will describe executive, senior and action officer forums.

*c.* Provide a forum to plan, coordinate, and resolve space related issues.

(1) Coordinate space related programming guidance.

(2) Coordinate space related planning guidance.

(3) Develop coordinated Army space related positions.

(4) Direct studies and assessments to support decisionmaking.

*d.* Meet as directed by the DCS, G–3/5/7 in consultation with the CG, USASMDC/ARSTRAT.

# Chapter 2
# Army Space Policy

## 2–1. General
The U.S. Army is one of the largest users of space-based capabilities in DOD. As the Army transforms, its operational characteristics will, in large part, be achieved through the use and exploitation of transformational space systems. This dependency requires the Army to actively participate in defining space related capability needs that ensure necessary force structure and systems are developed and acquired to enable the land force to conduct the full range of military operations now and in the future.

## 2–2. Army space objectives
*a.* The Army's four broad space related objectives are—

(1) To maximize the effectiveness of current space capabilities in support of operational and tactical land warfighting needs.

(2) To influence the design, development, acquisition, and concepts of operation of future space systems that enable and enhance current and future land forces.

(3) To advance the development and effective use of responsive, timely, and assured Joint interoperable space capabilities.

(4) To seamlessly integrate relevant space capabilities into the operating force.

*b.* The Army will pursue and advocate—

(1) Seamless SATCOM capabilities that support land force needs and integrate with the battle command architecture.

(2) Network centric transport layer architecture that supports and meets current and future land force requirements for timely, responsive, and assured C4IT and ISR. Transport layer integrates with joint, interagency, intergovernmental, and multinational elements.

(3) Assured and secure relay via space systems of combat identification and blue force situational awareness and tracking data in accordance with the Army's objective architecture for these capabilities.

(4) Timely and assured theater missile warning, launch detection confirmation, and tracking. Timely, assured, and unambiguous strategic missile warning, launch detection confirmation, and tracking. This information will be provided to land forces through a net centric, robust information transport layer. The future force will be capable of receiving missile warning data via a variety of means including net centric and direct means.

(5) Rapid restoration or augmentation of space capabilities tailored to the needs of joint force commanders.

(6) Robust and survivable sensors responsive to the future force needs. Responsive techniques may include near real-time reporting, tasking from in the theater, and transmitting data directly to theater users.

(7) Assured, jam resistant space and augmentation PNT capability to serve as a: stand alone PNT source; positioning source for ground-based weapon systems; navigation source for vehicles; and timing source for C4IT systems synchronization.

(8) Assured and tailorable weather, terrain, and environmental monitoring. Land forces require that these capabilities provide targeting quality terrain databases, three dimensional battlespace visualization, timely change recognition capabilities, and the weather tools required to plan and conduct land force operations.

(9) Space control capabilities that are responsive to land force operations.

(10) Space ranges to test, integrate, and exercise land force space concepts and technologies.

*c.* To achieve the Army's space responsibilities the Army will—

(1) Leverage existing space related capabilities from national, DOD, commercial and coalition partners to meet current and future force operational needs.

(2) Research, develop, experiment, and acquire Army space related capabilities that enable the Army to meet its assigned DOD, Joint, and National responsibilities.

(3) Execute CBTDEV and MATDEV to support space related DOTMLPF transformation efforts as outlined in the Army Plan. Articulate these efforts for matriculation across DOD in order to advance common Joint interoperability.

(4) Maintain a responsive and innovative Army TENCAP program.

(5) Identify, track, and report its organic Space Cadre as needed. The Army's Space Cadre consists of space

professionals and personnel assigned to identified Space Enabler billets. Provide robust space support, space force enhancement, space control and space force application to joint and future force operations.

(6) Participate in joint and Army space related training, education, exercises, experiments, and operations. Use these activities to help identify Army space related capability needs and potential solutions.

(7) Support NSSO led activities to include developing space program and architectures, the NSSP, and NSSPA.

(8) Maintain a robust science and technology effort to integrate commercial space related capabilities into programs.

## Appendix A
## References

### Section I
### Required Publications

**DODD 3100.10**
Department of Defense Space Policy (Cited in paras 1–4*b*, 1–5*c*.) (Available at http://www.dtic.mil/whs/directives/.)

**DODD 5101.2**
DOD Executive Agent for Space (Cited in paras 1–4*b*, 1–5*c*, and 1–14*i*.) (Available at http://www.dtic.mil/whs/directives/.)

### Section II
### Related Publications

A related publication is a source of additional information. The user does not have to read it to understand this regulation. DOD publications are available at http://www.dtic.mil/whs/directives/.

**AR 5–22**
The Army Proponent System

**AR 10–87**
Army Commands, Army Service Component Commands, and Direct Reporting Units

**AR 70–1**
Army Acquisition Policy

**AR 600–3**
The Army Personnel Proponent System

**AR 600–8**
Military Personnel Management

**AR 700–127**
Integrated Logistics Support

**CJCSI 3170.01**
Joint Capabilities Integration and Development System (Available at http://www.dtic.mil/cjcs_directives/cdata/unlimit/3170_01.pdf.)

**CJCSM 3170.01**
Operation of the Joint Capabilities Integration and Development System (Available at http://www.dtic.mil/cjcs_directives/cdata/unlimit/m317001.pdf.)

**DAGO 2002–03**
Assignment of Functions and Responsibilities within Headquarters, Department of the Army

**DAGO 2006–04**
Redesignation of the United States Army Training and Doctrine Command Future Center as the Army Capabilities integration Center

**DAGO 2006–37**
Designation of the United States Army Space and Missile Defense Command/Army Strategic Command as an Army Service Component Command

**DA Pam 70–3**
Army Acquisition Procedures

**DA Pam 600–3**
The Office Personnel Management System

**DODD 5000.01**
The Defense Acquisition System

**DODD 5100.1**
Functions of the Department of Defense and its Major Components

**DODD 8581.1**
Information Assurance Policy for Space Systems Used by the Department of Defense

**DODI 3100.12**
Space Support

**DODI 3100.14**
Space Force Enhancement

**DODI 3100.15**
Space Control

**DODI 5000.2**
Operation of the Defense Acquisition System

**FM 3–14**
Space Support to Army Operations (Available at http://www.tradoc.army.mil/publications.htm.)

**10 USC 135**
Space Programs (Available at http://www.gpoaccess.gov/uscode/.)

**Army Campaign Plan**
Army Campaign Plan (Available at http://www.army.mil/features/thewayahead/acp.html.)

**Army Modernization Plan**
Army Modernization Plan (Available at http://www.army.mil/institution/leaders/modplan.)

## Section III
## Prescribed Forms
This section contains no entries.

## Section IV
## Referenced Forms
This section contains no entries.

## Glossary

### Section I
### Abbreviations

**AAE**
Army acquisition executive

**AR**
Army regulation

**AROC**
Army Requirements Oversight Council

**ARSTAF**
Army Staff

**ASA(ALT)**
Assistant Secretary of the Army (Acquisition, Logistics, and Technology)

**ASA(FM&C)**
Assistant Secretary of the Army (Financial Management and Comptroller)

**ASC**
Army Space Council

**ASCO**
Army Space Cadre Office

**C4IT**
command, control, communications, computers, and information technology

**CBTDEV**
combat development

**CG**
commanding general

**CIO**
chief information officer

**CSA**
Chief of Staff, Army

**DA**
Department of the Army

**DCS, G–1**
Deputy Chief of Staff, G–1

**DCS, G–2**
Deputy Chief of Staff, G–2

**DCS, G–3/5/7**
Deputy Chief of Staff, G–3/5/7

**DCS, G–4**
Deputy Chief of Staff, G–4

**DCS, G–6**
Deputy Chief of Staff, G–6

**DCS, G–8**
Deputy Chief of Staff, G–8

**DOD**
Department of Defense

**DODD**
Department of Defense Directive

**DODI**
Department of Defense Instruction

**DOTMLPF**
doctrine, organization, training, materiel, leadership and education, personnel, and facilities

**HQDA**
Headquarters, Department of the Army

**IC**
intelligence community

**ISR**
intelligence, surveillance, and reconnaissance

**JCIDS**
Joint Capability Integration and Development System

**MATDEV**
materiel development

**NETCOM**
Network Enterprise Technology Command

**NRO**
National Reconnaissance Office

**NSSO**
National Security Space Office

**NSSP**
National Security Space Plan

**NSSPA**
National Security Space Program Assessment

**OSD**
Office of the Secretary of Defense

**PNT**
position, navigation, and timing

**POM**
program objective memorandum

**POR**
program of record

**PPBE**
planning, programming, budgeting, and execution

**SA**
Secretary of the Army

**SATCOM**
Satellite Communications

**TENCAP**
tactical exploitation of national capabilities

**TRADOC**
U.S. Army Training and Doctrine Command

**USA**
Under Secretary of the Army

**USASMDC/ARSTRAT**
U.S. Army Space and Missile Defense Command/U.S. Army Forces Strategic Command

**VCSA**
Vice Chief of Staff, Army

## Section II
## Terms

**Army Space Cadre**
Soldiers and civilians whose principal duties include planning, developing, resourcing, acquiring, integrating, or operating space forces, systems, concepts, applications, or capabilities in any element of the four primary mission areas within the domain of Space Operations as defined by JP 3–14. The Army Space Cadre consists of military and civilian space professionals and space enablers.

**Combat developer**
Command or agency that formulates and documents operational concepts, doctrine, organizations, and/or materiel requirements (ICD, CDD, and CPD) for assigned mission areas and functions. Serves as the user representative during acquisitions for their approved materiel requirements as well as doctrine and organization developments.

**Combat development**
Combat developments is the process of: (1) Analyzing, determining, documenting, and obtaining approval of warfighting concepts, future operational capabilities, organizational requirements and objectives, and materiel requirements. (2) Leading the Army community in determining solutions for needed future operational capabilities that foster development of requirements in all DOTMLPF domains. (3) Providing user considerations to, and influence on, the Army's Science & Technology program. (4) Integrating the efforts and representing the user across the DOTMLPF domain during the acquisition of materiel and development of organizational products to fill those requirements.

**Integration**
The process of making or completing by adding or fitting together into an agreed framework (architecture) the information requirements, data, applications, hardware, and systems software required to support the Army in peace, transition, and conflict.

**Joint force**
A general term applied to a force composed of significant elements, assigned or attached, of two or more Military Departments, operating under a single Joint force commander.

**Joint force commander**
A general term applied to a combatant commander, subunified commander, or Joint task force commander authorized to exercise combatant command (command authority) or operational control over a Joint force.

**Joint operations**
A general term to describe military actions conducted by Joint forces or Service forces in relationships between them (for example, support, coordinating authority) that, of themselves, do not create Joint forces.

**Joint publications**
A publication containing Joint doctrine that is prepared under the direction and authority of the Chairman of the Joint Chiefs of Staff and applies to all U.S. military forces.

**LandWarNet**
LandWarNet is the Army's portion of the Global Information Grid. A combination of infrastructure and services, it moves information through a seamless network and enables the management and use of warfighting and business information.

**Land forces**
Personnel, weapon systems, vehicles, and support elements operating on land to accomplish assigned missions and tasks.

**Materiel developer**
The research, development and acquisition command, agency, or office assigned responsibility for the system under development or being acquired. The term may be used generically to refer to the research, development and acquisition community in the materiel acquisition process.

**Requirement**
A formally established, validated, and justified need for the allocation of resources to achieve a capability to accomplish approved military objectives, missions, or tasks.

**Situational awareness**
Knowledge and understanding of the current situation which promotes timely, relevant, and accurate assessment of friendly, enemy, and other operations within the battlespace in order to facilitate decision making. An informational perspective and skill that foster an ability to determine quickly the context and relevance of events that are unfolding.

**Space**
A medium like the land, sea, and air within which military activities will be conducted to achieve U.S. national security objectives.

**Space control**
Combat, combat support, and combat service support operations to ensure freedom of action in space for the area includes: surveillance of space; protection of U.S. and friendly space systems; prevention of an adversary's ability to use space systems and services for purposes hostile to U.S. national security interests; negation of space systems and services used for purposes hostile to U.S. national security interest; and directly supporting battle management, command, control, communications, and intelligence.

**Space enablers**
Space enablers (military and civilian): personnel assigned to positions whose primary career field is not space, but perform unique tasks or functions or may require skills to apply space capabilities. Supplemental space training is directly related to the duty positions of assignment. This group consists of officers, warrant officers, enlisted Soldiers, and civilians across the Army and from a wide variety of career fields, branches, disciplines, and functional areas.

**Space force application**
Combat operations in, through, and from space to influence the course and outcome of conflict. The force application mission area includes ballistic missile defense and force projection.

**Space force enhancement**
Combat support operations to improve the effectiveness of military forces as well as support other intelligence, civil, and commercial users. The space force enhancement mission area includes: intelligence, surveillance, and reconnaissance; integrated tactical warning and attack assessment; command, control, and communications; positions, velocity, time, and navigation; and environmental monitoring.

**Space professionals**
Space professionals (military and civilian): career space specialists, whose principal duties include planning, developing, resourcing, acquiring, integrating, or operating space forces, concepts, applications, or capabilities in accordance with DODD 3100.10 and Joint Publication 3–14. These individuals follow a career of assignments in space positions.

## Section III
## Special Abbreviations and Terms

This section contains no entries.

# USAPD

ELECTRONIC PUBLISHING SYSTEM
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| DOC STATUS: | REVISION |

## DEPARTMENT OF TRANSPORTATION

## Federal Aviation Administration

## Finding of No Significant Impact

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (DOT).

**ACTION:** Notice of environmental finding document: finding of no significant impact.

**SUMMARY:** The FAA participated as a cooperating agency with the U.S. Air Force (USAF) in preparation of the Environmental Assessment (EA) for the Falcon 1 and Falcon 9 Launch Vehicle Program (Falcon Launch Vehicle Program) at Cape Canaveral Air Force Station (CCAFS), Florida, November 2007. The Falcon Launch Vehicle Program is a commercial venture by Space Exploration Technologies, Inc. (SpaceX) to put spacecraft into orbit and supply the International Space Station (ISS) once the Space Shuttle is retired. The Proposed Action analyzed in the EA includes launching two space launch vehicles, the Falcon 1 and the Falcon 9 from Space Launch Complex (SLC) 40, while utilizing the Solid Motor Assembly and Readiness Facility (SMARF) building as a vehicle support facility, and the reentry and recovery of the Dragon reentry capsule in the ocean.

The EA analyzed the environmental consequences of conducting up to twelve Falcon 1 launches per year and up to twelve Falcon 9 launches per year starting in 2008 for the next five years

from SLC 40 at CCAFS. Two alternative locations, SLC 37 and 47, were considered for the launch of the Falcon vehicles. The EA also analyzed the environmental consequences of reentry/recovery of the Dragon reentry capsule. Additionally, the EA analyzed infrastructure improvements proposed at CCAFS to support the proposed launch activities. The USAF signed a Finding of No Significant Impact (FONSI) on December 21, 2007, which stated that the Proposed Action should not have a significant environmental impact on the human environment.

SpaceX is required to obtain a launch license from the FAA to conduct launches of the Falcon 1 and Falcon 9 launch vehicles with commercial payloads. SpaceX also is required to obtain a reentry license from the FAA for the reentry of the Dragon capsule. The FAA is using the EA to support its environmental determination for a launch license for SpaceX to launch Falcon 1 and Falcon 9 vehicles at CCAFS and a reentry license for the Dragon capsule.

From its independent review and consideration, the FAA has determined that the Proposed Action addressed in this FONSI, to issue a launch or reentry license for Falcon 1 and Falcon 9 launch vehicle activities, is substantially the same as the actions analyzed in the Falcon Launch Vehicle Program EA and that FAA's comments and suggestions have been satisfied (see 1506.3(c) and FAA Order 1050.1E, 518h). The FAA formally adopts the EA and hereby incorporates the analysis to support future decisions on license applications.

After reviewing and analyzing currently available data and information on existing conditions, project impacts, and measures to mitigate those impacts, the FAA has determined that its action is not a Federal action that would significantly affect the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA). Therefore, the preparation of an Environmental Impact Statement (EIS) is not required and the FAA is issuing this FONSI. The FAA made this determination in accordance with all applicable environmental laws.

*For a Copy of the EA or FONSI Contact:* Questions or comments should be directed to Mr. Daniel Czelusniak; FAA Environmental Specialist; Federal Aviation Administration; 800 Independence Ave., SW.; AST–I00, Suite 331; Washington, DC 20591; (202) 267–5924.

**Background**

Launches of launch vehicles and reentries of reentry vehicles must be licensed by the FAA pursuant to 49 U.S.C. Sections 70101–70121, the Commercial Space Launch Act. Issuing a launch or reentry license is a Federal action requiring environmental analysis by the FAA in accordance with NEPA, 42 U.S.C. 4321 *et seq.* Upon receipt of a complete license application, the FAA must evaluate the information and determine whether to issue a launch or reentry license to SpaceX, as appropriate. The FAA would use the analyses in the Falcon Launch Vehicle Program EA as the basis for the environmental determination of the impacts to support licensing launches of the Falcon 1 launch vehicle or the Falcon 9 launch vehicle from CCAFS and/or the reentry of the Dragon reentry vehicle. The issuance of a FONSI does not guarantee that a license will be issued by the FAA for the launch of the Falcon launch vehicles or the reentry of the Dragon capsule. Each license application also must meet all safety, risk, and indemnification requirements.

**Proposed Action**

SpaceX is proposing to launch the Falcon 1 and the Falcon 9 launch vehicles and the Dragon reentry capsule from CCAF8. The Falcon 1 is a two-stage, light-lift launch vehicle designed to put small spacecraft into orbit. The vehicle uses liquid oxygen (LOX) and kerosene as propellants. Some payloads are expected to be loaded with small amounts of liquid or solid propellants for use in orbit after the launch flight. The first stage is recoverable and could be reused. The second stage is not reusable and is not intended to be recovered.

The Falcon 9 is a two-stage, medium class, liquid launch vehicle designed to put space systems and satellites into orbit. Falcon 9 uses LOX and kerosene as propellants. The second stage and payloads on the Falcon 9 could use small quantities of LOX or kerosene or other propellants including nitrogen tetroxide (NTO), monomethylhydrazine (MMH), or other hydrazine propellants, and solid propellants. Both the first and second stages of the Falcon 9 are recoverable and could be reused.

The Dragon capsule could be carried as a payload on the Falcon 9 vehicle. The Dragon capsule is being developed to deliver cargo to the ISS. Following its mission to deliver cargo to the ISS, the Dragon would reenter the atmosphere on a pre-planned trajectory, would be tracked to a soft landing in the ocean, and would be recovered by a salvage vehicle. The capsule could be refurbished and reused. Locations in the Atlantic Ocean (off the east coast of Florida), the Pacific Ocean (off the coast of California), and the equatorial Pacific (near the Marshall Islands) are being considered as recovery zones.

SpaceX has proposed several infrastructure improvements to CCAFS to support the proposed launch activities, including modifications to SLC 40 and construction of a vehicle and payload processing facility. The potential environmental consequences of these connective actions are considered in this FONSI.

Under the No Action Alternative, SLC 40 would not be modified and proceed towards planned demolition. SLC 40 would not be used by the Falcon Launch Vehicle Program to meet the National Space Transportation Policy's goal of providing low-cost and reliable access to space.

**Environmental Impacts**

The following presents a brief summary of the environmental impacts described in the Falcon Launch Vehicle Program EA, which are incorporated by reference in this FONSI. This FONSI is based upon the impacts discussed in that EA. The potential impacts addressed in the EA have been analyzed in previous NEPA documents such as the 1998 Evolved Expendable Launch Vehicle (EELV) Final EIS and 2002 NASA Routine Payload Final EA and were used as the ''generic standard'' for launch vehicles and spacecrafts. Specifically, the Dragon capsule design parameters fit within the ''generic'' spacecraft analyzed in the Routine Payload Final EA. Also, the 2005 Programmatic Assessment for Reactivation/Reuse of Launch Complexes on CCAFS document provided background information for environmental impacts associated with the reuse/reactivation of one or more SLCs and the construction of a possible new SLC based on currently known conditions. These documents were used to compare possible impacts of the Falcon Launch Vehicle Program.

*Air Quality:* Any use of ozone-depleting substances would be in accordance with federal, state, and local laws regulating ozone-depleting substance use, reuse, storage, and disposal. There would be no impact on stratospheric ozone. Generator emissions associated with payload processing would be regulated as stationary sources by the Florida Department of Environmental Protection.

Emissions from launch vehicles would not substantially impact ambient air quality or endanger public health. Each launch would be considered a discrete event that would generate short-term impacts on the local air quality. Long-term effects resulting from the launches would not be expected because the launches would be infrequent and the resulting emissions would be rapidly dispersed and diluted by winds in the troposphere. The Falcon Launch Vehicle Program would not have an appreciable affect on PM2.5 standards under the current attainment status of CCAFS.

*Biological Resources:* Site modifications would take place in a developed area and would not entail new ground disturbance. In addition, there would be no disturbance of wetlands because there are no wetlands within the boundary of SLC 40. Biological resource impacts would not be expected from the modification, construction, or use of proposed launch and support facilities. A United States Fish and Wildlife Service (USFWS) approved light management plan would be implemented prior to construction activities and activation of the launch facility to ensure sea turtles are not impacted.

Launch activities could cause some small impacts near the launch pad associated with fire and acidic deposition, but impacts from the Falcon vehicles would be less than those from previous launch vehicles. Although Florida scrub jays, gopher tortoise, southeastern beach mice, indigo snakes and sea turtle nesting occur in the vicinity of SLC 40, post-launch monitoring conducted on previous launches concluded that launch impacts to these species are minimal. Additionally, sonic booms from launches are not expected to negatively affect the survival of any marine species. Exterior lighting at all facilities used for spacecraft processing at CCAFS would comply with established lighting policy to minimize disorienting effects on sea turtle hatchlings.

*Cultural Resources:* SLC 40 is not eligible for listing on the National Register of Historical Places. It is not considered a historic complex, and there are no historic properties or known archeological sites located in the immediate vicinity. No significant impacts to known historic or archeological resources would be expected as a result of the Proposed Action.

*Geology and Soils:* No unique geologic features of exceptional interest or mineral resources occur in the project area. Construction related to the Proposed Action would not affect geology and soils; nor would operation of the Falcon Launch Vehicle Program affect geology or soils in the vicinity of SLC 40. Potential wind and water erosion would be controlled by the development and implementation of a Storm Water Pollution Prevention Plan.

*Hazardous Materials and Waste:* All hazardous materials associated with the Proposed Action would be handled and disposed of per the requirements established by the Occupational Safety and Health Administration (OSHA) and the Hazardous Materials Contingency Plan developed for the Falcon Launch Vehicle Program. Any materials remaining after completion of payload processing would be properly stored for future use or disposed of in accordance with all applicable regulations. All applicable federal, state, county, and USAF rules and regulations would be followed for the proper storage, handling, and usage of hazardous materials under the Falcon Launch Vehicle Program. Furthermore, the Proposed Action would not be expected to result in significant impacts on hazardous materials management or hazardous materials emergency response.

Hazardous waste streams generated by the Falcon Launch Vehicle Program would be typical of other hazardous waste streams in Florida. The existing hazardous waste landfills would have sufficient capacity to handle the small amounts of hazardous waste expected to be generated under the Proposed Action. Furthermore, no significant impacts on hazardous waste management would be expected.

*Health and Safety:* Proposed refurbishment activities would comply with all federal OSHA regulations and all applicable Air Force Instructions and regulations on refurbishment safety, including AFI 32–1023, *Design and Refurbishment Standards and Execution of Facility Refurbishment Projects,* and Air Force Occupational Safety and Health Standards (AFOSH). Therefore, health and safety impacts during refurbishment would not be significant.

CCAFS range safety regulations ensure that the general public, launch area personnel, and foreign landmasses are provided an acceptable level of safety, and that all aspects of pre-launch and launch operations adhere to public laws. Range safety organizations review, approve, monitor, and impose safety holds, when necessary, on all pre-launch and launch operations. Health and safety impacts to personnel involved in propellant loading operations in the payload processing facilities would be minimized by adherence to OSHA and AFOSH regulations. The Proposed Action would not be expected to result in significant impacts on health and safety.

*Orbital Debris:* Lower stages of the Falcon would burn out and splash down in the open ocean. Upper stages that achieve Low Earth Orbit would be programmed after spacecraft separation to burn residual propellants to depletion in a vector that would result in reentry in two to three months for a soft-water landing. Upper stages going to higher orbits are not subject to controlled reentry and would contribute to orbital debris. The contribution to orbital debris from the launch of Falcon 1 and Falcon 9 vehicles and spacecraft would not be expected to have a significant impact on the environment.

*Utilities:* The existing water supply system at SLC 40 can support Falcon 1 and Falcon 9 launch requirements. The amount of solid waste generated under the Proposed Action would be minimal compared to the capacity of the on-base or approved off-base landfills. The electrical power needs of the Falcon Launch Vehicle Program are within the capacity of existing systems. Therefore, no significant impacts on water supply, solid waste management, or electrical power would be expected.

*Transportation:* A maximum of 15 personnel and 15 daily vehicle round trips would support construction and refurbishment activities, which would not constitute a significant increase in traffic volumes on roadways in the vicinity of CCAFS. A maximum of 25 personnel and 25 daily vehicle round trips would support launch operation activities, which would not constitute a significant increase in traffic volumes on key roadways within CCAFS areas.

*Land Use and Visual Resources:* The Proposed Action would occur primarily in areas designated for space launch activities. Operations would be consistent with both the Base General Plan and the USAF mission at CCAFS. Activities at SLC 40 and surrounding areas would be in conformance with its designated use. Therefore, no significant land use impacts would be expected.

SpaceX operational activities would have less visual impact than that of prior SLC 40 activities; therefore, no significant impacts within the flight range of the Falcon launch vehicles would be expected.

*Noise:* There would be a temporary increase in ambient noise levels during construction and refurbishment activities. However, there are no residential areas or sensitive receptors in the vicinity of SLC 40. Refurbishment activities would not be expected to significantly impact endangered species potentially located at SLC 40. Hearing protection would be provided if sound levels exceed OSHA limits.

Based on modeled engine noise levels for the Falcon 1, noise levels associated with the Proposed Action would not be expected to exceed the DNL threshold of 65 dBA in nearby residential areas or exceed the 85 dBA noise threshold limit value recommended for workers in an 8-hour day. Noise produced from Falcon 1 and Falcon 9 launch vehicles would be sufficiently reduced by the deluge system and would not be expected produce negative affects beyond those that have already been analyzed and experienced under ongoing launch activities. Impacts on humans from sonic booms would not be significant under the Proposed Action.

*Socioeconomics:* Construction and refurbishment activities would result in a temporary and minor increase in the number of on-base personnel. This increase would not represent a significant increase in the population or growth rate of the region, since most of the construction crew already live and work in the area.

The addition of up to 25 workers at CCAFS to support the Proposed Action does not represent a significant increase in the population or growth rate of the region. The Proposed Action would not significantly affect the local housing market or result in the need for new social services or support facilities. The Proposed Action would not generate negative socioeconomic impacts in the region.

*Environmental Justice:* Environmental impacts generated by operation, construction, and refurbishment activities for the Proposed Action would not be significant and would not adversely affect minority or low-income populations or children. The operation and refurbishment of the Proposed Action would not cause any environmental justice impacts.

*Water Resources:* Construction in the northeast quadrant of SLC 40 would not substantially alter the existing drainage course and adverse impacts to natural drainage would not be expected. A Storm Water Erosion and Pollution Prevention Plan would be developed and implemented to minimize impacts from erosion. SpaceX would obtain all necessary permits. Proposed construction and refurbishment activities would not be expected to disturb wetlands or affect any floodplains.

No impacts on surface water quality would occur from industrial wastewater from the deluge water system. Significant impacts would not be expected on jurisdictional waters of the United States from inadvertent discharge of deluge wastewater. When the first stage splashes down in the ocean, approximately 5 gallons of RP–l would be expelled and would dissipate within hours and would not significantly impact water quality. Water demands for the Proposed Action would be supplied by existing water distribution systems at CCAFS, and wastewater would be processed through existing wastewater handling and treatment systems at CCAFS. Water demands would have a negligible impact on these existing systems, and local and regional water resources would not be affected.

*Cumulative Impacts:* Cumulative impacts to biological resources, air quality, and water resources were considered in the Falcon Launch Vehicle Program EA. Some vegetative damage could occur from occasional brush fires and/or heat from the launch and acid deposition in the near-field areas. The loss of tree and shrub species and an increase of grass and sedge species could occur. Far-field vegetation should recover between launches since far-field deposition would not occur in the same area after each launch. There should be no significant impacts on terrestrial wildlife from the exhaust cloud because the cloud would remain in anyone area for only a short period of time. The implementation of a light management plan to reduce beach lighting during the nesting season should reduce adverse impacts to sea turtles.

Because the atmospheric emissions associated with launch programs are brief and sporadic, the long-term cumulative air quality impacts in the lower atmosphere would not be expected to be significant. Short-term cumulative air quality impacts would not occur because launches for the various programs would not be conducted at the same time. The relatively small emissions associated with ground support operations would have little incremental and cumulative impact in an area that presently meets air quality standards. No long-term adverse air impacts would be expected from refurbishment activities. No cumulative impacts to water resources would be expected.

*Determination:* An analysis of the Proposed Action has concluded that there would be no significant short-term or long-term effects to the environment or surrounding populations. After careful and thorough consideration of the facts herein, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives set forth in Section 101(a) of the NEPA and other applicable environmental requirements and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section I 02(2)( c) of NEPA. Therefore, an Environmental Impact Statement for the Proposed Action is not required.

Issued in Washington, DC on: January 15, 2009.

**George Nield,**

*Associate Administrator for Commercial Space Transportation.*

[FR Doc. E9–1974 Filed 1–29–09; 8:45 am]

**BILLING CODE 4910–13–P**

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

### Office of Commercial Space Transportation; Notice of Availability of the Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Jacksonville Aviation Authority (JAA) Launch Site Operator License at Cecil Field, Florida (FL)

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation.

**ACTION:** Notice of Availability of Final EA and FONSI.

**SUMMARY:** In accordance with the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321 *et seq.*), Council on Environmental Quality NEPA implementing regulations (40 CFR Parts 1500–1508), and FAA Order 1050.1E, Change 1, the FAA is announcing the availability of the Final EA and FONSI for the Jacksonville Aviation Authority (JAA) Launch Site Operator License at Cecil Field, FL.

The EA was prepared in response to an application for a Launch Site Operator License from JAA. Under the Proposed Action, the FAA would issue a Launch Site Operator License to JAA to operate a facility for horizontal launches and landings of suborbital, manned reusable launch vehicles (RLVs). These vehicles, when operated out of Cecil Field, could carry space flight participants, scientific experiments, or payloads. The proposed launch site is located within the city limits of the City of Jacksonville, FL in Duval County, approximately 15 miles southwest of downtown Jacksonville. The EA addresses the potential environmental impacts of implementing the Proposed Action and the No Action Alternative of not issuing a Launch Site Operator License to JAA.

The FAA has posted the Final EA and FONSI on the Internet at *http://ast.faa.gov.* In addition, CDs of the EA and FONSI were sent to persons and agencies on the distribution list (found in Chapter 7 of the EA). A paper copy and a CD version of the EA and FONSI will be made available for review at the following locations:

Jacksonville Public Library—Argyle Branch, 7973 Old Middleburg Road South, Jacksonville, FL 32222.

Jacksonville Public Library—Webb Wesconnett Regional, 6887 103rd Street, Jacksonville, FL 32210.

Jacksonville Public Library—West Regional, 1425 Chaffee Road South, Jacksonville, FL 32221.

Jacksonville Public Library—Main Branch, 303 N Laura St, Jacksonville, FL 32202.

Green Cove Springs Library, 403 Ferris St., Green Cove Springs, FL 32043.

*Additional Information:* Under the Proposed Action, the FAA would issue a Launch Site Operator License to JAA that would allow them to operate Cecil Field for horizontal suborbital RLV launches. JAA has identified two types of horizontally launched RLVs, Concept X and Concept Z, which are considered typical vehicles that would be launched from Cecil Field. The RLVs would launch and land on Runway 18L–36R, the primary north-south runway at Cecil Field. Both proposed RLVs would take-off from Cecil Field under jet power. Rocket operations would occur in a designated offshore area, approximately 60 miles east of the Florida coast. The RLVs would return to Cecil Field as maneuverable gliders.

JAA proposes to use Cecil Field's existing infrastructure, such as hangars, control tower, and runways for commercial space launch operations. Therefore, JAA does not anticipate new construction activities at Cecil Field related to the proposed spaceport.

The only alternative to the Proposed Action analyzed in the EA is the No Action Alternative. Under this alternative, the FAA would not issue a Launch Site Operator License to JAA, and there would be no commercial space launches from Cecil Field. The site would continue to be available for existing general aviation and training-related activities.

A wide-array of resource areas were considered to provide a context for understanding and assessing the potential environmental effects of the Proposed Action, with attention focused on key issues. The resource areas considered included climate and air quality; coastal resources; compatible land use; Department of Transportation Act: Section 4(f) resources; farmlands; fish, wildlife, and plants; floodplains; hazardous materials, pollution prevention, and solid waste; historical, architectural, archaeological, and cultural resources; light emissions and visual resources; natural resources, energy supply, and sustainable design; noise; socioeconomics; water quality; wetlands; wild and scenic rivers; children's environmental health and safety risks; environmental justice; construction impacts; secondary (induced) impacts; airports/airport users; airspace; transportation; and cumulative impacts.

The FAA published a Notice of Availability of the Draft Final EA and FONSI in the **Federal Register** on April 21, 2009. The FAA hosted a public meeting during the comment period, on May 14, 2009 in Jacksonville, Florida during which members of the public, organizations, tribal groups, and government agencies had the opportunity to provide oral or written comments on the Draft EA. Two members of the public provided comments during the meeting. The public comment period ended on May 20, 2009. One written comment was received during the public comment period. The Final EA responds to all substantive comments and includes any changes or edits resulting from the comments received.

**FOR FURTHER INFORMATION CONTACT:** Mr. Daniel Czelusniak, Environmental Specialist, Office of Commercial Space Transportation, Federal Aviation Administration, 800 Independence Avenue, SW., Room 331, Washington, DC 20591, telephone (202) 267–5924; E-mail *daniel.czelusniak@faa.gov.*

Issued in Washington, DC on June 29, 2009.

**Michael McElligott,**

*Manager, Space Systems Development Division.*

[FR Doc. E9–15872 Filed 7–2–09; 8:45 am]

**BILLING CODE 4910–13–P**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

## Office of Commercial Space Transportation; Notice of Availability of the Environmental Assessment and Finding of No Significant Impact for Pegasus Launches at the U.S. Army Kwajalein Atoll Ronald Reagan Ballistic Missile Defense Test Site

**AGENCY:** The Federal Aviation Administration (FAA), lead agency; U.S. Army, cooperating agency.

**ACTION:** Notice of availability.

**SUMMARY:** In accordance with the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321 *et seq.*), Council on Environmental Quality NEPA implementing regulations (40 CFR Parts 1500–1508), and FAA Order 1050.1E, Change 1, the FAA is announcing the availability of the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for Pegasus Launches at the U.S. Army Kwajalein Atoll Ronald Reagan Ballistic Missile Defense Test Site (USAKA/RTS).

Orbital Sciences Corporation has applied to the FAA for renewal of Launch Operator License (LLO) 04–069. Under the Proposed Action (the preferred alternative), the FAA would

renew Orbital Sciences Corporation's Launch Operator License for launch operations of the Pegasus expendable launch vehicle family. Launches would occur from USAKA/RTS in the Republic of the Marshall Islands, a subordinate command of the U.S. Army Space and Strategic Defense Command.

The Pegasus expendable launch vehicle consists of three solid rocket propellant motor stages with an optional liquid propellant-based Hydrazine Auxiliary Propulsion System (HAPS) and is designed to be carried to its launch point by an L–1011 Launch Carrier Aircraft (LCA). The L–1011 LCA, which consists of FAA-approved standard engines, uses Commercial Jet-A or Military JP4 or JP10 fuel. Pre-launch and mating activities would be performed at Vandenberg Air Force Base under LLO 00–053. A separate environmental review was conducted in conjunction with the approval of LLO 00–053. Therefore, the Proposed Action addressed in the EA does not include Pegasus pre-launch processing operations.

Once the LCA and mated launch vehicle have landed at USAKA/RTS, system checks would be conducted. The LCA would be refueled. Concurrently, an advisory to nearby ships and aircraft would be issued. The LCA and mated Pegasus vehicle would leave USAKA/RTS under jet power and travel to the launch site over the Pacific Ocean. Following the release of the Pegasus launch vehicle, the L–1011 LCA would return to a designated runway at USAKA/RTS. The first and second stages would detach during flight and fall, unpowered, to the ocean. The third stage would continue to carry the payload into orbital insertion; detach from the payload and optional HAPS (if appropriate), and fall into the ocean. None of the jettisoned stages would be recovered. The EA addresses the potential environmental impacts of implementing the Proposed Action and the No Action Alternative of not renewing Orbital Sciences' Launch Operator License.

The FAA has posted the EA and FONSI on the FAA Web site at *http://ast.faa.gov*. In addition, hardcopies and/or CDs of the EA and FONSI were sent to persons and agencies on the distribution list (found in Chapter 7 of the EA).

*Additional Information:* Under the Proposed Action (the preferred alternative), the FAA would renew Orbital Sciences' Launch Operator License for launch operations of the Pegasus expendable launch vehicle family. The L–1011 LCA with the mated Pegasus launch vehicle would travel under jet power to the launch site over the Pacific Ocean. At an altitude of 35,000 feet, the L–1011 would release the Pegasus launch vehicle and return to a designated runway at USAKA/RTS. The Pegasus vehicle would free fall for 5 seconds before the first stage motor was ignited. The first stage of the Pegasus vehicle would burn for approximately 77 seconds following ignition while propelling the vehicle to an altitude of approximately 223,000 feet. The spent first stage would detach and fall back to the ocean. The second stage motor would ignite and burn for approximately 83 seconds, carrying the vehicle and its payload to an altitude of 689,000 feet. During the ignition of the second stage, the payload fairing would jettison and fall into the ocean. The spent second stage would detach and fall to the ocean. The third stage would continue to burn for 65 seconds carrying the payload into orbital insertion; detach from payload and optional HAPS (if appropriate), and fall into the ocean. The optional HAPS fourth stage could be used in or near orbit to obtain higher altitudes, achieve finer altitude accuracy, or conduct more complex maneuvers. None of the jettisoned stages would be recovered.

The L–1011 LCA, which consists of FAA-approved standard engines, uses Commercial Jet-A or Military JP4 or JP10 fuel. Section 3.1.2.6 of the 1989 EA includes a detailed description of the Pegasus launch vehicle.

The only alternative to the Proposed Action analyzed in the EA is the No Action Alternative. Under this alternative, the FAA would not renew Orbital Sciences' Launch Operator License and there would be no commercial launches of the Pegasus launch vehicle conducted from USAKA/RTS. Existing operating procedures, military operations, and other launch activities would continue at USAKA/RTS.

Resource areas were considered to provide a context for understanding and assessing the potential environmental effects of the Proposed Action. The EA does not analyze all environmental resources areas in detail because not all resource areas are affected by the Proposed Action. The resource areas analyzed in detail in the EA included air quality; biological resources; hazardous materials, pollution prevention, and solid waste; noise; and water resources (surface water, groundwater, floodplains, and wetlands), and cumulative impacts.

**FOR FURTHER INFORMATION CONTACT:** Mr. Daniel Czelusniak, Environmental Specialist, Office of Commercial Space Transportation, Federal Aviation Administration, 800 Independence Avenue, SW., Suite 331, Washington, DC 20591; telephone (202) 267–5924; e-mail *Daniel.Czelusniak@faa.com.*

Issued in Washington, DC on July 1, 2009.

Responsible Official:

**Michael McElligott,**

*Manager, Space Systems Development Division.*

[FR Doc. E9–16127 Filed 7–7–09; 8:45 am]

**BILLING CODE 4910–13–P**

## DEPARTMENT OF STATE

**[Public Notice: 6803]**

## Policy on Review Time for License Applications

**AGENCY:** Department of State.

**ACTION:** Notice.

In National Security Presidential Directive–56, Defense Trade Reform, signed January 22, 2008, the Department of State was directed to complete the review and adjudication of license applications within 60 days of receipt, except in cases where national security exceptions apply. The President further directed that these exceptions be published. A **Federal Register** notice entitled ''Policy on Review Time for License Applications'' was published on April 15, 2008 (73 FR 20357) stating five national security exceptions.

Experience in the last nineteen months has indicated that a sixth exception is required. It has been noted in reviews that events may require the Department of State to initiate a review of an established export policy relevant to license applications. By the nature of the established deadline, this might result in cases that have been approvable before the review being returned without action to the applicant while the review is ongoing. Enforcement of the deadline without being able to account for these situations might result in another applicant's license, submitted after the first license but that had not reached the 60-day deadline, being approved once the review is complete; inadvertently creating an unlevel playing field. As such, the Directorate of Defense Trade Controls has added a sixth exception to account for this issue. In accordance with NSPD–56, the following six national security exceptions are applicable:

(1) When a Congressional Notification is required: The Arms Export Control Act Section 36 (c) and (d) and the International Traffic in Arms Regulations, 22 CFR 123.15, requires a certification be provided to Congress prior to granting any license or other approval for transactions, if it meets the requirements identified for the sale of major defense equipment, manufacture abroad of significant military equipment, defense articles and services, or the re-transfer to other nations. Notification thresholds differ based on the dollar value, countries concerned and defense articles and services.

(2) Required Government Assurances have not been received. These would include, for example, Missile Technology Control Regime Assurances, and Cluster Munitions assurances.

(3) End-use Checks have not been completed. (Commonly referred to as ''Blue Lantern'' checks. End-use checks are key to the U.S. Government's prevention of illegal defense exports and technology transfers, and range from simple contacts to verifying the bona fides of a transaction to physical inspection of an export.)

(4) The Department of Defense has not yet completed its review.

(5) A Waiver of Restrictions is required. (For example, a sanctions waiver.)

(6) When a related export policy is under active review and pending final determination by the Department of State.

Dated: November 23, 2009.

**Robert S. Kovac,**

*Acting Deputy Assistant Secretary for Defense Trade, Bureau of Political Military Affairs, Department of State.*

[FR Doc. E9–28875 Filed 12–2–09; 8:45 am]

BILLING CODE 4710–25–P

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**Before the**
**Federal Communications Commission**
**Washington, D.C. 20554**

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|---|---|---|
| In the Matter of | ) | File Nos. SAT-LOA-19970904-00080 |
| | ) | SAT-AMD-19971222-00219 |
| Northrop Grumman Space & Mission Systems | ) | SAT-AMD-20031104-00324 |
| Corporation | ) | SAT-AMD-20040312-00030 |
| | ) | SAT-AMD-20040719-00136 |
| Applications for Authority to | ) | SAT-AMD-20051118-00227 |
| Operate a Global Satellite System Employing | ) | SAT-AMD-20070209-00033 |
| Geostationary Satellite Orbit and | ) | (NGSO System – Call Sign S2254) |
| Non-Geostationary Satellite Orbit Satellites | ) | |
| in the Fixed-Satellite Service | ) | File Nos. SAT-LOA-19970904-00081 |
| in the Ka-band and V-band | ) | SAT-AMD-20040312-00032 |
| | ) | SAT-AMD-20040719-00138 |
| | ) | SAT-AMD-20051118-00230 |
| | ) | SAT-AMD-20070209-00030 |
| | ) | (73° W.L. – Call Sign S2256) |
| | ) | |
| | ) | File Nos. SAT-LOA-19970904-00082 |
| | ) | SAT-AMD-20040312-00033 |
| | ) | SAT-AMD-20040719-00140 |
| | ) | SAT-AMD-20051118-00232 |
| | ) | SAT-AMD-20070209-00031 |
| | ) | (68.5° E.L. – Call Sign S2257) |
| | ) | |
| | ) | File Nos. SAT-LOA-19970904-00083 |
| | ) | SAT-AMD-20040312-00034 |
| | ) | SAT-AMD-20040719-00139 |
| | ) | SAT-AMD-20051118-00231 |
| | ) | SAT-AMD-20070209-00032 |
| | ) | (116.5° E.L. – Call Sign S2258) |
| | ) | |
| | ) | File Nos. SAT-LOA-19970904-00084 |
| | ) | SAT-AMD-20040312-00031 |
| | ) | SAT-AMD-20040719-00137 |
| | ) | SAT-AMD-20051118-00229 |
| | ) | SAT-AMD-20070209-00029 |
| | ) | (125° W.L. – Call Sign S2255) |
| | ) | |
| | ) | File No. SAT-WAV-19971222-00220 |
| | ) | |
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| | ) | |

## ORDER AND AUTHORIZATION

**Adopted: February 23, 2009** **Released: February 24, 2009**

By the Acting Chief, International Bureau:

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Paragraph No.

# I. INTRODUCTION

1. By this Order, we grant Northrop Grumman Space & Mission Systems Corporation (Northrop Grumman) authority for a satellite system consisting of three non-geostationary satellite orbit (NGSO) satellites and four geostationary satellite orbit (GSO) satellites.[1] These satellites will provide fixed-satellite service (FSS) in the Ka- and V-bands.[2] Specifically, we authorize Northrop Grumman to construct three NGSO satellites that will operate in the frequency bands outlined in the chart below. We also authorize Northrop Grumman to construct, launch and operate four GSO satellites at the orbital locations and frequency bands identified in the chart. Authorizing this combined NGSO and GSO satellite system will give Northrop Grumman an opportunity to provide customers access to a variety of advanced broadband and interactive satellite communications services.

| Architecture | Authorized Frequencies | Operating Authority[3] |
|---|---|---|
| NGSO Satellites | 47.2-50.2 GHz (Earth-to-space)<br>37.5-42.0 GHz (space-to-Earth)<br>29.5-30.0 GHz (Earth-to-space)<br>28.6-29.1 GHz (Earth-to-space)<br>19.7-20.2 GHz (space-to-Earth)<br>18.8-19.3 GHz (space-to-Earth) | Co-Primary<br>Co-Primary<br>Secondary<br>Primary<br>Non-conforming<br>Primary |
| GSO Satellites Located<br>At 125° W.L., 73° W.L., | 47.2-50.2 GHz (Earth-to-space)<br>37.5-42.0 GHz (space-to-Earth) | Co-Primary<br>Co-Primary |

[1] These applications were originally filed by TRW, Inc. pursuant to a filing "cut-off date" announced by the Commission. Satellite Policy Branch Information: Applications Accepted For Filing: Cut-Off Established for Additional Space Station Applications and Letters of Intent in the 36-51.4 GHz Frequency Band, *Public Notice*, Report No. SPB-89, 12 FCC Rcd 10450 (1997) (*V-band Cut-off Notice*). In 2002, the Commission approved the transfer of control of TRW's authorizations and pending applications to Northrop Grumman Corporation. Application of TRW Inc., Transferor and Northrop Grumman Corporation, Transferee, For Consent to Transfer of Control of Authorization to Construct, Launch and Operate a Ka-Band Satellite System in the Fixed-Satellite Service, *Order and Authorization*, 17 FCC Rcd 24625 (Int'l Bur., Sat. Div., 2002) (*TRW Transfer of Control Order*). TRW later changed its name to Northrop Grumman Space & Mission Systems Corporation. *See* Letter to Marlene H. Dortch, Secretary, FCC from Stephen D. Baruch, Counsel to Northrop Grumman Space & Mission Systems Corp. (Jan. 10, 2003). At that time, Northrop Grumman requested an exemption from the application "cut-off date" with respect to the TRW applications, to preserve the filing status of these applications. See Application File No. SAT-WAV-19971222-00220. In light of the Commission's subsequent decision that transfers of control will no longer affect an application's processing status (*see* Amendment of the Commission's Space Station Licensing Rules and Policies, Mitigation of Orbital Debris, *First Report and Order and Further Notice of Proposed Rulemaking*, IB Docket Nos. 02-34 and 02-54, 18 FCC Rcd 10760, 10814 (para. 140) (2003) (*First Space Station Licensing Reform Order)*), we dismiss the request as moot and conform the applicant's name to reflect the change in control.

[2] The term "Ka-band" refers to the space-to-Earth (downlink) communications in the 17.7-20.2 GHz band and the corresponding Earth-to-space (uplink) communications in the 27.5-30.0 GHz frequency band. The term "V-band" refers to the space-to-Earth (downlink) communications in the 37.5-42.5 GHz band and the corresponding Earth-to-space (uplink) communications in the 47.2-50.2 GHz frequency band.

[3] Space stations operating in primary services are protected against interference from stations of secondary services. Stations operating in a secondary service cannot cause harmful interference to or claim protection from harmful interference from stations of a primary service. Co-primary services have equal rights to operate in particular frequencies. Non-conforming services may be provided only on a non-harmful interference basis to any authorized Federal, non-Federal, or non-U.S.-licensed services and may not claim interference protection from those services.

| | | |
|---|---|---|
| 68.5° E.L., and 116.5° E.L. | 29.25-30.0 GHz (Earth-to-space)<br>28.6-29.1 GHz (Earth-to-space)<br>28.35-28.6 GHz (Earth-to-space)<br>19.7-20.2 GHz (space-to-Earth)<br>18.8-19.3 GHz (space-to-Earth)<br>18.3-18.8 GHz (space-to-Earth) | Primary<br>Secondary<br>Primary<br>Primary<br>Non-conforming<br>Primary |

2. We deny, however, Northrop Grumman's request to launch and operate its NGSO satellites due to orbital debris mitigation concerns.[4] Once Northrop Grumman has finalized its end-of-life disposal plan for the NGSO satellites, it may file an application to launch and operate these satellites. Nevertheless, we address issues relating to Northrop Grumman's proposed NGSO operations in this Order so we will be in a position to act expeditiously should Northrop Grumman file a request for launch and operating authority for the NGSO satellites. We also deny Northrop Grumman's request for a waiver of the bond requirement for its GSO satellites.

## II. BACKGROUND

### A. V-band

3. In July 1997, the Commission released a Public Notice establishing a cut-off for space station applications proposing to use the V-band.[5] In response to the Public Notice, 14 entities filed applications for 17 satellites, including Northrop Grumman. These applicants proposed GSO and/or NGSO systems.[6]

4. In December 1998, the Commission released the *V-band Allocation Order,* where it allocated two gigahertz of spectrum for FSS in the 37.6-38.6 GHz and 40.0-41.0 GHz frequency bands for downlinks, and two gigahertz in the 48.2-50.2 GHz frequency band for uplinks.[7] The *V-band Allocation Order* also re-allocated the 47.2-48.2 GHz band for exclusive non-Federal use.[8]

5. In November 2003, the Commission adopted the *V-band Second Report and Order*.[9]

[4] *See* para. 102, below.

[5] *V-band Cut-off Notice*, 12 FCC Rcd at 10450. The original cut-off date was August 21, 1997, but was later extended to September 26, 1997. Clarification and Corrections to Public Notices, Report Nos. SPB-88 and SPB-89, Establishing Deadlines for Applications, Letters of Intent, and Amendments to Applications in the 2 GHz and 36-51.4 GHz Frequency Bands, *Public Notice*, 12 FCC Rcd 12050 (Int'l Bur., 1997); Extension of Cut-off Dates for Applications, Letters of Intent, and Amendments to Applications in the 2 GHz and 36-51.4 GHz Frequency Bands, *Public Notice*, Report No. SPB-99 (Sept. 4, 1997).

[6] Ten applicants subsequently withdrew their applications. The Commission dismissed the applications filed by three other applicants. Northrop Grumman is the only remaining V-band applicant.

[7] Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz Frequency Bands for Government Operations, *Report and Order*, IB Docket No. 97-95, 13 FCC Rcd 24649 (1998) (*V-band Allocation Order*). *See also* Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations, *Further Notice of Proposed Rulemaking*, IB Docket No. 97-95, 16 FCC Rcd 12244 (2001) (*V-band Further Notice*).

[8] *See V-band Allocation Order*, 13 FCC Rcd at 24671 (para. 41).

[9] Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the

(continued....)

In that *Order*, the Commission made various changes in V-band designations and allocations that reflected decisions made at the 2000 and 2003 World Radiocommunication Conferences. The Commission also adopted power flux density (PFD) limits for both GSO and NGSO V-band systems.[10]

6. In May 2003, the Commission released the *First Space Station Licensing Reform Order*, adopting new licensing procedures designed to allow it to process satellite applications significantly faster than it could previously, while maintaining adequate safeguards against speculation.[11] The Commission concluded that continuing to analyze pending V-band applications under the processing procedure previously in effect would frustrate these goals. The Commission directed the International Bureau to analyze all pending V-band applications pursuant to the procedures adopted in the *First Space Station Licensing Reform Order*. In this regard, the Commission directed the Bureau to treat all pending V-band applications as though they were filed at the same time. The Commission further directed the Bureau to divide the V-band FSS spectrum between GSO systems and NGSO systems based on the proportion of qualified GSO applicants and NGSO applicants. The Bureau would then assign qualified GSO applicants to the orbit locations they requested in the "GSO-designated" portion of the band. In cases where two applicants requested the same orbital location, the Bureau would subdivide the GSO spectrum between them. The Commission also directed the Bureau to divide the NGSO portion of the V-band equally among the qualified NGSO applicants.[12]

**B. Ka-band**

7. In May 1997, the International Bureau licensed 13 GSO applicants and one NGSO applicant to operate satellite systems as part of the first Ka-band FSS processing round.[13] Consistent with the Commission's 1996 decision to divide the 27.5-30.0 GHz portion of the Ka-band among several services, the Bureau authorized the GSO systems in one range of Ka-band spectrum and the NGSO system in another.[14]

8. In October 1997, the Bureau established a second processing round for FSS Ka-band systems.[15] At that time, the Commission also adopted its *Ka-band Third Report and Order*

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40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0-38.0 GHz and 40.0-40.5 GHz for Government Operations, *Second Report and Order*, IB Docket No. 97-95, 18 FCC Rcd 25428 (2003) (*V-band Second Report and Order*).

[10] *V-band Second Report and Order*, 18 FCC Rcd at 25470-72 (promulgating 47 C.F.R. § 25.202(a) (1) fn. 15 and 47 C.F.R. § 25.208(q) - (u)).

[11] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10865 (para. 279).

[12] *Id.*

[13] Assignment of Orbital Locations to Space Stations in the Ka-band, *Order*, 13 FCC Rcd 1030 (Int'l Bur. 1997). *See also* Teledesic Corp., *Order and Authorization*, 12 FCC Rcd 3154 (Int'l Bur. 1997) (authorizing Teledesic Corp. to launch and operate a NGSO FSS system in the Ka-band). Teledesic subsequently surrendered its NGSO authorization. Letter to Marlene H. Dortch, Secretary, FCC, from Mark A. Grannis, Counsel to Teledesic (June 27, 2003). In addition, a number of GSO licensees surrendered their licensees.

[14] Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, *First Report and Order and Fourth Notice of Proposed Rulemaking*, 11 FCC Rcd 19005 (1996) (*Ka-band Plan Order*).

[15] *See Public Notice* Satellite Policy Branch Information: Satellite Applications Accepted for filing in the Ka-band, Cut-Off Established for Additional Applications in the 28.35-28.6 GHz, 29.1-30 GHz, 17.7 - 18.8 GHz, and 19.3 - 20.2 GHz Frequency Bands, Report No. SPB-106, 13 FCC Rcd 8020 (Int'l Bur. 1997).

establishing technical requirements, licensing qualifications, and service rules for GSO FSS and NGSO FSS systems in the Ka-band.[16] The Bureau subsequently licensed 11 companies to operate Ka-band GSO satellites at 34 orbital locations. The Bureau deferred action on the second round Ka-band NGSO applications,[17] however, until the Commission established principles by which multiple NGSO FSS systems could share the NGSO-designated portion of the spectrum.[18]

9. In July 2003, the Commission adopted an Order establishing a sharing method for non-Federal Ka-band FSS NGSO systems.[19] Under this sharing method, all Ka-band NGSO systems will have access to the entire NGSO-designated spectrum, except during in-line interference events.[20] When two NGSO FSS systems cannot avoid an in-line interference event, the operators must divide the available spectrum equally for the duration of the event, unless the operators agree to a different sharing arrangement.[21] The *Ka-band NGSO Order* also adopted a technical definition to support the sharing method, a default mechanism, and various service rules.

### C. Northrop Grumman Applications

#### 1. Procedural History

10. In September 1997, pursuant to the announcement of the V-band application filing window, Northrop Grumman filed applications for authority to establish a global V-band FSS system. This system was to use 15 NGSO satellites in medium Earth orbit (MEO) and four GSO satellites. In December 1997, in response to the filing cut-off for the second processing round for Ka-band applications, Northrop Grumman amended its V-band filings to include Ka-band frequencies on all 19 of its satellites.

11. In 2001, as part of the second Ka-band processing round, the Bureau granted Northrop Grumman authority to construct, launch, and operate four GSO Ka-band satellites.[22] The Bureau deferred action on the V-band and Ka-band NGSO portions of the 1997 applications. Northrop Grumman later decided not to proceed with the authorized GSO Ka-band satellites and

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[16] *See* Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed-Satellite Services, *Third Report and Order*, CC Docket No. 92-297, 12 FCC Rcd 22310 (1997) (*Ka-band Third Report and Order*). In that *Order*, the Commission observed that the 27.5-30.0 GHz and 17.7-20.2 GHz band is allocated internationally and domestically for a number of uses. To address these different uses, the Commission adopted a band plan that divides the bands into several segments, each of which is designated for primary use by GSO FSS, NGSO FSS, and other services. *Id.* at 22366.

[17] Six NGSO applications were filed in the second Ka-band processing round. Subsequently, Motorola Global Communications, Inc., Hughes Communications, Inc., Lockheed Martin Corp., and SkyBridge II, LLC withdrew their applications. contactMEO Communications, LLC, now operating as ATCONTACT Communications, LLC, was granted a license in April 2006 for a system composed of both NGSO and GSO satellites. *See* contactMEO Communications, LLC, *Order and Authorization*, 21 FCC Rcd 4035 (Int'l Bur. 2006). For ease of reference, we will refer to this entity as ATCONTACT in this Order. Northrop Grumman is the only remaining NGSO Ka-band applicant.

[18] *Ka-band Third Report and Order*, 12 FCC Rcd at 22325.

[19] Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ka-band, *Report and Order*, 18 FCC Rcd 14708 (2003) (*Ka-band NGSO Order*).

[20] *See* 47 C.F.R. § 25.261(b). An "in-line" interference event occurs when the physical alignment of one system's earth station and another systems's NGSO satellite causes unintentional transmissions in either transmission direction.

[21] *Ka-band NGSO Order*, 18 FCC Rcd at 14717.

[22] *TRW, Inc*., *Order and Authorization*, 16 FCC Rcd 14407 (Int'l Bur. 2001).

surrendered these licenses in 2003.[23]

12. In March 2004, Northrop Grumman amended its pending V-band/NGSO Ka-band applications in response to the Commission's January 29, 2004 Public Notice inviting V-band applicants to amend their pending applications to conform to the Commission's revised V-band allocation and technical rules.[24] In these amendments, Northrop Grumman proposed to: (1) change the orbital configuration to a combination of three highly-elliptical orbit (HEO) NGSO satellites and four GSO satellites; (2) relocate some of the GSO satellites to different orbital locations; (3) change its V-band spectrum plan to conform with the *V-band Second Report and Order*; (4) operate its GSO satellites in portions of the Ka-band; (5) provide additional or revised technical information concerning system operation, and (6) update ownership information.[25]

13. On May 18, 2004, the International Bureau's Satellite Division dismissed Northrop Grumman's amended application as incomplete on two grounds.[26] First, the Division stated that the NGSO portion of the application did not comply with Section 25.145(c)(3) of the Commission's rules.[27] This rule requires NGSO applicants to submit a casualty risk assessment if, as Northrop Grumman proposed, "planned post-mission disposal involves atmospheric re-entry of the spacecraft." Second, the Division stated that Northrop Grumman failed to submit the required interference analysis demonstrating that its proposed GSO satellites are compatible with the Commission's two-degree orbital spacing environment.[28] The Division also noted that Northrop Grumman had requested to operate its GSO satellites in Ka-band spectrum designated for NGSO use only or for NGSO use on a primary basis, and cautioned Northrop Grumman that it had failed to demonstrate that its proposed Ka-band GSO satellites could operate compatibly with NGSO systems in this spectrum.[29]

14. Subsequently, the Satellite Division determined that the Commission's rules regarding the casualty risk assessment and two-degree interference analysis were subject to reasonable but conflicting interpretations. Consequently, the International Bureau issued Public Notices to clarify these requirements.[30] In the Notices, the Bureau stated that it would dismiss

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[23] *See* Letter from Stephen D. Baruch, Counsel to Northrop Grumman Space & Mission Systems Corp. to Secretary, FCC (Mar. 5, 2003).

[24] *See International Bureau Invites Applicants to Amend Pending V-band Applications*, DA 04-234, Report No. SPB-199 (Jan. 29, 2004) (*V-band Amendment Public Notice)*.

[25] *See* Application of Northrop Grumman, File No. SAT-AMD-20040312-00030 (NGSO March 2004 Amendment), Application of Northrop Grumman, File No. SAT-AMD-20040312-00031 (119° W.L. March 2004 Amendment), Application of Northrop Grumman, File No. SAT-AMD-20040312-00032 (89° W.L. March 2004 Amendment), Application of Northrop Grumman, File No. SAT-AMD-20040312-00033 (15° E.L. March 2004 Amendment), Application of Northrop Grumman, File No. SAT-AMD-20040312-00034, (116.5° E.L. March 2004 Amendment) (March 2004 Amendments).

[26] *See* Letter to Peter Hadinger, Northrop Grumman Space & Mission Systems Corp., from Thomas S. Tycz, Chief, Satellite Division, FCC, 19 FCC Rcd 8870 ( May 18, 2004) (May 18 Letter*)*.

[27] 47 C.F.R. § 25.145(c)(3).

[28] 47 C.F.R. § 25.140(b)(2).

[29] May 18 Letter, 19 FCC Rcd at 8871.

[30] *Public Notice*, International Bureau Satellite Division Information, Report No. SPB-208, Orbital Debris Mitigation: Clarification of 47 C.F.R. sections 25.143(b), 25.145(c) (3), 25.146(i)(4) and 25.217(d) Regarding Casualty Risk Assessment for Satellite Atmospheric Reentry, 19 FCC Rcd 10714 (Int'l Bur., Sat. Div., 2004) (*Orbital Debris Public Notice*); *Public Notice*, International Bureau Satellite Division Information: Clarification of 47 C.F.R. § 25.140(b)(2), Space Station Application Interference Analysis, Report No. SPB-207, 19 FCC Rcd 10652 (Int'l Bur., Sat. Div., 2004) (*2004 Two-Degree Spacing Public Notice*).

applications that do not contain this information on a going-forward basis, but that it would afford pending applicants an opportunity to amend their applications to comply with the clarified requirements. The Division reinstated Northrop Grumman's applications and those of other situated applicants, on its own motion, and gave all applicants an opportunity to file conforming amendments.[31] In response, Northrop Grumman submitted a two-degree interference analysis and a revised orbital debris mitigation plan and casualty risk assessment for each application.[32] Northrop Grumman also submitted additional technical information to support its claim that its GSO satellites will not cause interference to NGSO satellites of other non-Federal systems in the Ka-band. In response to a Division request, it also submitted information regarding its efforts to avoid in-orbit collisions with a similar system proposed by ATCONTACT.[33] Thereafter, the Commission's orbital debris mitigation disclosure rules became effective.[34] Northrop Grumman amended its applications to provide additional technical information in accordance with the new rules.[35]

15. In February 2007, Northrop Grumman filed further amendments to each of its pending applications.[36] In these amendments, Northrop Grumman proposed a change in orbital location for three GSO satellites. Additionally, Northrop Grumman proposed to add Ka-band spectrum to various GSO satellites. In each of these amendments, Northrop Grumman also sought to increase power levels in the 18.8-19.3 GHz and 28.6-29.1 GHz bands to levels consistent with a four-degree orbital spacing framework. Finally, Northrop Grumman withdrew its request for a waiver of Section 25.202(g)[37] to allow transfer-orbit and emergency-mode on-orbit TT&C links in the 4/6 GHz (C-band). In sum, in its *2007 Amendments,* Northrop Grumman requests authority to operate its system as follows:

[31] Letter to Peter Hadinger, Northrop Grumman Space & Mission Systems Corporation, from Thomas S. Tycz, Chief, Satellite Division, FCC, DA 04-1725 (June 16, 2004) (June 16 Letter). *See also* Mobile Satellite Ventures Subsidiary LLC, *Order and Authorization*, 20 FCC Rcd 9752, 9756 (paras. 10-11) (Int'l Bur., 2005). *See also* Mobile Satellite Ventures Subsidiary LLC, *Order,* 19 FCC Rcd 18133 (Sat. Div., Int'l Bur. 2004), and Letter to James Talens, contactMEO Communications, LLC, from Thomas S. Tycz, Chief, Satellite Division, FCC (June 16, 2004).

[32] *See* Applications of Northrop Grumman, File Nos. SAT-AMD-20040719-00136, SAT-AMD-20040719-00137, SAT-AMD-20040719-00138, SAT-AMD-20040719-00140, SAT-AMD-20040719-00139 (July 2004 Amendments).

[33] Letter to Marlene Dortch, Secretary, FCC, from Stephen D. Baruch, Counsel to Northrop Grumman Space & Mission Systems Corp. (May 12, 2005).

[34] Mitigation of Orbital Debris, *Second Report and Order*, 19 FCC Rcd 11567 (2004) (*Orbital Debris Order)*. *See also Public Notice*, International Bureau Satellite Division Information, Disclosure of Orbital Debris Mitigation Plans, Including Amendment of Pending Applications, Report No. SPB-112 (Oct. 13, 2005).

[35] Northrop Grumman Space and Mission Systems Corporation, File Nos. SAT-AMD-20051118-00227, 229, 230, 231, 232 (filed Nov. 18, 2005) (2005 Amendments*).*

[36] Northrop Grumman Space and Mission Systems Corporation, File Nos. SAT-AMD-20070209-00029 (125° W.L. 2007 Amendment); SAT-AMD-20070209-00030 (73° W.L. 2007 Amendment); SAT-AMD-20070209-00031 (68.5° E.L. 2007 Amendment); SAT-AMD-20070209-00032 (116.5° E.L. 2007 Amendment); SAT-AMD-20070209-00033 (NGSO 2007 Amendment); all filed February 9, 2007 (2007 Amendments).

[37] 47 C.F.R. § 25.202(g).

| Architecture | Proposed Frequencies | Proposed Operating Authority[38] |
|---|---|---|
| NGSO Satellites | 47.2-50.2 GHz (Earth-to-space) | Primary Basis |
| | 37.5-42.0 GHz (space-to-Earth) | Primary Basis |
| | 29.5-30.0 GHz (Earth-to-space) | Secondary or Non-Unacceptable Interference Basis |
| | 28.6-29.1 GHz (Earth-to-space) | Primary Basis |
| | 19.7-20.2 GHz (space-to-Earth) | Secondary or Non-Unacceptable Interference Basis |
| | 18.8-19.3 GHz (space-to-Earth) | Primary Basis |
| GSO Satellites Located at 125° W.L., 73° W.L., 68.5° E.L., and 116.5° E.L. | 47.2-50.2 GHz (Earth-to-space) | Primary Basis |
| | 37.5-42.0 GHz (space-to-Earth) | Primary Basis |
| | 29.25-30.0 GHz (Earth-to-space) | Primary Basis |
| | 28.6-29.1 GHz (Earth-to-space) | Secondary Basis |
| | 28.35-28.6 GHz (Earth-to-space) | Primary Basis |
| | 19.7-20.2 GHz (space-to-Earth) | Primary Basis |
| | 18.8-19.3 GHz (space-to-Earth) | Non-harmful Interference Basis |

16. To implement the proposed system, as amended, Northrop Grumman requests several waivers of Commission rules. These include: (1) a contingent partial waiver of the Commission's bond requirement to permit it to post a single NGSO bond to cover the entire system; (2) a waiver of Section 25.156(d)(3) to allow the Commission to consider both the NGSO and GSO components concurrently and the V-band and Ka-band components concurrently; (3) a waiver of Section 25.202(g) to place its on-orbit TT&C links in the Ka-band rather than in both Ka- and V-band; (4) a waiver of Section 25.140(b)(2), to the extent necessary, to allow increased-power operations in the 18.8-19.3 GHz and 28.6-29.1 GHz bands consistent with a four-degree orbital spacing regime; (5) a waiver of the Commission's Ka-band Plan to operate its NGSO satellites in the 19.7-20.2 GHz and 29.5-30.0 GHz frequency bands on a secondary or "non-unacceptable interference basis"; and (6) a waiver of the Commission's Ka-band Plan to permit it to operate its GSO FSS satellites in the NGSO-designated 18.8-19.3 GHz frequency band on a "non-harmful interference basis."[39]

**2. Comments**

17. We first placed Northrop Grumman's applications on Public Notice in August 2004.[40] EchoStar filed a Petition to Deny and SES Americom filed a Petition to Deny or Dismiss.[41]

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[38] *See*, *e.g.*, 2007 Amendments at 4-5, Table 1. In its chart, Northrop Grumman lists the 47.2-50.2 GHz and 37.5-42.0 GHz frequency bands as "Primary." The Table of Frequency Allocations, Section 2.106 of the Commission's rules, indicates that these frequencies are allocated to FSS on a "co-primary" basis. 47 C.F.R. § 2.106. Further, Northrop Grumman requests authority to operate its GSO satellites on a "non-harmful interference basis" in the 18.8-19.3 GHz band and its NGSO satellites on a secondary or "non-unacceptable interference basis" in the 19.7-20.2 GHz band. The appropriate operating status in these bands is "non-conforming." *See* note 3, *above*.

[39] NGSO March 2004 Amendment at 23-27.

[40] *See* Policy Branch Information, Satellites Space Applications Accepted for Filing, Public Notice, Report No. SAT-00234 (Aug. 13, 2004).

[41] Petition to Deny of EchoStar Satellite LLC, filed Sept. 13, 2004 (EchoStar Petition to Deny); Consolidated Petition to Deny or Dismiss of SES Americom, Inc., filed Sept. 13, 2004 (SES Americom Petition to Deny).

Northrop Grumman filed a Consolidated Opposition to the EchoStar and SES Americom petitions.[42] EchoStar and SES Americom filed replies to Northrop Grumman's opposition.[43]

18. EchoStar argues that, because we permitted Northrop Grumman to provide additional technical showings in support of its application instead of dismissing it, we should have done the same with applications EchoStar filed proposing similar GSO FSS operations.[44] Alternatively, EchoStar suggests that the Bureau should grant EchoStar's petition for reconsideration of the dismissal of its applications, reinstate its applications, and process the applications in accordance with the Commission's "first-come, first-served" policy.[45] EchoStar argues that under this policy, EchoStar's applications are first-in-time and thus have processing priority over Northrop Grumman's applications, which seek to use two of the orbital locations that EchoStar requested in the same frequency band.[46]

19. EchoStar further states that the Commission should grant EchoStar's Petition for Rulemaking to redesignate the NGSO spectrum in the 18.8-19.3 GHz and 28.6-29.1 GHz bands for both GSO and NGSO operations, and to develop sharing criteria for co-frequency NGSO/GSO operations.[47] EchoStar claims that addressing GSO/NGSO sharing issues would avoid future disputes and would effectively manage available spectrum.[48]

20. SES Americom asserts that Northrop Grumman's proposal conflicts with the Commission's *Ka-band Plan Order*, and that Northrop Grumman has not justified a waiver of the plan.[49] SES Americom states that we cannot consider Northrop Grumman's application until the Commission determines whether, and under what conditions, NGSO systems can operate in GSO Ka-band spectrum on a secondary basis,.[50]

21. In April 2007, we placed Northrop Grumman's 2007 Amendments on Public Notice.[51] No comments were received in response to these amendments.

## III. DISCUSSION

### A. Processing Framework

22. Northrop Grumman's proposed satellite system consists of NGSO and GSO components, with each component operating in both the Ka-band and V-band. Operations in the V-band and Ka-band are governed by separate processing and service rules. Further, NGSO and GSO satellites are governed by separate processing and service rules. Consequently, we will analyze the four components of Northrop Grumman's proposed system separately. Because we are acting on all portions of Northrop Grumman's system in this Order, however, its request for a waiver of Section

[42] Northrop Grumman, Consolidated Opposition to Petitions to Deny or Dismiss, filed Sept. 28, 2004 (Northrop Grumman Opposition).

[43] EchoStar Satellite LLC, Consolidated Reply to Oppositions to Petitions to Deny, filed Oct. 8, 2004 (EchoStar Reply). Consolidated Reply of SES Americom, filed Oct. 8, 2004 (SES Americom Reply).

[44] EchoStar Petition to Deny at 6.

[45] EchoStar Petition to Deny at 7.

[46] *Id*.

[47] EchoStar Petition to Deny at 9.

[48] *Id.*

[49] SES Americom Petition to Deny at 1, citing *Ka-band Plan Order*, 11 FCC Rcd at 19005.

[50] SES Americom Petition to Deny at 7.

[51] *See* Policy Branch Information, Satellites Space Applications Accepted for Filing, Public Notice, Report No. SAT-00434 (Apr. 6, 2007).

25.156(d)(3) of the Commission's rules, which would allow us to proceed with all components on parallel processing tracks, is moot.

### 1. V-band

23. In the *First Space Station Licensing Reform Order*, the Commission adopted new processing rules for space station applications. Specifically, it adopted a first-come, first-served approach for GSO applications, under which it grants an application if the applicant is qualified and the proposed satellite will not cause harmful interference to a previously licensed satellite or to a satellite proposed in a previously-filed application.[52] Further, the Commission adopted a "modified processing round" approach for NGSO applications. Under this approach, when an NGSO application is filed, the Commission issues a public notice announcing a filing deadline for additional NGSO applications to be considered concurrently with the first application, and then divides the available spectrum equally among the qualified NGSO applicants filing by the cut-off date.[53]

24. As noted, in adopting these new licensing procedures, the Commission directed the International Bureau to treat all then-pending V-band applications filed in the 1997 processing round as if they were filed at the same time.[54] Consistent with newly adopted Section 25.156(d)(5) of its rules, the Commission further directed the Bureau to divide the spectrum proportionally between qualified GSO and NGSO applicants and to subdivide the GSO and NGSO spectrum, respectively, where there were conflicts between qualified GSO or NGSO applicants.[55]

25. Northrop Grumman is the only remaining V-band applicant.[56] Its proposed system includes both GSO and NGSO satellites. Thus, under the framework set out in the *First Space Station Licensing Reform Order* and the Commission's rules, we would divide the V-band spectrum in half, designating one-half to NGSO operations and the other half to GSO operations. Next, because there would be no conflicts among requested orbital locations, we would assign Northrop Grumman's proposed GSO satellites to its requested locations. Further, to accommodate multiple entry pursuant to Section 25.157(e)(2) of the rules, we would assign Northrop Grumman's NGSO constellation to only one-third of the V-band NGSO spectrum and make the remaining NGSO spectrum available to other NGSO systems in an additional processing round.[57] Northrop Grumman, however, requests authority to operate both the NGSO and GSO components of its system throughout all of the V-band spectrum allocated in the United States for FSS uplinks and throughout most of the V-band spectrum allocated in the United States for FSS downlinks.[58]

26. Given the design of Northrop Grumman's proposed system and the manner in which it will operate, we find that a waiver of Sections 25.156(d)(5) and 25.157(e)(2) is warranted. The Commission may waive its rules and policies where particular facts make strict compliance

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[52] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10792-10805 (paras. 71-108).

[53] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10774 (paras. 23-34).

[54] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10865 (para. 279).

[55] *Id.*

[56] *See* note 6, above.

[57] Section 25.157(e)(2) provides that where there are one or two applications in a processing round , the Commission will assign each applicant to 1/3 of the available spectrum, and will conduct an additional processing round to assign the remaining spectrum. 47 C.F.R. § 25.157(e)(2).

[58] In the United States, the 47.2-50.2 GHz and 37.5-42.5 GHz bands are allocated to FSS on a co-primary basis for uplink and downlink operations, respectively. Northrop Grumman requests authority to operate in the 47.2-50.2 GHz uplink band, and in the 37.5-42.0 GHz downlink band. NGSO March 2004 Amendment at 5, Table 1.

inconsistent with the public interest.[59] In doing so, the Commission may take into account more effective implementation of overall policy on an individual basis, and whether a deviation from the general rule will better serve the public interest.[60] We conclude that waiving the band segmentation provisions in Sections 25.156(d)(5) and 25.157(e)(2) of the Commission's rules is warranted here. Allowing Northrop Grumman to operate its NGSO and GSO satellites throughout the V-band spectrum as proposed: (1) will not contravene the purpose of the band-splitting approach, which was to accommodate all qualified GSO and NGSO applicants in cases where co-frequency NGSO-like and GSO-like applications are filed simultaneously, and (2) will not preclude additional entry by either GSO or NGSO applicants in the V-band.

27. The Commission adopted the first-come, first-served processing procedure for GSO-like applications because granting the first-filed application would not preclude additional entry in that band. This is because the Commission's rules require GSO satellites operating in the same frequency band to operate compatibly at two-degree orbital intervals.[61] At two-degree spacings, more than a dozen GSO satellites can provide service to the United States in the same frequency band. In contrast, the Commission has not adopted a wholesale set of rules under which NGSO systems can use the same spectrum or under which hybrid GSO/NGSO systems can use the same spectrum without causing mutual harmful interference. Although the Commission has adopted specific NGSO/NGSO and NGSO/GSO sharing criteria in certain frequency bands through rulemakings, this is not the case in many bands, including the V-band. In these cases, band-segmentation allows the Commission to accommodate multiple entrants.

28. Here, however, granting Northrop Grumman authority to operate its NGSO and GSO satellites throughout the requested V-band spectrum will not preclude additional entry in the V-band. Northrop Grumman proposes to operate its three NGSO satellites in "highly elliptical orbit," with one NGSO satellite in each of three orbital planes. The altitude of Northrop Grumman's proposed highly elliptical orbit (HEO) satellites at their apogees is such that the HEO satellite appears nearly stationary when viewed from the Earth. This architecture reduces the potential for "in-line" interference events with other systems. Further, when an in-line interference event occurs, Northrop will switch operations to one of its GSO satellites. This will allow another V-band system to continue to operate across the entire V-band spectrum at all times. Thus, multiple systems similar to Northrop Grumman's in design can operate in the same frequency bands if their operators coordinate their orbits. In this way, Northrop Grumman can operate its HEO and GSO satellites in the same frequency bands and we can license additional GSO and HEO satellites in the same band.

29. In the past, we have granted NGSO systems access to the entire frequency band when doing so will not preclude additional entry.[62] In these circumstances, we have treated NGSO systems under a first-come, first-served approach and have not instituted a processing round. Given the opportunities for additional V-band entrants afforded by Northrop Grumman's system design, we waive the band segmentation requirements. Thus, we allow Northrop Grumman's hybrid system to operate across its requested frequencies and will process Northrop Grumman's applications on a

[59] *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (*Northeast Cellular*); 47 C.F.R. § 1.3.

[60] *WAIT Radio v. FCC,* 418 F.2d 1153 (D.C. Cir. 1969) *(WAIT Radio)*.

[61] *See* 47 C.F.R. § 25.140(b)(2).

[62] *See* Space Imaging, LLC, *Declaratory Order and Order and Authorization*, 20 FCC Rcd 11964, 11969 (para. 13) (Int'l Bur., 2005) (the Bureau can grant waivers of the NGSO-like satellite system processing rules in cases where band segmentation is not necessary to preclude an applicant from unreasonably restricting further entry into the frequency band). *See also* Lockheed Martin Corporation, *Order and Authorization*, 20 FCC Rcd 11023, 11028 (para. 15) (Int'l Bur., 2005); Digital Globe, Inc., *Order and Authorization*, 20 FCC Rcd 15696, 15699 (paras. 7-8) (Int'l Bur., 2005).

first-come, first-served basis.[63]

30. Northrop Grumman is the only remaining applicant in the 1997 V-band Processing Round and, thus, has "first-in-line" status. No other satellites or satellite systems are authorized to operate in the V-band. Consequently, granting Northrop Grumman access to its requested V-band spectrum will not cause interference to any previously licensed satellite system or to a system proposed in a previously filed application. Accordingly, we grant Northrop authority to operate its GSO satellites and NGSO satellites throughout its requested V-band spectrum.

### 2. Ka-band

#### a. NGSO Component

31. As noted above, the portion of Northrop Grumman's 1997 amendment requesting Ka-band NGSO authority is still pending. The Bureau deferred action on the pending Ka-band NGSO satellite applications filed in the second Ka-band application processing round until the Commission completed a rulemaking on technical rules for Ka-band NGSO systems. As a result of that rulemaking, the Commission required Ka-band NGSO systems to share the NGSO-designated Ka-band spectrum by employing mechanisms designed to avoid in-line interference events between NGSO systems.[64] In situations where an in-line interference event is unavoidable, the Commission required operators to employ mechanisms enabling them to divide the spectrum equally among the affected systems for the duration of the event. We will process that portion of Northrop Grumman's application proposing NGSO operations in the 18.8-19.3 GHz and 28.6-29.1 GHz bands designated for primary NGSO use pursuant to these rules.[65] In other words, we will permit Northrop Grumman to operate NGSO satellites throughout the entire Ka-band spectrum designated for primary NGSO use by employing mechanisms designed to avoid in-line interference events with other NGSO systems.

32. The in-line interference avoidance mechanism adopted in the *Ka-band Order* applies only to NGSO operations in the 18.8-19.3 GHz and 28.6-29.1 GHz bands.[66] It does not apply to the 19.7-20.2 GHz or the 29.5-30.0 GHz bands in which Northrop Grumman proposes to operate its NGSO satellites on a non-conforming and secondary basis, respectively. Rather, Section 25.157 of the Commission's rules applies to these bands.[67] Sections 25.157(c) and (e) require us to establish a processing round for NGSO applications in these bands and divide the available spectrum among the qualified applicants in that processing round.[68] Northrop Grumman, however, requests authority to operate its NGSO satellites throughout the 19.7-20.2 GHz and 29.5-30.0 GHz bands.

33. Given the design of Northrop Grumman's proposed NGSO operations and the

[63] 47 C.F.R. §§ 25.156(d)(5), 25.157(e)(2). If Northrop Grumman does not implement its GSO satellites, however, we may revisit this issue.

[64] *Ka-band NGSO Order*, 18 FCC Rcd at 14708. *See* para. 9, *above.*

[65] The Commission had not completed the Ka-band NGSO rulemaking proceeding at the time it adopted the band segmentation licensing approach for NGSO systems in the *First Space Station Licensing Reform Order.* The Commission stated in the *First Space Station Licensing Reform Order* that since the record in the Ka-band NGSO rulemaking proceeding was fully developed, it would complete that rulemaking rather than apply a band segmentation approach to the pending Ka-band NGSO applications. In addition, the Commission directed the Bureau to award Ka-band NGSO licenses pursuant to the processing mechanism adopted in the Ka-band NGSO Report and Order. *See First Space Station Licensing Reform Order*, 18 FCC Rcd at 10865-66 (para. 280).

[66] *Ka-band NGSO Order*, 18 FCC Rcd at 14708, fn.1.

[67] 47 C.F.R. § 25.157.

[68] 47 C.F.R. §§ 25.157(c), (e).

manner in which it will operate, we find that a waiver of Section 25.157 is warranted. Northrop Grumman's NGSO satellites will employ a mechanism designed to permit multiple NGSO systems to operate in the same spectrum by limiting the number of in-line interference events between NGSO systems and dividing the spectrum among the affected NGSO systems during such an event. We see no reason to prevent Northrop Grumman from taking advantage of this multiple-entry architecture in all portions of the Ka- FSS-band in which it seeks to operate.

34. As noted, we have granted NGSO systems access to the entire frequency band when doing so will not preclude additional entry.[69] In these circumstances, we have treated NGSO systems under a first-come, first-served approach and have not instituted a processing round. Consequently, as we did for the Northrop Grumman's proposed V-band operations, we waive the processing round and band segmentation requirements and will process Northrop Grumman's request to operate its NGSO satellites in the 19.7-20.2 GHz and 29.5-30.0 GHz bands on a first-come, first-served basis.

**b. GSO Component**

35. Northrop Grumman applied to add Ka-band capacity to its proposed GSO V-band satellites in March 2004. Because Northrop Grumman filed these amendments after the Commission reformed its processing procedures, we analyze the Ka-band portion of the GSO satellites under a "first come, first served" procedure. There are no other Ka-band GSO satellites licensed to operate at any of Northrop Grumman's requested orbital locations. Further, there are no prior-filed Ka-band GSO applications requesting authority to operate at these locations. Consequently, we grant Northrop Grumman's Ka-band GSO requests.

**B. Qualifications**

36. All applicants requesting authority to launch and operate a satellite space station must present information sufficient to establish their legal, technical, and financial qualifications to hold a Commission license. The regulations set forth in Part 25 of the Commission's rules govern FSS applicants and licensees.[70]

**1. Legal and Financial Qualifications**

37. Based on the record, we find no evidence that Northrop Grumman lacks the legal qualifications under our rules to hold a Commission license.[71] In its *First Space Station Licensing Reform Order*, the Commission eliminated the financial requirements then in place and replaced them with a bond requirement.[72] We discuss the bond requirement in paragraphs 109-110, below, which we include as a condition of Northrop Grumman's license.

**2. Technical Qualifications**

**a. V-band Allocations**

**(i) V-band Uplink**

38. The 47.2-50.2 GHz band in which Northrop Grumman proposes to operate V-band

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[69] *See* para. 29, above.

[70] In the *First Space Station Licensing Reform Order,* the Commission emphasized that even in cases where it decided not to apply the new satellite processing rules to particular applications, the remainder of the rules adopted in the proceeding, such as safeguards against speculation, would apply. *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10866 (paras. 281-83).

[71] *See also TRW Transfer of Control Order*, 17 FCC Rcd at 24628-29 (paras. 8-12) (discussion of Northrop Grumman's legal qualifications as a general matter).

[72] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10823-24 (paras. 162-165).

uplinks is allocated, on a co-primary basis, to the fixed service (FS), mobile service (MS), and the Fixed-Satellite Service (FSS). The FSS allocation requires FSS operators to limit use of the 47.2-48.2 GHz portion of the band to gateways.[73] Further, the allocation identifies the 48.2-50.2 GHz portion of the band to high-density applications for FSS, such as user terminals.[74] Further, Federal FS, MS, and FSS systems are allocated to operate in the 48.2-50.2 GHz portion of this band. For ease of reference, the uplink V-band allocations are depicted as follows:

| Frequency Band (Bandwidth, in megahertz) | 47.2-48.2 GHz (1000) | 48.2-50.2 GHz (2000) |
|---|---|---|
| Non-Federal Service | FS<br>FSS<br>MS | FS<br>FSS<br>MS |
| Federal Service | No Allocations | FS<br>FSS<br>MS |

39. We note that, in accordance with Article 5, Footnotes 5.149, 5.340 and 5.555 of the ITU Radio Regulations, the 48.94-49.04 GHz band is also allocated to the radio astronomy service on a primary basis in all ITU Regions.[75] Footnote 5.555 is incorporated in the U.S. Table of Frequency Allocations.[76] We also note that, in accordance with Article 5, Footnote 5.552 of the ITU Radio Regulations, the ITU has urged Administrations to take all practical steps to reserve the 47.2-49.2 GHz band for feeder links for the broadcasting-satellite service operating in the 40.5-42.5 GHz band in all ITU Regions.[77] In addition, in accordance with Article 5, Footnote 5.516B of the ITU Radio Regulations, the 48.2-50.2 GHz band is identified for use by high-density applications in the fixed-satellite service (Earth-to-space) in ITU Region 2.[78] ITU coordination will be required to protect these services. National coordination will be required with radio astronomy stations in the

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[73] Gateways are earth station complexes consisting of multiple interconnecting earth station antennas supporting the communication routing and switching functions of an FSS system as a whole. *See* 47 C.F.R. § 25.201. Further, operators may use FSS gateways in this band only if the licensee has: (1) coordinated earth station downlink operations in the 37.5-40.0 GHz band (*see V-band Second Report and Order*, 18 FCC Rcd at 25436 (para. 17) and 25441-42 (paras. 30-33)) and (2) obtains a license under Part 101 of the Commission's rules or an agreement from a Part 101 licensee for the area in which an earth station is to be located. Satellite earth station facilities in this band may not be ubiquitously deployed and may not be used to serve individual consumers. 47 C.F.R. § 25.202 n.15.

[74] *See* 47 C.F.R. § 2.106, fn. 5.516B.

[75] *See* ITU Radio Regulations, Article 5, Footnotes 5.149, 5.340 and 5.555. For the purpose of frequency allocation, the International Telecommunication Union (ITU) has divided the world into three Regions. ITU Region 1 includes Europe, Africa, territories of the former U.S.S.R. in Asia, as well as portions of the Arctic, Atlantic and Pacific Oceans. ITU Region 2 includes North and South America. ITU Region 3 includes Southern Asia, Australia, New Zealand, and some Pacific Islands.

[76] *See* 47 C.F.R. § 2.106, fn. 5.555.

[77] *See* ITU Radio Regulations, Article 5, Footnote 5.552.

[78] *See* ITU Radio Regulations, Article 5, Footnote 5.516B, and Resolution 143 (WRC-2007). In accordance with Article 5, Footnote 5.516B of the ITU Radio Regulations, the other V-band uplink frequencies that have been identified for use by high-density applications in the fixed-satellite service are 47.5-47.9 GHz (space-to-Earth) in ITU Region 1, 48.2-48.54 GHz (space-to-Earth) in ITU Region 1, and 49.44-50.2 GHz (space-to-Earth) in ITU Region 1.

48.94-49.04 GHz band. Finally, the 2007 World Radio conference (WRC-2007) adopted a resolution establishing out-of-band protection criteria for the Earth Exploration Satellite Service (Passive) operating in the 50.2-50.4 GHz band. Under this Resolution, FSS systems operating in the adjacent 49.7-50.2 GHz (Earth-to-space) frequency band must meet specified out-of-band emission limits.[79]

### (ii) V-band Downlink

40. In the V-band downlink band at 37.5-42.0 GHz, the Commission adopted "soft segmentation" as a sharing method between the FS and FSS services.[80] "Soft-segmentation" encourages high-density FS deployment below 40 GHz by requiring satellite operators to meet more restrictive power flux density (PFD) limits in this portion of the band, and encourages high-density FSS deployment above 40 GHz by permitting more liberal PFD limits in this band. The PFD limits are different for GSO FSS systems and NGSO FSS systems. Further, the Commission restricted the 37.5-40.0 GHz band to FSS gateway operations[81] to protect the designated high density FS operations in this band and identified the 40.0-42.0 GHz band for high-density applications for FSS.[82]

41. The downlink allocations are depicted as follows:

| Frequency Band (Bandwidth, in megahertz) | 37.5-38.0 GHz (500) | 38.0-38.6 GHz (600 ) | 38.6-39.5 GHz (900) | 39.5-40.0 GHz (500) | 40.0-40.5 GHz (500) | 40.5-41.0 GHz (500) | 41.0-42.0 GHz (1000) | 42.0-42.5 GHz (500) |
|---|---|---|---|---|---|---|---|---|
| Non-Federal Service | FS<br>FSS<br>MS | FS<br>FSS<br>MS | FS<br>FSS<br>MS | FS<br>FSS<br>MS | FSS<br>MSS | BS<br>BSS<br>FSS<br>fs<br>ms<br>mss | BS<br>BSS<br>FS<br>FSS<br>MS | FS<br>BS<br>BSS<br>MS |
| Federal Service | FS<br>MS<br>SRS (downlink) | FS<br>MS | No Allo-cations | FSS<br>MSS | EESS (downlink)<br>eess (uplink)<br>FSS<br>MSS<br>SRS (uplink) | FSS<br>mss | No Allo-cations | No Allo-cations |

42. As mentioned in the *V-band Second Report and Order*,[83] rain fade has a significant impact on radio propagation at 40 GHz.[84] Because of the high rain fade, higher PFD levels and other ameliorative techniques are necessary, at times, to maintain adequate satellite performance, even for gateway operations in the 37.5-40.0 GHz band. Thus, although the Commission adopted a PFD

[79] *See* ITU Resolution 750 (WRC-2007). *See also* Article 5, Footnote 5.BA03 (WRC-2007).

[80] *See V-Band Second Report and Order*, 18 FCC Rcd at 25432 (para. 8).

[81] In addition, as noted above, use of this band by the fixed-satellite service is limited to gateway earth station operations. *See* 47 C.F.R. § 25.202(a)(1) fn. 15, 16. *See also V-band Second Report and Order*, 18 FCC Rcd at 25436 (para. 17) and 25441-42 (paras. 30-33).

[82] *See* 47 C.F.R. § 2.106, Footnote 5.516B.

[83] *V-band Second Report and Order*, 18 FCC Rcd at 25440-41 (para. 29).

[84] *Id.*

limit in the *V-band Second Report and Order*, it has permitted PFD limits to exceed this level on a case-by-case basis. Additionally, this issue will be addressed in a rulemaking that will establish specific criteria for evaluating when, and to what extent, PFD levels may exceed the specified "clear-air" levels in the 37.5-40.0 GHz band.[85] We discuss this PFD issue in more detail below.[86]

43. In addition, we note that, in accordance with the ITU Radio Regulations, the downlink frequencies identified for use by FSS high-density applications are 40-40.5 GHz (space-to-Earth) in all ITU Regions, and 40.5-42 GHz (space-to-Earth) in ITU Region 2.[87] We encourage, but do not require, Northrop Grumman to use these bands for any high-density applications it chooses to implement. If Northrop Grumman chooses to implement other FSS applications in these bands, it will be required to coordinate with other applicants/licensees who have planned or implemented high-density applications in these bands.

44. Further, the Federal Space Research Service (SRS) will operate on a co-primary basis in portions of the V-band. In this regard, NTIA submitted a letter in the V-Band proceeding in 2004, indicating that the *Space Exploration Initiative of 1989* identified the 37.0-37.5 GHz and 40.0-40.5 GHz frequency bands for use by space research systems to be implemented in support of U.S. initiatives to provide a permanent manned presence in Earth orbit (on or near the moon) and to begin manned exploration of the planet Mars.[88] The letter also states that the 1992 World Administrative Radio Conference (WARC 1992) adopted a downlink allocation for SRS in the 37.0-37.5 GHz band, an uplink allocation for SRS in the 40.0-40.5 GHz band, and an allocation at 37-38 GHz for space research systems to be implemented in support of Very Long Baseline Interferometry (VLBI) by satellite. The letter further states that when operating manned spacecraft over distances as far removed from the Earth as Mars, it might be necessary to combine the received signals simultaneously from more than one receiving site, *e.g.,* Goldstone, CA and Socorro, NM, to achieve mission objectives.[89] For those reasons, NTIA proposes to protect seven SRS sites from FSS V-band operations: Goldstone, California; Green Bank, West Virginia; Guam; Merritt Island, Florida; Wallops Island, Virginia; and White Sands and Socorro, New Mexico.

### b. The Ka-band Plan

#### (i) Ka-band Uplink

45. The Commission completed its proceeding involving the 27.5-30.0 GHz frequency band in 1996. At that time, the Commission segmented the band and designated specified portions for terrestrial operations, feeder link operations for mobile-satellite service (MSS) systems, service link operations for GSO FSS systems, and service link operations for NGSO FSS systems.[90] Significantly, the Commission adopted discrete designations for NGSO FSS systems and GSO FSS

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[85] *See V-Band Second Report and Order* 18 FCC Rcd at 25440-41 (paras. 28, 29).

[86] *See* para. 54, below.

[87] *See* ITU Radio Regulations, Article 5, Footnote 5.516B, and Resolution 143 (WRC-2007). In addition, in accordance with Article 5, Footnote 5.516B of the ITU Radio Regulations, the V-band downlink frequencies that have been identified for use by high-density applications in the fixed-satellite service are 39.5-40.0 GHz (space-to-Earth) in ITU Region 1 (Europe).

[88] *See* letter from Frederick R. Wentland, Associate Administrator, Office of Spectrum Management, NTIA, to Edmond J. Thomas, Chief, Office of Engineering and Technology, FCC (Mar. 24, 2004) (NTIA Letter), at 1. *See also* Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands, *Third Notice of Proposed Rulemaking*; ET Docket No. 95-183 and PP Docket No. 93-253, 19 FCC Rcd 8232 (2004).

[89] *NTIA Letter* at 1-2.

[90] *Ka-band Plan Order*, 11 FCC Rcd 19005.

systems, while adopting shared designations for other services. As relevant here, the Commission designated the 28.35-28.6 GHz and 29.25-30.0 GHz bands to GSO FSS (Earth-to-space) on a primary basis, with NGSO FSS services (Earth-to-space) permitted on a secondary basis.[91] It also designated the 28.6-29.1 GHz band to NGSO FSS (Earth-to-space) on a primary basis.[92] In adopting the Ka-band Plan, the Commission stated that "[t]he plan … designates co-frequency sharing in band segments where the Commission and the parties have concluded it is technically feasible."[93]

46. The uplink plan is depicted as follows:

| Frequency Band (Bandwidth, in megahertz) | 28.35-28.6 GHz (250) | 28.6-29.1 GHz (500) | 29.25-29.5 GHz (250) | 29.5-30.0 GHz (500) |
|---|---|---|---|---|
| Non-Federal Service | GSO FSS ngso fss | NGSO FSS gso fss | GSO FSS | GSO FSS ngso fss |

47. We note that in accordance with Article 5, Footnote 5.516B of the ITU Radio Regulations, the Ka-band uplink frequencies identified for use by high-density applications in the fixed-satellite service are 28.35-28.45 GHz (Earth-to-space) in ITU Region 2, 28.45-28.94 GHz (Earth-to-space) in all ITU Regions, 28.94-29.1 GHz (Earth-to-space) in ITU Regions 2 and 3, 29.25-29.46 GHz (Earth-to-space) in ITU Region 2, and 29.46-30.0 GHz (Earth-to-space) in all ITU Regions.[94] We also note that in accordance with Article 5, Footnote 5.538 (WRC-2007) of the ITU Radio Regulations, the 29.999-30.0 GHz band is allocated to the FSS (space-to-Earth) on a primary basis for beacon transmissions intended for uplink power control. Such space-to-Earth transmissions shall not exceed an equivalent isotropically radiated power of +10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit.[95]

**(ii) Ka-band Downlink**

48. The Commission also adopted rules for non-Federal users involving the space-to-Earth (downlink) FSS allocation at 18.3-20.2 GHz. In this regard, the Commission designated the 18.3-18.8 GHz band and the 19.7-20.2 GHz band for primary use by GSO FSS and the 18.8-19.3 GHz downlink segment for primary NGSO FSS use.[96] The Commission originally permitted GSO

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[91] *Ka-band Third Report and Order*, 12 FCC Rcd at 22310.

[92] *Ka-band Plan Order*, 11 FCC Rcd at 19030.

[93] *Ka-band Plan Order,* 11 FCC Rcd at 19024.

[94] *See* ITU Radio Regulations, Article 5, Footnote 5.516B, and Resolution 143 (WRC-2007). In accordance with Article 5, Footnote 5.516B of the ITU Radio Regulations, the other Ka-band uplink frequencies that have been identified for use by high-density applications in the fixed-satellite service are 27.5-27.82 GHz (Earth-to-space) in ITU Region 1.

[95] *See* Ka-band Plan Order, 11 FCC Rcd at 19005; and ITU Radio Regulations, Article 5, Footnote 5.538 (WRC-2007).

[96] Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for the Broadcast Satellite Service Use, *Report and Order*, 15 FCC Rcd 13430, 13432 (2000) (*18 GHz Order*). In redesignating the 18.3-18.58 GHz band for FSS primary operations, the Commission also adopted provisions designed to ensure the orderly migration and timely reimbursement of FS stations operating in the band. Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and the 27.5-30.0 GHz Frequency

(continued....)

and NGSO systems to operate on a secondary basis in those portions of the band where that architecture did not have primary status.[97] In the *18 GHz Order*, however, the Commission eliminated the secondary designations after concluding that "secondary use of the 18 GHz band is not viable because it would unreasonably inhibit high-density deployment of these services and limit the use of spectrum by primary users of the bands."[98] The Commission confirmed these conclusions on reconsideration, stating that removing secondary operations lessens the potential for harmful interference to the primary services and avoids disruptions that could occur to users of secondary services.[99]

49. The downlink plan is depicted as follows:

| Frequency Band (Bandwidth, in megahertz) | 18.3-18.8 GHz (500) | 18.8-19.3 GHz (500) | 19.7-20.2 GHz (500) |
|---|---|---|---|
| Non-Federal Service | GSO FSS | NGSO FSS | GSO FSS |

50. In addition, Federal GSO and NGSO systems operate throughout the 17.8-20.2 GHz frequency band. These systems operate in accordance with the PFD limits contained in the ITU Radio Regulations.[100] Non-Federal systems must be coordinated with these Federal systems in accordance with Footnote US334 to the Table of Allocations.[101] As set forth in the *Ka-band NGSO Report and Order*, each NGSO FSS licensee must complete coordination with all other operational NGSO FSS licensees and with Federal FSS systems, prior to the launch of its first satellite.[102] Additionally, GSO satellites that operate in the 18.6-18.8 GHz band must comply with Footnote US255 to the Table of Frequency Allocations, which prescribes PFD limits for the 18.6-18.8 GHz band to protect the Earth Exploration-Satellite Service (passive).[103]

(...continued from previous page)
Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Service Use, *Second Order on Reconsideration*, 17 FCC Rcd 24248 (2002).

[97] *Ka-band Plan Order,* 11 FCC Rcd at 19035 (para. 77).

[98] *18 GHz Order*, 15 FCC Rcd at 13456-57 (para. 55).

[99] Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and the 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite Service Use, *First Order on Reconsideration*, 16 FCC Rcd 19808, 19821 (2001).

[100] *See 18 GHz Order*, 15 FCC Rcd at 13473. The PFD limits in the 18.3-18.6 GHz band are -115/-105 dB (W/m²) in any one megahertz band, depending on the angle of arrival. There are no power flux-density limits in the 19.7-20.2 GHz band. *See* Letter from William T. Hatch, National Telecommunications and Information Administration, to Dale Hatfield, Chief, Office of Engineering and Technology, FCC (Mar. 29, 2000).

[101] 47 C.F.R. § 2.106, fn. US 334.

[102] *Ka-band NGSO Report and Order*, 18 FCC Rcd at 14722. *See also* 47 C.F.R. § 2.106, fn. US 334. A licensee may initiate coordination under US 334 by submitting a letter request to the Commission. A system is deemed operational when at least one of its satellites reaches its intended orbit and initiates transmission and reception of radio signals.

[103] 47 C.F.R. 2.106, fn. US255 (as revised in the *18 GHz Order*, 15 FCC Rcd at 13489) states: In addition to any other applicable limits, the power flux-density across the 18.6-18.8 GHz band produced at the surface of the Earth by emissions from a space station under assumed free-space propagation conditions shall not exceed

(continued....)

51. Further, in accordance with Article 5, Footnote 5.516B of the ITU Radio Regulations, the Ka-band downlink frequencies identified for use by high-density applications in the fixed-satellite service are 18.3-19.3 GHz (space-to-Earth) in ITU Region 2, and 19.7-20.2 GHz (space-to-Earth) in all ITU Regions.[104] Accordingly, we encourage, but do not require, Northrop Grumman to use these bands for any high-density applications it chooses to implement. If Northrop Grumman chooses to implement other FSS applications in these bands, it will be required to coordinate with other applicants/licensees who have planned/implemented high-density applications in these bands.[105]

### c. NGSO Satellites

52. For reasons discussed below, we find Northrop Grumman technically qualified to construct its NGSO FSS satellites, pending submission of additional information regarding its orbital debris mitigation plans.[106] We will authorize Northrop Grumman to launch and operate its NGSO satellites once it submits the requisite orbital debris mitigation information. Nevertheless, we address technical issues relating to Northrop Grumman's proposed NGSO operations in this Order so we will be in a position to act expeditiously on any request by Northrop Grumman for launch and operating authority.

#### (i) V-band Operations

53. Northrop Grumman proposes to operate its NGSO satellites in the 37.5-42.0 GHz (downlink) and 47.2-50.2 GHz (uplink) frequency bands that are allocated to FSS on a co-primary basis. No comments or objections were filed regarding operations in this band. For the reasons discussed below, we find that Northrop Grumman's proposed NGSO V-band operations comply with the Commission's technical requirements now in place for this new service, but condition grant to require Northrop Grumman to comply with any technical requirements that may be applicable in the future. Further, we require Northrop Grumman to coordinate with other co-primary services operating in the NGSO V-band spectrum as described below.

54. First, we find that Northrop Grumman's NGSO downlink operations, based on data provided in Northrop Grumman's Technical Annex,[107] meet the PFD limits contained in Section 25.208(r), (s), and (t) of the Commission's rules in the 40.0-42.0 GHz band.[108] The NGSO operations in the 37.5-40.0 GHz band, however, exceed the "clear-air" PFD limits for elevation angles between approximately 11 and 22 degrees. Nevertheless, since Northrop Grumman's system employs very narrow antenna beams, it should be possible for Northrop Grumman to operate only those satellite antenna beams that can be received by earth stations at sufficiently high elevation angles to meet the PFD limits. Because Northrop Grumman did not submit a waiver request to operate at PFD limits above the specified values, we will permit Northrop Grumman to operate its NGSO satellites in the 37.5-40.0 GHz band only when the NGSO satellites meet the clear-air PFD

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–95 dB (W/m$^2$) for all angles of arrival. This limit may be exceeded by up to 3 dB for no more than 5 percent of the time. *See also* 47 C.F.R. § 25.208(d).

[104] *See* ITU Radio Regulations, Article 5, Footnote 5.516B, and Resolution 143 (WRC-2007).

[105] In addition, Article 5, Footnote 5.519 (WRC-2007) of the ITU Radio Regulations, allocates the 18.3-18.4 GHz band to the meterological satellite service (space-to-Earth) on a primary basis in Regions 1 and 3.

[106] *See* paras. 96-102, below.

[107] *See* NGSO March 2004 Amendment, Technical Appendix at 18, Figure 7. *See also* NGSO 2007 Amendment, Technical Appendix, Section 6.

[108] *See* 47 C.F.R. §§ 25.208(r), (s), (t).

limits, *i.e.*, at elevation angles to the NGSO satellites that are greater than 22 degrees.

55. Aside from PFD limits, the Commission has not adopted specific service rules for NGSO V-band operations. In the *First Space Station Licensing Reform Order*, the Commission stated that, rather than delaying licensing in cases where it had adopted a domestic allocation for a particular service but had not adopted specific service rules in Part 25, it would license systems based on specified default rules.[109] Section 25.217(b)(1) of the Commission's rules contains a list of the default rules that apply to NGSO-like satellites.[110] The Commission also stated that, absent Part 25 rules, it would require licensees to comply with any applicable ITU technical requirements.[111] Thus, Northrop Grumman's V-band NGSO system must comply with the applicable default rules and any applicable ITU requirements. We note, however, that the Commission also stated that any license issued under the default rules will be subject to any subsequent service rules it adopts.[112] Consequently, we require Northrop Grumman to modify its operations, if necessary, to bring them into conformance with any service rules the Commission may later adopt.

56. The default rules applicable to Northrop Grumman's proposed V-band NGSO system are Sections 25.142(d) (prohibition of exclusionary agreements); 25.143(b)(2)(ii) and 25.143(b)(2)(iii) (geographic service area requirements); 25.204(g) (earth station uplink requirements during rain fade conditions); 25.210(c) (ability to change transponder flux densities by ground command); 25.210(d) and 25.210(f) (full frequency reuse); 25.210(i) (cross-polarization isolation requirements); 25.210(k) (antenna measurements); and 25.210(l) (reporting requirements). We address these requirements below.

57. *Prohibition of Exclusionary Agreements*. Section 25.142 (d) of the Commission's rules[113] prohibits Commission licensees from acquiring or enjoying any right to distribute service by virtue of any concession, contract, or arrangement with an affiliated company that is denied to other U.S. operators. Nothing in Northrop Grumman's application suggests that Northrop Grumman has acquired any such rights. Once licensed, Northrop Grumman must continue to abide by this policy.

58. *Geographic Service Area Requirements*. Section 25.143(b) requires NGSO systems to be capable of serving locations as far north as 70 degrees latitude and as far south as 55 degrees latitude for at least 75 percent of every 24-hour period.[114] It also requires NGSO systems to be capable of providing continuous service throughout the 50 states, Puerto Rico and the U.S. Virgin Islands.[115]

59. Northrop Grumman acknowledges that its NGSO satellites do not adequately cover the far southern latitudes. It asserts, however, that the combined coverage of its hybrid NGSO/GSO satellites meets the NGSO coverage requirements.[116] We find that while Northrop Grumman has not shown that it complies with the letter of the Commission's NGSO coverage requirements, it has provided a sufficient basis for a waiver of that requirement. As noted above, waivers may be granted

[109] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10784 (para. 52).

[110] 47 C.F.R. § 25.217(b)(1).

[111] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10784 (para. 52).

[112] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10784 (para. 52). *See also* 47 C.F.R. § 25.217(e).

[113] 47 C.F.R § 25.142(d).

[114] 47 C.F.R § 25.143(b)(2)(ii).

[115] 47 C.F.R § 25.143(b)(2)(iii).

[116] NGSO March 2004 Amendment at 18-19. *See also* NGSO 2007 Amendment, Technical Appendix, Section 6.

if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[117] In this case, because the footprints of Northrop Grumman's four GSO satellites extend well south of the required 55 degrees latitude in the southern hemisphere, a waiver will not undermine the policy objective of the rule in question. If Northrop Grumman chooses not to construct any of is GSO satellites, however, it should address its compliance with the NGSO coverage requirement in its modification application to change its system design.

60. *Compensation for Rain Fade.* Section 25.204(g) of the Commission's rules requires earth stations to employ uplink adaptive power control or other methods of fade compensation to enable the station to meet the desired performance while reducing potential interference to other networks.[118] We defer our determination of whether Northrop Grumman's complies with this requirement until we receive an earth station application seeking authority to communicate with Northrop Grumman's V-band NGSO system.

61. *Switchable Transponder Flux Densities*. Northrop Grumman's proposed V-band NGSO satellites will not use transponders, but rather will demodulate and remodulate signals in a processor. As a result, Northrop Grumman's satellite, as proposed, will not employ any transponders that do not comply with Section 25.210(c) of the Commission's rules.

62. *Full Frequency Reuse*. Sections 25.210(d) and (f) of the Commission's rules require NGSO satellite systems to employ state-of-the-art full frequency reuse either through the use of orthogonal polarizations within the same beam and/or the use of spatially independent beams.[119] Northrop Grumman has demonstrated that each of the beams on its NGSO satellites meet this requirement by using orthogonal polarization in all operating bands.[120]

63. *Cross-polarization Isolation*. Section 25.210(i) of the Commission's rules requires all FSS space stations to be designed to provide a cross-polarization isolation such that the ratio of the on-axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band is at least 30 dB within its primary coverage area.[121] Northrop Grumman has demonstrated that it has designed its NGSO space stations to provide at least 30 dB cross-polarization isolation within their primary coverage area.[122]

64. *Reporting Requirements.* Section 25.210(k) of the Commission's rules requires licensees to measure each space station antenna's co-polarized and cross-polarized performance and to report this data to the Commission within thirty days after the licensee completes preliminary in-orbit testing.[123] Section 25. 210(l) of the Commission's rules requires licensees to submit reports on June 30th of each year, detailing the status of space station construction and, once launched, the operating status of each transponder.[124] We require Northrop Grumman to submit all required reports in a timely manner.[125]

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[117] *See* para. 26, above, *citing WAIT Radio,* 418 F.2d at 1157.

[118] 47 C.F.R § 25.204(g).

[119] 47 C.F.R. §§ 25.210(d), (f).

[120] *See* NGSO March 2004 Amendment, Technical Appendix at 2, 5-12.

[121] 47 C.F.R. § 25.210(i).

[122] *See* NGSO March 2004 Amendment, FCC Form 312, Schedule S, Section S7(g). *See also* NGSO 2007 Amendment, FCC Form 312, Schedule S, Section S7(g).

[123] 47 C.F.R. § 25.210(k).

[124] 47 C.F.R. § 25.210(l).

[125] *See* para. 107, below.

65. *Applicable ITU Requirements.* The 37.5-38.0 GHz band is allocated for the Federal Space Research Service (SRS) on a co-primary basis. Consequently, we will require Northrop Grumman to coordinate its NGSO operations with all co-primary Federal SRS operations prior to launch of its first satellite. In particular, we will require Northrop Grumman's FSS downlink transmissions to protect licensed Federal SRS facilities operating in the 37.5-38.0 GHz band. To this end, we will require Northrop Grumman and SRS facilities to coordinate their operations based on Recommendation ITU-R SA.1396, "Protection Criteria for the Space Research Service in the 37-38 GHz and 40-40.5 GHz Bands." More specifically, the ITU Recommendation includes criteria designed to protect SRS earth stations that operate in the 37.0-38.0 GHz band from harmful interference that would be caused if the total time during which the power density of noise-like interference or the total power of CW-type interference in any single band or in all sets of bands 1 hertz wide, is greater than –217 dB(W/Hz) at the input terminals of the earth station receiver for a period exceeding 0.001% of the time for manned missions, and 0.1% of the time for all other space research missions. The ITU Recommendation also includes criteria designed to protect SRS space stations that operate in the 40.0-40.5 GHz band from harmful interference that would be caused if the total power density of noise-like interference or the total power of CW-type interference in any single band or in all sets of bands 20 hertz wide, is greater than –193 dB(W/20 Hz) at the input terminals of the space station receiver, with the amount of time of exposure to the interference limited to 0.1% of the time for both manned and unmanned missions. The Recommendation allows levels exceeding these protection criteria on a case-by-case basis. To adequately protect SRS facilities, we will not permit Northrop Grumman to begin operations in the 37.5-38.0 GHz and 40.0-40.5 GHz bands until it has successfully coordinated its operations with licensed SRS operations pursuant to Recommendation ITU-R SA.1396.[126]

66. Last, we recognize that in 2007, the ITU addressed an out-of-band interference issue between co-primary V-band Federal and non-Federal service. Specifically, the ITU adopted a resolution specifying that the level of unwanted emissions from the transmit power density at the input of a fixed-satellite service earth station antenna in the 49.7-50.2 GHz (Earth-to-space) frequency band falling into the 50.2-50.4 GHz EESS (Passive) band shall not exceed -20 dBW/200 MHz for VSAT/user-type terminals and -10 dBW/200 MHz for gateway/hub applications under clear sky conditions.[127] The WRC-2007 resolutions became effective on January 1, 2009. As noted, the Commission has stated that, absent Part 25 rules, it will require licensees to comply with any applicable ITU technical requirements.[128] Thus, if the Commission has not adopted service rules when Northrop Grumman brings its system earth stations into operation, we will require Northrop Grumman's earth stations to comply with the ITU emission limits.[129]

67. *Additional Coordination with NTIA.* Further, NTIA has informed us of several locations where it expects to implement co-primary terrestrial facilities for the military in the 37.5-38.6 GHz band.[130] We require Northrop Grumman to coordinate with NTIA in this band as well. As with all Federal/non-Federal sharing, coordination is to be effectuated through the Interdepartmental Radio Advisory Committee (IRAC) and its Frequency Assignment Subcommittee (FAS).

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[126] Any future FSS space station applicants in this band must provide a showing in their applications that their downlink operations will not interfere with any previously licensed SRS receiving earth stations. *See V-band Second Report and Order,* 18 FCC Rcd at 25445 (para. 39).

[127] *See* ITU Resolution 750 (WRC-2007) and ITU Radio Regulations, Article 5, Footnote 5.BA03 (WRC-2007).

[128] *See* para. 55, *above*.

[129] Given the three-to-five year construction period required for most space stations, we do not expect Northrop Grumman to file applications for system earth stations before the ITU rules become effective.

[130] *See* NTIA Letter at Enclosure 2.

68. Consequently, we find that Northrop Grumman's proposed NGSO V-band operations comply with all applicable Commission requirements, ITU requirements, or, in the case of geographic service area requirements, that a waiver is warranted. We therefore grant Northrop Grumman authority to construct its proposed NGSO satellites in these bands, subject to the conditions discussed above.

**(ii) Ka-band Operations**

69. Northrop Grumman proposes to use several portions of the Ka-band for NGSO operations. First, it seeks to use the 18.8-19.3 GHz (downlink) and 28.6-29.1 GHz (uplink) frequency bands for communications links between its users and its NGSO satellites.[131] These operations are consistent with the Ka-band Plan, which designates these bands for primary NGSO operations. Moreover, we find that Northrop Grumman's proposed operations comply with the applicable PFD limits in Section 25.208(e) of the Commission rules and in ITU Article 21.16 (Table 21-4).[132] Further, for the same reasons discussed in paragraphs 58-59, above, we grant Northrop Grumman a waiver of the geographic service area requirements in Sections 25.145(1) and (2) of the Commission's rules for its NGSO Ka-band satellites.[133] Thus, we grant Northrop Grumman authority to construct the NGSO satellites that it proposes to operate in this band. Once we issue Northrop Grumman launch and operating authority in this band, it will be required to coordinate its operations with Federal systems in the 18.8-19.3 GHz frequency band in accordance with Footnote US334 to the Table of Frequency Allocations before it launches its first NGSO satellite.[134] Further, Northrop Grumman must comply with the spectrum sharing method adopted in the *Ka-band NGSO Order* when in-line interference events occur with other Ka-band NGSO systems.[135]

70. Northrop Grumman requests a waiver of the Ka-band Plan to operate its NGSO satellites on a non-interference basis in the 19.7-20.2 GHz (downlink) and 29.5-30.0 GHz (uplink) frequency bands designated for primary GSO FSS use.[136] Northrop Grumman asserts that its satellites will meet the equivalent power flux density (EPFD) limits in Article 22 of the ITU Radio Regulations and that the satellites' downlink EPFD levels are at least 15 dB lower than the values specified in Article 22. Consequently, Northrop Grumman concludes that "[t]his means that no unacceptable interference would be caused to the GSO networks with primary designations in those bands…." It also states that it will not claim interference protection from GSO FSS operations in these bands.[137]

71. SES Americom argues that Northrop Grumman's compliance with Article 22's EPFD limits does not justify its requested waiver. SES Americom states the Commission has not considered or adopted the ITU's international EPFD limits and that Northrop Grumman has not

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[131] NGSO March 2004 Amendment at 18; and at 5, Table 1.

[132] *See* 47 C.F.R. § 25.208(e). *See also First Space Station Licensing Reform Order*, 18 FCC Rcd at 10784. *See also* NGSO 2007 Amendment, Technical Appendix, Table 6, Figure 6, and Section 6. WRC-07 modified the power flux density limits for certain types of NGSO constellations operating in the 18 GHz band. Northrop Grumman is required to meet these limits.

[133] 47 C.F.R. § 25.145(1), (2). These rules are identical to the default rules that apply to V-band NGSO operations.

[134] 47 C.F.R. § 2.106, fn. US 334.

[135] *Ka-band NGSO Order*, 18 FCC Rcd at 14714. As set forth in Part 25 of our rules, Northrop Grumman must also request authority for Earth-to-space transmissions in an earth station application. 47 C.F.R. § 25.115. In the *18 GHz Order*, the Commission authorized blanket licensing for NGSO FSS earth stations in the bands in which NGSO FSS is designated primary status. *See 18 GHz Order*, 15 FCC Rcd at 13432.

[136] NGSO March 2004 Amendment at 26.

[137] NGSO March 2004 Amendment at 26-27.

justified the use of these limits domestically.[138] As discussed below, we find that Northrop Grumman has justified use of Article 22 EPFD limits.

72. The Ka-band Plan authorizes NGSO operations on a secondary basis to GSO operations in the 29.5-30.0 GHz band. Because Northrop Grumman proposes to operate its NGSO satellites on a secondary basis in this band, no waiver is required. As a secondary user, however, Northrop Grumman's operations shall not cause harmful interference to primary GSO operations, nor can Northrop Grumman claim protection from harmful interference caused by GSO operations. In analyzing requests to operate on a secondary basis, the Commission has always required applicants to demonstrate that their proposed secondary operations are not likely to cause interference to primary operations.[139] To do otherwise would create an unacceptable likelihood of disruption to primary services.

73. Our review of Northrop Grumman's technical showing indicates that Northrop Grumman's uplink NGSO operations are not likely to interfere with GSO operations in the 29.5-30.0 GHz band. Because there are no Part 25 rules governing NGSO operations in this band, we require Northrop Grumman to comply with the relevant ITU requirements.[140] Northrop Grumman's technical demonstration in its March 2004 Amendment uses computer simulation software developed in accordance with specifications outlined in ITU-R Recommendation S.1503 and demonstrates that the maximum uplink EPFD limits calculated for its NGSO satellites satisfy the requirements of Article 22 of the ITU Radio Regulations.[141] We note, however, that in April 2005, the ITU released a later version of this Recommendation (S.1503-1). Therefore, we require Northrop Grumman to file a certification within 30 days of the date of this Order stating that it is still compliant with the ITU EPFD limits. Moreover, Article 22.5I of the ITU Radio Regulations provides that if the associated EPFD limits are met, the NGSO FSS satellite system is considered coordinated with GSO networks. Thus, we conclude that if Northrop Grumman continues to meet the ITU EPFD limits, there is little likelihood that its NGSO operations will interfere with GSO operations. We therefore find sufficient basis to grant Northrop Grumman's request to operate its NGSO satellites in the 29.5-30.0 GHz band on a secondary basis.

74. In contrast, the 19.7-20.2 GHz downlink band for non-Federal systems is designated for GSO only, with no secondary designation for non-Federal NGSO operations. Northrop Grumman therefore requests a waiver to operate its NGSO satellites in this portion of the band. As noted previously, waivers may be granted if the relief requested would not undermine the policy objective of the rule in question, and would otherwise serve the public interest.[142] Further, in analyzing requests for non-conforming spectrum uses, the Commission has indicated it would generally grant such waivers "when there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the non-conforming operator accepts

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[138] *SES Americom Petition to Deny* at 6.

[139] *See*, *e.g.*, Qualcomm, Inc., *Memorandum Opinion and Order, and Authorization*, 4 FCC Rcd 1543 (1989) (authorizing mobile-satellite service on a secondary basis in the 14 GHz band and on a non-conforming basis in the 12 GHz band).

[140] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10784 (para. 52).

[141] NGSO March 2004 Amendment, Attachment D at 50. Northrop Grumman's calculation assumed five NGSO users operating in the same frequency channel within GSO 1.55 degrees beam. According to Northrop Grumman, the maximum uplink EPFD levels are: 0.7m: -176.2 dB (W/m2/40 kHz); 1.2 m: -185.73 dB (W/m2/40 KHz). *Id.* Commission staff reviewed Northrop Grumman's calculations, verified their accuracy, and found that the proposed operations fall within the corresponding limits defined in Article 22 of the ITU Radio Regulations.

[142] 47 C.F.R. § 1.3. *See also WAIT Radio*, 418 F.2d 1153; *Northeast Cellular*, 897 F.2d 1166.

any interference from authorized services."[143]

75. Northrop Grumman, relying on its computer simulation software, demonstrates that the operations of its NGSO satellites in the 19.7-20.2 GHz band meet the ITU EPFD limits in Article 22, Tables 22-1C and 22-4B. As noted above, the ITU considers a NGSO FSS system that meets these EPFD limits to be fully coordinated with respect to any GSO FSS network.[144] In light of the ITU rules and our verification of Northrop Grumman's software calculations, we find that Northrop Grumman's operations should not affect primary non-Federal GSO operations in the band. As a further assurance against unacceptable interference to GSO operations, we will require Northrop Grumman to publish its NGSO satellites' ephemeris data in the North American Aerospace Defense Command's (NORAD's) two-line format on a Northrop Grumman-maintained web site and to update this data every three days.[145] Consequently, we find that granting a waiver to allow Northrop to operate NGSO satellites in the 19.7-20.2 GHz band will not undermine the objective of the rule to protect primary services and will serve the public interest by allowing Northrop Grumman to offer consumers a range of broadband and interactive services. We will also require Northrop Grumman to comply with any service rules the Commission may later adopt.

76. Further, Northrop Grumman must coordinate its Ka-band NGSO satellites with Federal GSO and NGSO systems in this frequency band in accordance with Footnote US334 to the Table of Frequency Allocations prior to the launch of its first satellite. As a non-conforming user, Northrop Grumman's operations will be on a non-harmful interference basis, and Northrop Grumman will not be protected from interference from other allocated non-Federal and Federal operations in this band. In addition, as a non-conforming user, Northrop Grumman shall not cause harmful interference to any authorized Federal GSO or NGSO FSS system, and shall immediately cease operations upon notification of such harmful interference resulting from its operations. Similarly, Northrop Grumman must also coordinate with specific GSO earth stations pursuant to ITU Article 9, No. 9.7A.

### (iii) Replacement Satellites

77. In the *Ka-band NGSO Report and Order*, the Commission adopted a blanket licensing procedure that authorizes the construction and launch of all satellites in the constellation. This includes satellites needed to replace those that fail or are retired prior to the end of the license term.[146] This follows the procedure used for NGSO constellations in other frequency bands.[147] The blanket licensing procedure provides licensees with the ability to replace satellites in their fleets

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[143] Fugro-Chance, Inc., *Order and Authorization*, 10 FCC Rcd 2860 (para. 2) (Int'l Bur. 1995) (authorizing non-conforming mobile-satellite service in the 4/6 GHz band); see also Motorola Satellite Communications, Inc., *Order and Authorization*, 11 FCC Rcd 13952, 13956 (para. 11) (Int'l Bur. 1996) (authorizing service to fixed terminals in bands allocated to the mobile-satellite service); Geostar Positioning Corp., *Order and Authorization*, 4 FCC Rcd 4538 (para. 7) (1989) (authorizing service to radiodetermination satellite service terminals in a band allocated to the fixed-satellite service).

[144] *See* para. 73, above.

[145] *See Ka-band NGSO Order*, 18 FCC Rcd at 14720. Ephemeris data is information that will allow a GSO operator to locate an NGSO constellation at any given time. To avoid in-line interference events, the Commission requires Ka-band NGSO FSS licensees and Ku-band NGSO licensees operating in the 10.75-14.5 GHz band to provide such data. *See* Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range, ET Docket No. 98-206, *First Report and Order and Further Notice of Proposed Rulemaking*, 16 FCC Rcd 4096, 4138 (para. 102) (2000).

[146] *Ka-band NGSO Order*, 18 FCC Rcd at 14726.

[147] *See, e.g.*, 47 C.F.R. § 25.142(a)(5) (for the "Little LEO" service) and 47 C.F.R. § 25.143(c) (for the "Big LEO" service).

promptly and to avoid any service disruptions to their customers. Thus, we issue Northrop Grumman a blanket license for the Ka-band component of its NGSO constellation. In addition, we extend blanket licensing, and its benefits, to Northrop Grumman's V-band NGSO component. Consequently, we authorize Northrop Grumman to construct three hybrid Ka-band/V-band NGSO FSS satellites and to maintain this constellation until the end of the license period. Any replacement satellites that Northrop Grumman launches before the end of the constellation's license term must be technically identical to those in service, including the frequency bands and orbital parameters, and may not result in a net increase in the number of operating satellites.

#### d. GSO Satellites

78. In addition to its request for NGSO satellite system authority, Northrop Grumman seeks authority to operate a GSO FSS satellite at each of four orbital locations (125° W.L., 73° W.L., 68.5° E.L. and 116.5° E.L.), in both the V-band and the Ka-band. As discussed below, we find Northrop Grumman's proposed GSO satellites meet the Commission's technical and service rules. We discuss V-band and Ka-band operations separately below.

##### (i) V-band Operations

79. Northrop Grumman proposes to operate its four GSO satellites in the 37.5-42.0 GHz (downlink) and 47.2-50.2 GHz (uplink) frequency bands, which are allocated on a co-primary basis to FSS. No comments or objections were filed regarding these operations. Thus, we allow Northrop Grumman to operate in these bands, provided that it meets all the technical requirements applicable to these bands, including those in the default rules.[148]

**80.** To comply with our rules, Northrop Grumman must show that its GSO V-band satellite operations will meet two-degree orbital spacing requirements. The Commission has stated that it will apply the two-degree spacing requirements that it applies to GSO satellites in the C-band, Ku-band, Ka-band, and to proposed GSO satellites in other frequency bands.[149] Northrop Grumman indicates that its V-band operations are consistent with operations in a two-degree spacing environment.[150] Because there are no authorized co-frequency V-band GSO FSS satellites within two-degrees of Northrop Grumman's proposed orbital locations, Northrop Grumman conducted a two-degree compatibility analysis using the characteristics of its own satellites.[151] Our review of this analysis confirms Northrop Grumman's conclusion that its proposed satellites are two-degree compatible.[152] We also find that Northrop Grumman's proposed V-band operations meet the PFD limits for operations in the 37.5-42.0 GHz band specified in Sections 25.208 (q), (s), and (u) of the Commission's rules and in ITU Article 21.16 (Table 21-4).[153] Further, with the exception of the geographic service area requirement, the same default rules apply to Northrop Grumman's GSO V-band operations as apply to its NGSO operations. For the reasons discussed in paragraphs 56-64 above, we find that Northrop Grumman's proposed GSO operations similarly comply with these

[148] 47 C.F.R. § 25.217(c). *See also First Space Station Licensing Reform Order*, 18 FCC Rcd at 10784 (para. 52).

[149] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10808 (para. 119).

[150] *See* 116.5° E.L. July 2004 Amendment, Annex 1 at 5. *See also* 125° W.L. 2007 Amendment, 73° W.L. 2007 Amendment, 68.5° E.L. 2007 Amendment, 116.5° E.L. 2007 Amendment, Attachment A.

[151] *See* 116.5° E.L. July 2004 Amendment, Annex 1 at 5, 125° W.L. 2007 Amendment, 73° W.L. 2007 Amendment, 68.5° E.L. 2007 Amendment, 116.5° E.L. 2007 Amendment, Attachment A. *See also 2004 Two-Degree Spacing Public Notice*, 19 FCC Rcd at 10952.

[152] NGSO July 2004 Amendment, Annex 1 at 1-5.

[153] *See* 47 C.F.R. §§ 25.208(q), (s), and (u), ITU Article 21.16 (Table 21-4) of the ITU Radio Regulations. *See also First Space Station Licensing Reform Order*, 18 FCC Rcd at 10784 (para. 52).

rules. Last, as noted above, we require Northrop Grumman's GSO operations to comply with applicable ITU or Commission requirements governing out-of-band earth station emission limits.[154]

81. Further, Northrop Grumman must complete coordination with all Federal FSS systems operating in the 37.5-42.0 GHz and 47.2-50.2 GHz frequency bands prior to launch of its first satellite. Finally, we limit Northrop Grumman's operations in the 37.5-40.0 GHz and 47.2-48.2 GHz portions of the V-band to gateway operations, consistent with the requirements in Footnote 15 of Section 25.202(a)(1) of the Commission Rules.[155]

### (ii) Ka-band Operations

82. Northrop Grumman proposes to operate all four GSO FSS satellites in the 18.3-18.8 GHz (downlink), 19.7-20.2 GHz (downlink), 28.35-28.6 GHz (uplink), and 29.25-30.0 GHz (uplink) bands, which are designated for primary use for GSO operations. Northrop Grumman also proposes to operate all four GSO satellites in the 28.6-29.1 GHz (uplink) and 18.8-19.3 GHz (downlink) frequency bands. The 28.6-29.1 GHz band is designated for GSO FSS use on a secondary basis with respect to primary NGSO FSS operations. The 18.8-19.3 GHz band does not contain a designation for GSO FSS operations and thus can only be authorized for use by GSO satellites on a non-conforming basis. Northrop Grumman requests waivers of the Ka-band Plan to allow GSO use of the 28.6-29.1 GHz and 18.8-19.3 GHz frequency bands.[156]

83. We find that Northrop Grumman's proposed operations in the primary GSO Ka-band frequencies comply with all requirements for GSO satellites in Part 25 of the Commission's rules. First, we find that Northrop Grumman's analyses show that its GSO FSS satellites are compatible with a two-degree orbital spacing environment.[157] Further, we find that Northrop Grumman's proposed operations comply with the applicable PFD limits in Sections 25.138(a)(6), 25.208(c), and 25.208(d) of the Commission rules, as well as ITU Article 21.16 (Table 21-4) of the ITU Radio Regulations.[158] Accordingly, we grant Northrop Grumman authority to operate its four proposed GSO satellites in the GSO Ka-band frequencies. We condition this authority, however, on Northrop Grumman coordinating its operations with Federal systems in accordance with Footnote US334 to the Table of Frequency Allocations.[159]

**84.** Next, we analyze Northrop Grumman's request to operate its GSO satellites in those portions of the Ka-band designated for primary NGSO use. In support of its waiver request to permit these operations, Northrop Grumman states that its GSO FSS satellites will comply with applicable PFD limits in Section 25.208(e) of the Commission rules and Article 21.16 (Table 21-4) of the ITU Rules and Regulations.[160] Northrop Grumman also states that its GSO component will facilitate spectrum sharing among NGSO systems because Northrop Grumman will switch its NGSO operations to a GSO satellite during an in-line event. This will allow other NGSO systems to

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[154] *See* para. 66, above.

[155] *See* 47 C.F.R. § 25.202(a)(1), fn. 15.

[156] *See* NGSO March 2004 Amendment at 27.

[157] 125° W.L. 2007 Amendment, Technical Appendix, Attachment B-1; 73° W.L. 2007 Amendment, Technical Appendix Attachment B-2; 68.5° E.L. 2007 Amendment, Technical Appendix Attachment B-3, 116.5° E.L. 2007 Amendment, Technical Appendix Attachment B-4.

[158] *See* 47 C.F.R. §§ 25.138(a)(6) and 25.208(c),(d) and Article 21.16 (Table 21-4) of the ITU Radio Regulations. *See* 125° W.L. 2007 Amendment, Technical Appendix, Attachment B-1; 73° W.L. 2007 Amendment, Technical Appendix, Attachment B-2; 68.5° E.L. 2007 Amendment, Technical Appendix Attachment B-3, 116.5° E.L. 2007 Amendment, Technical Appendix, Attachment B-4.

[159] 47 C.F.R. § 2.106, fn. US 334.

[160] 47 C.F.R. § 25.208(e), Article 21.16 (Table 21-4) of the ITU Radio Regulations.

operate across the entire designated Ka-band spectrum during an NGSO to NGSO in-line event rather than reducing spectrum use, as would otherwise be required. Thus, Northrop Grumman argues that granting a waiver will not undermine the purpose of the rule designating the 18.8-19.3 GHz and 28.6-29.1 GHz frequency bands for primary NGSO FSS use.[161]

**85.** EchoStar and SES Americom observe that the Commission previously denied an EchoStar application to operate GSO satellites in spectrum designated for Ka-band NGSO services because EchoStar's commitment to shut off its GSO satellites upon notification of a "concrete risk of harmful interference" was not sufficient to ensure that NGSO satellites would not receive harmful interference.[162] EchoStar and SES Americom assert that EchoStar's proposal to cease operations during an in-line interference event is analogous to Northrop Grumman's proposal to switch its traffic to a GSO satellite and that we should similarly deny Northrop Grumman's applications.[163] Although SES Americom recognizes that Northrop Grumman provides a technical analysis while EchoStar did not, SES Americom maintains that the technical analysis is not relevant because the Commission has not established protection criteria for Ka-band NGSO systems.[164] SES Americom also asserts that accepting Northrop Grumman's application before the Commission conducts a rulemaking to permit GSO operations in NGSO-designated bands gives Northrop Grumman unfair "first-in-line" date priority over other potential applicants.[165]

**86.** We find that Northrop Grumman has provided adequate justification for a waiver of the Ka-band Plan to the extent such a waiver is necessary. We first address Northrop Grumman's request for waiver of the Ka-band Plan in the 28.6-29.1 GHz (uplink) frequency band. This band contains a secondary designation for GSO FSS uplink operations. Consequently, Northrop Grumman does not need a waiver of the Table of Frequency Allocations to operate in this spectrum on a non-interference basis. We will permit Northrop Grumman's GSO satellites to operate in this band if these operations do not interfere with primary NGSO operations. Technical studies to develop interference criteria between GSO and NGSO systems have not been completed.[166] We recognize that, without established NGSO FSS interference protection criteria, satellite operators cannot fully assess the impact of proposed GSO operations on NGSO operations. Nevertheless, we note that Northrop Grumman has provided a quantitative demonstration of how its GSO satellites will protect NGSO systems in the 28.6-29.1 GHz frequency band. Northrop Grumman's analysis included potential interference from its GSO satellites into the NGSO satellite design proposed by ATCONTACT, and the low-Earth orbit satellite design proposed by SkyBridge II, which has since been withdrawn.[167] Northrop Grumman analyzed the potential interference between each of these systems in terms of the Interference-to-Noise Ratio, $I_O/N_O$ assuming a minimum topocentric line of sight angular separation of ten degrees. Based on the worse case scenarios, Northrop Grumman calculated a $I_O/N_O$ of -31.3 dB with respect to the ATCONTACT system and an $I_O/N_O$ of -15 dB with respect to the SkyBridge II system. This corresponds to a $\Delta T/T$ of 0.07% and 3.16%,

[161] NGSO March 2004 Amendment at 22, 27.

[162] SES Americom Petition at 7-8; EchoStar Petition at 5-6.

[163] EchoStar Reply at 2-4.

[164] SES Americom Petition at 8-9.

[165] SES Americom Petition at 10-11; SES Americom Reply at 9-10.

[166] *See* Astrolink International, LLC, *Order and Authorization*, 16 FCC Rcd 20124, 20127 (Int'l Bur. 2001).

[167] *See, e.g.,* 119° W.L. July 2004 Amendment, at Annex 3. SkyBridge II LLC withdrew its Ka-band NGSO FSS application in October 2004. *Public Notice,* Policy Branch Information, Report No. SAT-00252, 19 FCC Rcd 20950 (Int'l Bur. 2004). *See also* 125° W.L. 2007 Amendment, Technical Appendix, Attachment C-1; 73° W.L. 2007 Amendment, Technical Appendix, Attachment C-2; 68.5° E.L. 2007 Amendment, Technical Appendix, Attachment C-3, 116.5° E.L. 2007 Amendment, Technical Appendix, Attachment C-4.

respectively. These values are well below the 6% threshold that triggers coordination between satellite systems under the relevant ITU Radio Regulations. Therefore, we conclude that the Northrop Grumman satellite system will not cause harmful interference to the ATCONTACT system nor would it have to the SkyBridge II system. Neither SES Americom nor EchoStar has provided any technical analyses to disprove Northrop Grumman's demonstration nor do we have any reason to believe that Northrop Grumman's study is flawed.

87. In contrast, the Table of Frequency Allocations limits the use of the 18.8-19.3 GHz band – which Northrop Grumman proposes for GSO downlink operations – to NGSO downlink operations.[168] The Commission stated that secondary GSO operations would be feasible only if an NGSO receiver does not point at the geostationary orbit.[169] It further stated that pointing flexibility allows NGSO licensees to use fewer satellites in their constellations and that it would not constrain such flexibility to facilitate NGSO sharing with non-primary GSO operations.[170] Northrop Grumman's NGSO orbital characteristics are such that the NGSO receive earth stations within its own system will never point toward the geostationary arc. Furthermore, Northrop Grumman's technical analysis, discussed above, demonstrates that its downlinks on its GSO FSS satellites would not cause harmful interference to any of the then-pending proposed non-Federal NGSO FSS systems.[171] Finally, allowing Northrop Grumman to switch to its GSO satellites during in-line events between its NGSO satellites will facilitate NGSO operations in this band.

88. We also conclude that EchoStar's applications are not similarly situated with Northrop Grumman's. While both entities requested a waiver of the Ka-band plan to operate GSO satellites in NGSO-designated spectrum, EchoStar -- in contrast to Northrop Grumman -- did not provide a technical analysis to support its waiver request. Generally, the Commission requires applicants proposing non-conforming operations to demonstrate that their proposed operations will not cause interference into allocated services. Instead, EchoStar asserted that it did not need to provide a technical analysis because it would terminate operations upon notification that its GSO operations were posing a "concrete risk of harmful interference" to NGSO operations.[172] It also asserted that a waiver was justified because the NGSO-designated band, which was not being used, would otherwise remain fallow.[173] The Division rejected these assertions, citing several pending applications proposing NGSO operations in this band (including Northrop Grumman's) and noting that EchoStar had not justified a departure from the Commission's policy to ensure that allocated services do not receive *any* interference from non-conforming services.[174] In contrast, Northrop Grumman's application included an undisputed technical showing that it would not interfere with NGSO operations. While Northrop Grumman submitted this showing in an amendment to its initial application, this information was in the record when the Division reviewed the merits of Northrop

[168] 47 C.F.R. § 2.106, fn. NG 165.

[169] *18 GHz Order*, 15 FCC Rcd at 13458-9.

[170] *Id*.

[171] *See* NGSO July 2004 Amendment, 119° W.L. July 2004 Amendment, 89° W.L. July 2004 Amendment, 15° E.L. July 2004 Amendment, and 116.5° E.L. July 2004 Amendment at Annex 3. *See also* 125° W.L. 2007 Amendment, Technical Appendix, Attachment C-1; 73° W.L. 2007 Amendment, Technical Appendix, Attachment C-2; 68.5° E.L. 2007 Amendment, Technical Appendix, Attachment C-3, 116.5° E.L. 2007 Amendment, Technical Appendix, Attachment C-4.

[172] *See, e.g.,* EchoStar Satellite Corporation, Application for Authority to Construct, Launch, and Operate a Geostationary Satellite Using Ka-band Frequencies at 121° W.L., File No. SAT-LOA-20030827-00180, at 15 (*EchoStar Application*), denied in EchoStar Satellite LLC, *Memorandum Opinion and Order*, 19 FCC Rcd 7846 (Sat. Div., Int'l Bur. 2004) (*EchoStar Order*).

[173] EchoStar Application at 16.

[174] *EchoStar Order*, 19 FCC Rcd at 7853.

Grumman's proposal.

89. Further, SES Americom's argument that Northrop Grumman's compliance with the ITU EPFD limits does not provide justification for a waiver is misplaced. We do not rely on Northrop Grumman's EPFD assertions, but rather base our waiver grant on our review of its interference analysis as set forth above. Finally, we do not agree with SES Americom that giving Northrop Grumman "first-in-line" status is unfair. Other potential applicants were free to file substantially complete applications with adequately supported requests for waiver of the Ka-band plan, just as Northrop Grumman did.[175]

90. Therefore, we grant Northrop Grumman a waiver of Section 2.106 of the Commission's rules to operate its GSO satellites on a non-conforming basis in the 18.8-19.3 GHz frequency band and grant it authority to operate its proposed GSO satellites in the 28.6-29.1 GHz band on a secondary basis. We require Northrop Grumman to accept interference from all operations with superior status in these bands, including Federal GSO and NGSO systems, and to terminate operations if it causes harmful interference to any superior-status service. Further, we require Northrop Grumman to terminate GSO operations in order to avoid an in-line interference event between one of its GSO satellites and other systems' NGSO satellites. Northrop Grumman must also coordinate with Federal GSO and NGSO FSS systems in the 18.8-19.3 GHz band in accordance with Footnote US334 to the Table of Frequency Allocations. We condition this authority, however, on Northrop Grumman complying with any interference criteria that may be adopted by the Commission.

#### (iii) Increased Power Operations in the 18.8-19.3 GHz and 28.6-29.1 GHz Frequency Bands

91. In its most recent amendments, Northrop Grumman proposes to increase the power levels on its GSO satellites in the 18.8-19.3 GHz and 28.6-29.1 GHz frequency bands. Northrop Grumman states that it requests this change because it seeks to provide emergency and homeland security operations during disasters in these bands.[176] Northrop Grumman indicates that these operations will require earth station terminals as small as 0.25 meters in diameter and that these small antennas require somewhat higher operating powers.[177] Northrop Grumman states that although the increased power still complies with applicable Commission rules, the combination of earth station size and power makes the earth stations best suited to a four-degree orbital spacing environment. Northrop Grumman therefore suggests that the Commission adopt four-degree orbital spacing for GSO satellites operating in these bands.[178] Northrop Grumman also requests a waiver of Section 25.140(b)(2) of the Commission's rules,[179] which requires applicants to provide an interference analysis demonstrating the compatibility of the proposed system with GSO satellites two-degrees away.

92. The Commission adopted a two-degree orbital spacing framework for Ka-band GSO

[175] Indeed, ATCONTACT applied for, and was granted, a similar waiver to operate GSO Ka-band satellites in the portion of the Ka-band designated for primary NGSO operations. *See* contactMEO Communications, LLC, 21 FCC Rcd at 4047-48. EchoStar and SES Americom objected to the grant of ATCONTACT's secondary/non-conforming GSO operations for the same reasons they object to Northrop Grumman's secondary/non-conforming GSO operations. These arguments were rejected in the order granting ATCONTACT's application. *Id*.

[176] *See, e.g.,* 125° W.L. 2007 Amendment at 10-13.

[177] *See, e.g.,* 125° W.L. 2007 Amendment at 11.

[178] *See, e.g.,* 125° W.L. 2007 Amendment at 10-13.

[179] *See, e.g.,* 125° W.L. 2007 Amendment at 11. *See also* 47 C.F.R. § 25.140(b)(2).

satellites in the *Ka-band Third Report and Order*.[180] Even assuming Northrop Grumman had filed a Petition for Rulemaking, which is the correct procedural vehicle to revisit the Commission's Ka-band decision, it has not persuaded us to consider increasing orbital spacings for GSO satellites in the 18.8-19.3 GHz and 28.6-29.1 GHz bands. The downlink frequency band at 18.8-19.3 GHz does not contain a designation for GSO satellites and the uplink frequency band at 28.6-29.1 GHz contains only a secondary designation for GSO satellites.[181] This means that GSO satellite operations cannot cause harmful interference to or claim protection from NGSO operations in these bands, which have a primary designation in both bands. We attempt to accommodate the provision of disaster-related relief services, where possible. We are reluctant to approve such services, however, where they could be subject to interference and could be required to be terminated upon notification of interference into NGSO operations. We note that GSO satellites provide disaster-related relief services in many other bands that contain a two-degree orbital spacing framework, including that portion of the Ka-band spectrum designated for GSO operations on a primary basis.

93. Nevertheless, we grant Northrop Grumman a waiver of Section 25.140(b)(2) of the Commission's rules to permit it to operate at its proposed higher power levels with small antennas on a conditional basis.[182] No other GSO satellites are now operating or are authorized to operate within four-degrees of Northrop Grumman's proposed satellites in the 18.8-19.3 GHz and 28.6-29.1 GHz bands.[183] Thus, allowing Northrop to operate at its proposed power levels will not affect any other GSO operator at this time. We require Northrop Grumman, however, to protect the operations of any two-degree compliant GSO operator that operates in these bands in the future. Further, Northrop Grumman may not claim protection against interference to its operations caused by a two-degree compliant GSO operator in these bands. Finally, given the secondary/non-conforming status of GSO operations in these bands, we require Northrop Grumman to notify its customers who are using antennas that are not two-degree compliant, in writing, that service is being provided on a non-conforming or secondary basis in these bands, that Northrop Grumman will be required to terminate operations if its operations cause harmful interference to a service designated to use these bands on a primary basis, and that Northrop Grumman cannot claim protection against interference caused by any operations with superior operating status.

### e. Tracking, Telemetry, and Command Function

94. Section 25.202(g) of the Commission's rules requires FSS systems to operate their tracking, telemetry, and command (TT&C) links at the edges of the frequency bands in which they are providing service.[184] The rule further provides that operators should select frequencies, polarization, and coding to minimize interference into other satellite networks and within their own satellite system. Northrop Grumman represents that each of its NGSO and GSO satellites will conduct TT&C at the edges of the NGSO Ka-band using one or two TT&C channels on each satellite with channel bandwidths of two megahertz.[185]

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[180] *Ka-band Third Report and Order,* 12 FCC Rcd at 22319.

[181] Indeed, as previously noted, the Commission eliminated the secondary designation for GSO downlinks at 18.8-19.3 GHz because it concluded that allowing secondary operations would inhibit use by primary users. *18 GHz Order*, 15 FCC Rcd at 13432.

[182] Northrop Grumman must still file license applications for any earth stations it seeks to operate in conjunction with its GSO satellites.

[183] ATCONTACT Communications, LLC has the only licensed GSO system in the 18.8-19.3 GHz and 28.6-29.1 GHz bands. None of its GSO satellites are authorized less than four-degrees away from Northrop Grumman's GSO satellites.

[184] 47 C.F.R. § 25.202(g).

[185] *See, e.g.,* 125° W.L. 2007 Amendment, Technical Appendix at 14.

95. Northrop Grumman asks us to grant a waiver of Section 25.202(g) to allow it to use TT&C frequencies in just one of the frequency bands used in which it is providing service—that is, the Ka-band NGSO FSS service bands—to allow it to take advantage of the efficiencies of a hybrid V-band/Ka-band system.[186] Northrop Grumman's request for a waiver of Section 25.202(g) is unnecessary. Section 25.202(g) does not require Northrop Grumman to conduct TT&C operations at the band edges of both the Ka- and V-bands. The rule requires only that TT&C operations occur at the band edges of an FSS band in which it is providing service. We find Northop Grumman in compliance with this rule.

**f. Orbital Debris Mitigation**

96. An applicant for a space station license must submit a description of the design and operational strategies that it will use to mitigate orbital debris, including a statement detailing post-mission disposal plans for space stations at the end of their operating life.[187] Northrop Grumman included an orbital debris mitigation plan in its amended application.[188] Thereafter, the Satellite Division released a Public Notice clarifying information that must be included in an applicant's casualty risk assessment if the planned post-mission disposal involves atmospheric re-entry of spacecraft.[189] Northrop Grumman further amended its application, consistent with the Public Notice, with respect to the proposed controlled re-entry of its NGSO FSS satellites during post-mission disposal of the spacecraft.[190] Northrop Grumman further amended its applications in February 2007 and submitted an erratum to each of the four GSO amendments that consisted of an updated orbital debris plan for each of these satellites.[191]

97. In its orbital debris mitigation plan, Northrop Grumman represents that it will incorporate vehicle design and operational techniques to minimize orbital debris.[192] It states that its system design will minimize the possibility of collision between satellites and other known objects. Further, Northrop Grumman states that its spacecraft design will also consider, and to the extent practicable, limit the probability that collisions with items smaller than one centimeter in diameter could cause a loss of control, and thereby prevent intended means of post-mission disposal.[193] In addition, Northrop Grumman states that critical components of its system will be designed to minimize vulnerability to high-speed particles and untracked debris that may result in loss of satellite control.[194]

98. As a general matter, although the risk of collision between the satellites is extremely low, the Commission has indicated that in cases in which orbital parameters for proposed satellite systems are similar to those of other operating systems, such that the two systems may have an

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[186] NGSO March 2004 Amendment at 25-26.

[187] *Orbital Debris Order,* 19 FCC Rcd 11567, 11619; 47 C.F.R. § 25.145. *See also* 47 C.F.R. § 25.114(d) (14).

[188] *See* SAT-AMD-20031104-00324. *See also* March 2004 Amendments.

[189] *Orbital Debris Public Notice*, 19 FCC Rcd 10714 (June 16, 2004).

[190] *See* July 2004 Amendments.

[191] *See* Errata to 125° W.L. 2007 Amendment, 73° W.L. 2007 Amendment, 68.5° E.L. 2007 Amendment, 116.5° E.L. 2007 Amendment, all filed on March 19, 2007.

[192] *See, e.g.,* NGSO July 2004 Amendment, Annex 2. *See also* 116.5° July 2004 Amendment, Annex 2. *See also* errata to 125° W.L. 2007 Amendment; 73° W.L. 2007 Amendment; 68.5° E.L. 2007 Amendment; 116.5° E.L. 2007 Amendment.

[193] *Id*.

[194] *Id*.

increased risk of physical collision, further review may be warranted.[195] In April 2005, the Division asked Northrop Grumman and ATCONTACT to provide written explanations regarding measures they will take to avoid in-orbit collisions between the NGSO satellites in their constellations that have similar orbital parameters.[196] In response, Northrop Grumman and ATCONTACT state that operational conditions, *i.e.*, initial orbital parameters, and ongoing coordination will ensure that the two systems' operations are physically compatible.[197]

99. According to Northrop Grumman, its GSO FSS satellites at the end of mission will be raised to an orbit with perigee altitude of at least 300 km above the GSO operational altitude. Although this proposal is consistent with prior practices, the Commission's new end-of-life disposal rule requires the disposal perigee altitude of the GSO spacecraft to be no lower than that calculated using the Interagency Space Debris Coordination Committee ("IADC") formula.[198] Although a perigee 300 kilometers above the geostationary altitude is typically sufficient to meet the IADC formula, a 300 kilometer increase may be insufficient depending on spacecraft design. Pursuant to the new rule, Northrop Grumman is required to make certain that the disposal perigee altitude of its GSO spacecraft complies with this requirement.

100. To ensure adequate disposal altitude for its GSO FSS satellites, Northrop Grumman assures the Commission that it will budget enough fuel to ensure that these satellites are properly disposed of at the end of life. Northrop Grumman also states that after end-of-life disposal, all remaining energy sources will be depleted or deactivated. This includes depleting remaining fuel, venting pressurized systems, discharging batteries and deactivating other safety systems.[199]

101. At end of mission of its NGSO FSS satellites, Northrop Grumman plans to de-orbit its NGSO FSS satellites through controlled re-entry by using a series of maneuver burns. Northrop Grumman states that the deorbit process will be designed to assure that the satellite is stable and under control throughout the deorbit process.[200] Northrop Grumman has identified an open area in the southern Pacific Ocean as the projected geographic region of the debris field.[201] Northrop Grumman also states that authorities for shipping lanes and airline routes in the area of the debris field will be notified of the event.

102. This case is one of the first in which we have addressed a system's plans to dispose of satellites using controlled atmospheric reentry, at end-of-life. According to Northrop Grumman, its system is still in the design process. Given the stage of development for its NGSO constellation, Northrop Grumman's application does not provide more detailed information concerning end-of-life operations, such as detailed operational plans, methods for coordination with relevant government

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[195] *See, e.g.*, *Orbital Debris Order,* 19 FCC Rcd at 11588.

[196] Letter to Peter Hadinger, Northrop Grumman Space & Missions Systems Corp., from Robert Nelson, Chief, Satellite Engineering Branch (Apr. 27, 2005). *See also* Letter to David Drucker, Manager, contactMEO Communications, LLC from Robert Nelson, Chief, Satellite Engineering Branch (Apr. 27, 2005).

[197] Letter to Marlene Dortch, Secretary FCC, from Stephen D. Baruch, Attorney for Northrop Grumman Space & Mission Systems Corporation (May 12, 2005); Letter to Marlene Dortch, Secretary, FCC, from James M. Talens, Attorney for contactMEO Communications, LLC (May 12, 2005).

[198] 47 C.F.R. § 25.283. IADC formula: 36,021 km + $(1000 \cdot C_R \cdot A/m)$, where $C_R$ is the solar pressure radiation coefficient of the spacecraft, and A/m is the Area to mass ratio, in square meters per kilogram, of the spacecraft.

[199] *See* NGSO July 2004 Amendment at Annex 2; 116.5° E.L. July 2004 Amendment at Annex 2. *See also* errata to 125° W.L. 2007 Amendment; 73° W.L. 2007 Amendment; 68.5° E.L. 2007 Amendment; 116.5° E.L. 2007 Amendment.

[200] *Id.*

[201] *Id*.

agencies, and insurance arrangements. We believe that a more detailed review of these issues is warranted as system design progresses, and prior to authorization of launch and operating authority. Until such a review can be completed, we are not in a position to conclude that either the disposal of Northrop Grumman's NGSO satellites, or the launch that would necessitate disposal, are in the public interest. Accordingly, we require Northrop Grumman to file, no later than 30 days following completion of the Critical Design Review milestone for its NGSO satellites, an application to modify its license, specifying its end-of-life operations. This application should provide detailed information concerning all aspects of the proposed disposal plan. Because the United States is potentially strictly liable for any damage caused on the surface of the Earth by re-entering Northrop Grumman satellites, we would anticipate that such a plan would involve insurance policies listing the United States as an additional insured party. Authority to launch and operate the satellites, as specified in this Order, will be granted if the information submitted demonstrates that Northrop Grumman's end-of-life disposal plans are in the public interest.

#### g. Inter-Satellite Links

103. Northrop Grumman suggests that it may use optical inter-satellite links on its NGSO satellites, although it does not propose any specific frequencies.[202] Under these circumstances, no further action is necessary at this time.[203]

### C. License Conditions

#### 1. Milestone Schedule

104. To ensure that licensees remain able and committed to implementing their planned satellites and do not hold scarce orbit and spectrum resources to the exclusion of other entrants, the Commission imposes milestone schedules on each licensed satellite. If a licensee fails to meet any of these milestones, the license becomes null and void. These milestones are set forth in Section 25.164 of the Commission's rules and are slightly different for GSO FSS satellites and NGSO FSS satellite constellations.[204] Northrop Grumman notes these differences and proposes that the earlier of the applicable milestones apply to its hybrid NGSO/GSO system.[205]

105. Licensees of satellite systems that include both GSO and NGSO components are required to construct the GSO portions of their system within the GSO milestones and the NGSO portion of their system within the NGSO milestones.[206] NGSO licensees must meet five milestones: (1) enter into a binding non-contingent contract to construct the satellite system within one year of licensing; (2) complete critical design review of the licensed system within two years of licensing; (3) begin construction of the first satellite in the licensed system within two years, six months of licensing; (4) launch and operate the first satellite within three years, six months; and (5) bring all of the licensed satellites into operation within six years of licensing.[207] GSO licensees must

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[202] *See* NGSO March 2004 Amendment, Technical Appendix at 2.

[203] The Commission's Table of Frequency Allocations addresses frequencies between 9 KHz and 400 GHz. 47 C.F.R. § 2.102. Optical frequencies are above 400 GHz. The ITU Radio Regulations do not include any allocations above 275 GHz. However, Footnote 5.565 of the Radio Regulations Table of Frequency Allocations lists a number of potential uses of these frequencies and urges consideration of the uses until such time a table of allocations is developed in those bands.

[204] 47 C.F.R. §§ 25.164(a) and (b).

[205] NGSO March 2004 Amendment at 20 and n. 27.

[206] Amendment of the Commission's Space Station Licensing Rules and Policies*, First Order on Reconsideration and Fifth Report and Order,* 19 FCC Rcd 12637, 12655 (2004) *(Space Station Licensing Reform First Reconsideration Order)*.

[207] 47 C.F.R. § 25.164(b).

meet four milestones: (1) enter into a binding non-contingent contract to construct the licensed satellite(s) within one year of licensing; (2) complete critical design review within two years of licensing; (3) begin construction of the satellite(s) within three years; and (4) launch and operate the satellite(s) within five years of licensing.[208] In addition, licensees must submit certifications of milestone compliance on or before the date for completion of each milestone.[209] Northrop Grumman has provided no reason to deviate from Commission policy for hybrid GSO/NGSO systems by consolidating the GSO and NGSO milestones. Indeed, doing so could result in confusion as to which milestones have been met and which part of the authorization is cancelled in the event Northrop Grumman fails to meet a milestone. Thus, we incorporate separate NGSO and GSO milestones in this license.[210] Northrop Grumman is, of course, free to proceed with both components of its system on parallel tracks if it wishes to do so.

### 2. License Term

**106.** The license term for both GSO FSS and NGSO FSS satellites is 15 years. The term for each GSO satellite begins on the date the licensee certifies to the Commission that the satellite has been placed in orbit and its operations conform to the conditions in its authorization.[211] For NGSO FSS satellites, the term commences when the licensee certifies to the Commission that its initial satellite has been placed in orbit and is operating in compliance with its authorization.[212] Consequently, the time at which the license term begins to run will likely vary for Northrop Grumman's GSO FSS and NGSO FSS satellites.

### 3. Reporting Requirements

107. Northrop Grumman must follow the Part 25 rules for reporting requirements for FSS systems, including an annual report describing the status of satellite construction and anticipated launch date, and the use made of each transponder on its in-orbit satellites.[213] Northrop Grumman must file this report on June 30 of each year, containing information current as of May 31 of that year. Additionally, within 30 days after preliminary in-orbit testing is completed, Northrop Grumman must submit antenna measurements of both co-polarized and cross-polarized performance on all antennas employed by space stations both within the primary coverage area, to facilitate coordination with other Commission licensees, and outside the primary coverage area, to facilitate international frequency coordination with other Administrations.[214]

### 4. International Coordination

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[208] 47 C.F.R. § 25.164(a).

[209] 47 C.F.R. §§ 25.164(c), (d), and (e).

[210] Because we are not granting Northrop Grumman launch or operating authority for its NGSO constellation at this time, we will not include those milestones in this Order. Rather, we will impose them at the time we grant launch and operating authority. Further we note that, in the *V-band Second Report and Order*, the Commission deferred certain V-band issues to a future rulemaking—including conditions under which FSS operations in the 37.5-40.0 GHz band can exceed the clear-air PFD limits to compensate for rain fade. *V-band Second Report and Order*, 18 FCC Rcd at 25440-41 (para. 29). Although this authorization only allows Northrop Grumman to operate its system consistent with the clear-air PFD limits that have already been established, any proposed modification to Northrop Grumman's system that exceeds these clear-air PFD limits would be subject to any future rules that deal with this issue.

[211] 47 C.F.R. § 25.121(d)(1).

[212] 47 C.F.R. § 25.121(d)(2).

[213] *See* 47 C.F.R. §§ 25.210(l), 25.217(b)(1), and 25.217(c)(1).

[214] *See* 47 C.F.R. §§ 25.210(k), 25.217(b)(1), and 25.217(c)(1).

108. In general, we will follow the applicable advance publication, coordination, due diligence and notification procedures as set forth in the ITU Radio Regulations in coordinating Northrop Grumman's satellites with other affected administrations. No protection from interference caused by radio stations authorized by other administrations is guaranteed unless coordination procedures are timely completed or, with respect to individual administrations, by successfully completing coordination agreements. In order to do so, we require that Northrop Grumman provide the Commission with the international coordination information specified in our rules.[215] This information shall include, but is not limited to, providing the Satellite Division a copy of all operator-to-operator summary records and/or coordination arrangements obtained from all coordination meetings with foreign commercial satellite operators. This information should be submitted with a request for confidential treatment and Administration-to-Administration approval. Northrop Grumman will be responsible for all cost recovery fees associated with any ITU filings on behalf of its system.

**5. Bond**

109. In the *First Space Station Licensing Reform Order*, the Commission eliminated the financial requirements then in place and replaced them with a bond requirement.[216] The bond requirement is intended to deter speculative space station applications and ensure that satellites are timely launched and service is provided to customers. Entities awarded a license for an NGSO satellite constellation must execute a \$5 million performance bond, and entities awarded a license for a GSO satellite must execute a \$3 million performance bond for each satellite, payable to the U.S. Treasury, within 30 days of the date the license is granted.[217] In the case of hybrid GSO/NGSO systems in which the GSO satellites operate in the same frequencies as the NGSO satellites, licensees may post a single \$5 million bond.[218] The bond is payable upon failure to meet any implementation milestone in the license, where adequate justification for extending the license is not provided.[219] In its *First Space Station Licensing Reform Order*, the Commission stated that it would entertain requests for complete or partial waivers of this bond requirement, but limited its discussion to waivers "for satellite operators proposing satellites designed to provide public safety services."[220]

110. Northrop Grumman seeks a partial waiver of this requirement. Northrop Grumman asserts we should not require it to post bonds for each GSO satellite because it is only seeking a single system license.[221] Rather, Northrop Grumman asserts that we should require it to post only the \$5 million bond applicable to NGSO systems. In clarifying that it would require a \$5 million bond for hybrid GSO/NGSO systems operating in the same frequency band, the Commission noted that if the licensee intends to operate the GSO satellites in a different frequency band than the NGSO satellite, it must post a \$3 million bond for each GSO satellite. Northrop Grumman has presented no justification for waiving this requirement, which is designed to ensure that operators are financially able to implement and are committed to implementing all the spectrum they have authority to use. Thus, we require Northrop Grumman to post a \$3 million bond for each of its four GSO satellites and a \$5 million bond for its NGSO constellation. Failure to post any of these bonds within 30 days of the grant of this license will render the authorization for that component of Northrop Grumman's

[215] 47 C.F.R. § 25.111(b).

[216] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10824.

[217] 47 C.F.R. §§ 25.165(a)(1), (2).

[218] 47 C.F.R. § 25.165(a)(3).

[219] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10826.

[220] *First Space Station Licensing Reform Order*, 18 FCC Rcd at 10825.

[221] *See, e.g.,* NGSO March 2004 Amendment at 13.

system null and void.

## IV. CONCLUSION AND ORDERING CLAUSES

111. Upon review of Northrop Grumman Space & Mission Systems Corporation's application, as amended, we find that Northrop Grumman Space & Mission Systems Corporation is qualified to be a Commission licensee and that, pursuant to Section 309 of the Communications Act of 1934, as amended, 47 U.S.C. §309, grant of this application will serve the public interest, convenience, and necessity. Accordingly, IT IS ORDERED, that Application File Nos. SAT-LOA-19970904-00080, SAT-AMD-19971222-00219, SAT-AMD-20031104-00324, SAT-AMD-20040312-00030, SAT-AMD-20040719-00136, SAT-AMD-20051118-00227, SAT-AMD-20070209-00033 (Call Sign S2254); SAT-LOA-19970904-00081, SAT-AMD-20040312-00032, SAT-AMD-20040719-00138, SAT-AMD-20051118-00230, SAT-AMD-20070209-00030 (Call Sign S2256); SAT-LOA-19970904-00082, SAT-AMD-20040312-00033, SAT-AMD-20040719-00140, SAT-AMD-20051118-00232, SAT-AMD-20070209-00031 (Call Sign S2257); SAT-LOA-19970904-00083, SAT-AMD-20040312-00034, SAT-AMD-20040719-00139, SAT-AMD-20051118-00231, SAT-AMD-20070209-00032 (Call Sign S2258); and SAT-LOA-19970904-00084, SAT-AMD-20040312-00031, SAT-AMD-20040719-00137, SAT-AMD-20051118-00229, SAT-AMD-20070209-00029 (Call Sign S2255) ARE GRANTED, to the extent indicated herein and are subject to the conditions specified in this Order.

112. IT IS FURTHER ORDERED that Application File No. SAT-WAV-19971222-00220 IS DISMISSED as moot.

113. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation is authorized to construct three NGSO FSS satellites (Call Sign S2254) capable of using the 28.6-29.1 GHz (uplink) and 18.8-19.3 GHz (downlink) frequency bands on a primary basis, the 29.5-30.0 GHz (uplink) frequency band on a secondary basis, and the 37.5-42.0 GHz (downlink) and 47.2-50.2 GHz (uplink) frequency bands on a co-primary basis. This authorization is subject to the technical specifications in Northrop Grumman Space & Mission Systems Corporation's applications, the Commission's rules, unless waived herein, the terms and conditions in this Order, and any technical requirements applicable to part or all of any of these frequency bands that the Commission may adopt in any future proceeding. Northrop Grumman shall complete coordination with all Federal FSS systems in the 18.8-19.3 GHz frequency band under 47 C.F.R. § 2.106, Footnote US 334, prior to the launch of its first NGSO FSS satellite in the 18.8-19.3 GHz (downlink) frequency band.

114. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation's NGSO FSS operations in the 29.5-30.0 GHz band must not cause harmful interference to any Federal or non-Federal systems authorized to operate on a primary basis in the 29.5-30.0 GHz frequency band. Further, Northrop Grumman Space & Mission Systems Corporation must accept any interference from primary systems, and must terminate operations immediately upon notification of harmful interference. Further, Northrop Grumman Space & Mission Systems Corporation's NGSO FSS operations in the 29.5-30.0 GHz band are subject to any rules the Commission adopts governing NGSO FSS satellite operations in spectrum designated for GSO FSS primary use.

115. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation's request for a waiver of the Ka-band Plan IS GRANTED, and Northrop Grumman Space & Mission Systems Corporation is authorized to construct three NGSO FSS satellites (Call Sign S2254) capable of operating in the 19.7-20.2 GHz (downlink) frequency band on a non-conforming basis. Northrop Grumman Space & Mission Systems Corporation's NGSO FSS operations in the 19.7-20.2 GHz band must accept any interference from any non-Federal or Federal station authorized to use the 19.7.-20.2 GHz band. In addition, Northrop Grumman Space & Mission Systems Corporation's NGSO FSS operations in the 19.7-20.2 GHz band shall not cause harmful interference to any authorized space station operating in compliance with the Table of Allocations and the Ka-band Plan, or authorized Federal FSS GSO or NGSO system. Northrop

Grumman Space & Mission Systems Corporation shall immediately cease NGSO FSS operations in the 19.7-20.2 GHz band upon notification of such harmful interference resulting from its operations. Northrop Grumman Space & Mission Systems Corporation shall complete coordination with Federal FSS systems in the 19.7-20.2 GHz band under 47 C.F.R. § 2.106, Footnote US334 prior to the launch of its first NGSO FSS satellite in the 19.7-20.2 GHz (downlink) frequency band.

116. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation's NGSO FSS satellite operations in the 18.8-19.3 GHz, 19.7-20.2 GHz, 28.6-29.1 GHz, and 29.5-30.0 GHz frequency bands are subject to the sharing method with non-Federal systems specified in the Establishment of Policies and Service Rules for the Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ka-band, *Report and Order*, 18 FCC Rcd 14708 (2003).

117. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must submit, no later than 30 days following the date of its Critical Design Review milestone for its NGSO satellite system, an application to modify its authorization for construction specifying its end-of-life operations for its NGSO FSS satellites.

118. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation IS AUTHORIZED to construct and launch four GSO FSS satellites, and to operate one satellite at each of the 125° W.L. (Call Sign S2255), 73° W.L. (Call Sign S2256), 68.5° E.L. (Call Sign S2257), and 116.5º E.L. (Call Sign S2258) orbital locations, using the 47.2-50.2 GHz (uplink) and 37.5-42.0 GHz (downlink) frequency bands on a co-primary basis; the 29.25-30.0 GHz (uplink), 28.35-28.6 GHz (uplink), 19.7-20.2 GHz (downlink), 18.3-18.8 GHz (downlink) frequency bands on a primary basis; and the 28.6-29.1 GHz band on a secondary basis; subject to the technical specifications in its applications, the Commission's rules, unless waived herein, the terms and conditions in this Order, and any technical requirements applicable to part or all of any of these frequency bands that the Commission may adopt in any future proceeding.

119. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation's GSO FSS satellites must not cause harmful intereference to any Federal or non-Federal station authorized to operate on a primary basis in the 28.6-29.1 GHz frequency band and must accept any interference from these systems, and must terminate operations immediately upon notification of harmful interference. Further, Northrop Grumman Space & Mission Systems Corporation's operations are subject to any rules the Commission adopts governing GSO FSS satellite operations in spectrum designated for NGSO FSS primary use.

120. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation's request for a waiver of the Table of Allocations, 47 C.F.R. § 2.106, IS GRANTED, and Northrop Grumman Space and Mission Systems Corporation IS AUTHORIZED to operate its four GSO FSS satellites in the 18.8-19.3 GHz band on a non-conforming basis. Northrop Grumman Space and Mission Systems Corporation's GSO FSS operations in the 18.8-19.3 GHz must accept any interference from any Federal or non-Federal station authorized to use the 18.8-19.3 GHz frequency band. In addition, Northrop Grumman Space and Mission Systems Corporation's GSO FSS operations in the 18.8-19.3 GHz band shall not cause harmful interference to any authorized space station operating in compliance with the Table of Allocations and the Ka-band Plan, or authorized Federal FSS GSO or NGSO system, and shall immediately cease operations upon notification of such harmful interference resulting from its operations. Northrop Grumman Space & Mission Systems Corporation's GSO FSS operations in the 18.8-19.3 GHz band are subject to any rules the Commission adopts governing GSO FSS satellite operations in spectrum designated for NGSO FSS primary use.

121. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation's request for a waiver of Section 25.140(b)(2) of the Commission's rules, 47 C.F.R. § 25.140(b)(2), to permit it to operate antennas as small as 0.25 meters at the powers proposed in its application IS GRANTED subject to the condition that Northrop Grumman Space & Mission Systems Corporation notify its customers, in writing, prior to commencement of service in the 28.6-

29.1 GHz and 18.8-19.3 GHz bands on a GSO satellite, that service in these bands is being provided on a non-interference basis to other services authorized in these bands, that the service may be degraded as the result of interference from other authorized services, and that service will be terminated if Northrop Grumman Space & Mission Systems Corporation's operations cause harmful interference to any authorized service.

122. IT IS FURTHER ORDERED that, pursuant to Section 1.3 of the Commission's Rules, 47 C.F.R. § 1.3, Northrop Grumman Space & Mission Systems Corporation IS GRANTED a waiver of Sections 25.143(b)(2)(ii) and (iii), 25.145(c)(1) and (2), and 25.217(b)(1) of the Commission's Rules, 47 C.F.R §§ 25.143(b)(2)(ii) and (iii); 25.145(c)(1) and (2); and 25.217(b)(1), for purposes of using the four GSO satellites authorized in this Order to meet the geographic service area requirements applicable to its NGSO satellites.

123. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation IS GRANTED a waiver of Sections 25.156(d)(5), 25.157(c)(2), and 25.157(e)(2) of the Commission's rules, 47 C.F.R. §§ 25.156(d)(5), 25.157(c)(2), and 25.157(e)(2), for purposes of processing its applications.

124. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation's request for a waiver of Section 25.156(d)(3) of the Commission's rules, 47 C.F.R. § 25.156(d)(3), IS DISMISSED AS MOOT.

125. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must coordinate its downlink operations in the 17.8-20.2 GHz band with the U.S. Federal systems, including Federal operations to earth stations in foreign countries, in accordance with Footnote US334 to the Table of Frequency Allocations, 47 C.F.R. § 2.106. In addition to meeting the terms of the coordination agreement, the non-conforming Northrop Grumman GSO operations at 18.8-19.3 GHz and NGSO operations at 19.7-20.2 GHz shall not cause harmful interference to, nor claim protection from, present and future Federal, non-Federal, International GSO and NGSO systems or any non-conforming services previously authorized on a non-harmful interference basis and shall immediately cease operations upon notification of such harmful interference resulting from its operations.

126. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must abide by the terms specified in FCC News Release , DA 04-234, Report No. SPB-199 (May 28, 2002) ("FCC and Industry Canada Sign Arrangement on Principles Governing Use of 37.5-42.5 GHz Band").

127. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation may not begin V-band downlink operations in the 37.5-38.0 GHz and 40.0-40.5 GHz frequency bands until it has successfully coordinated these operations with Federal Systems Space Research Service (SRS) facilities, pursuant to Recommendation ITU-R SA 1396, "Protection Criteria for the Space Research Service in the 37-38 GHz and 40-40.5 GHz Bands."

128. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must coordinate with Federal operations in the 37.5-38.6 GHz, 39.5-41.0 GHz, and 48.2-50.2 GHz frequency bands through the Interdepartmental Radio Advisory Committee and its Frequency Assignment Subcommittee.

129. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must operate its NGSO FSS satellites in the 37.5-42.0 GHz band consistent with the power flux-density requirements of 47 C.F.R. § 25.208(r), (s), and (t) and Article 21 of the International Telecommunication Union Radio Regulations.

130. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must operate its GSO FSS satellites in the 37.5-42.0 GHz band consistent with the power flux-density requirements of 47 C.F.R. § 25.208(q), (s), and (u) and Article 21 of the

International Telecommunication Union Radio Regulations.

131. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must operate its GSO and NGSO FSS satellites in the 18.8-19.3 GHz band consistent with the power flux-density requirements of 47 C.F.R § 25.208(e) and Article 21 of the International Telecommunication Union Radio Regulations.

132. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must operate its 125° W.L., 73° W.L., 68.5° E.L., and 116.5° E.L. GSO FSS satellites in the 18.3-18.8 GHz band consistent with the power flux-density requirements of §§ 47 C.F.R. 2.106, fn.US255, 47 C.F.R. 25.138(a)(6), 47 C.F.R. 25.208(c), and 47 C.F.R. 25.208(d).

133. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must operate its 125° W.L., 73° W.L., 68.5° E.L., and 116.5°E.L. GSO FSS satellites in the 19.7-20.2 GHz, 28.35-28.6 GHz, 29.25-30.0 GHz bands consistent with the power flux-density requirements of 47 C.F.R. § 25.138(a)(6).

134. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must operate its NGSO FSS satellites in the 19.7-20.2 GHz and 29.5 -30.0 GHz bands at least 15 dB below the equivalent power flux-density requirements of Article 22 of the International Telecommunication Union Radio Regulations.

135. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation’s use of beacons intended for uplink power control in the 29.999-30.0 GHz band shall not exceed an equivalent isotropically radiated power of +10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit in accordance with Article 5, Footnote 5.538 (WRC-2007) of the ITU Radio Regulations.

136. IT IS FURTHER ORDERED that, in accordance with International Telecommunication Union Resolution 750, Northrop Grumman Space & Mission Systems Corporation must operate its earth stations transmitting to GSO and NGSO FSS satellites in the 49.7-50.2 GHz band so that the level of unwanted emissions from the transmit power density at the input of a fixed-satellite service earth station antenna in the band 49.7-50.2 GHz falling into the 50.2-50.4 GHz EESS (Passive) band shall not exceed -20 dBW/200 MHz for VSAT/user-type terminals and -10 dBW/200 MHz for gateway/Hub applications under clear sky conditions. During fading conditions, these transmit power density levels can be exceeded by the amount that is needed to maintain link availability during fading conditions. Northrop Grumman Space & Mission Systems Corporation’s operations in the 49.7-50.2 GHz band will be subject to any other service rules that the Commission adopts for this band.

137. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must coordinate its NGSO FSS satellite system in the 19.7-20.2 GHz band with specific earth stations in geostationary-satellite networks in the fixed-satellite service that are located within the United States for domestic service or outside the United States for international service, under No. 9.7A of Article 9 of the International Telecommunication Union Radio Regulations.

138. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must coordinate its operations in the 48.94-49.04 GHz band with radio astronomy stations operating on a co-primary basis in this band.

139. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must coordinate its operations in the 18.3-18.4 GHz band with the meterological satellite service, which is authorized to operate GSO satellites on a co-primary basis in this band in Regions 1 and 3.

140. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation’s operations in the 37.5-40.0 GHz (downlink) and 47.2-48.2 GHz (uplink) frequency bands are limited to communications with gateway earth stations, in accordance with Footnote 15 of

47 C.F.R. §25.202(a)(1).

141. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation, in accordance with 47 C.F.R § 25.210(k), must, within 30 days after preliminary in-orbit testing is completed, submit antenna measurements of both co-polarized and cross-polarized performance on all antennas employed by space stations both within the primary coverage area and outside the primary coverage area.

142. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation, in accordance with 47 C.F.R § 25.111(b), must prepare the necessary information for submission to the ITU to initiate and complete the advance publication, international coordination, due diligence, and notification process of this satellite system, in accordance with the International Telecommunication Union Radio Regulations. This information must include, but is not limited to, providing the Satellite Division a copy of all operator-to-operator summary records and/or coordination arrangements obtained from all coordination meetings with foreign commercial satellite operators. This information should be submitted with a request for confidential treatment and Administration-to-Administration approval. Northrop Grumman Space & Mission Systems Corporation shall be held responsible for all cost recovery fees associated with these ITU filings. No protection from interference caused by radio stations authorized by other administrations is guaranteed unless coordination and notification procedures are timely completed or, with respect to individual administrations, by successfully completing coordination agreements. Any radio station authorization for which coordination has not been completed may be subject to additional terms and conditions as required to effect coordination of the frequency assignments of other administrations.

143. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation must maintain an electronic web site bulletin board to list the satellite ephemeris data, for each satellite in the Ka-band (and V-band) NGSO constellation, using the North American Aerospace Defense Command (NORAD) two-line orbital element format. The orbital elements shall be updated at least once every three days.

144. IT IS FURTHER ORDERED, that by March 26, 2009, Northrop Grumman Space & Mission Systems Corporation must file a certification with the Satellite Division that demonstrates, based on computer simulation software developed in accordance with specifications outlined in ITU-R Recommendation S.1503-1, the maximum uplink EPFD limits calculated for its NGSO satellites satisfy the requirements of Article 22 of the International Telecommunication Union Radio Regulations.

145. IT IS FURTHER ORDERED that the license term for each GSO FSS and NGSO FSS space station is fifteen years, as set forth in 47 C.F.R. § 25.121.

146. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation, in accordance with 47 C.F.R § 25.210(l), must file an annual report describing the status of satellite construction and anticipated launch date, and a detailed description of the use made of each of its in-orbit satellites. Northrop Grumman Space & Mission Systems Corporation must file this report on June 30 of each year, containing information current as of May 31 of that year.

147. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation's authorization to construct an NGSO satellite constellation shall become NULL and VOID, with no further action on the Commission's part, in the event its space stations are not constructed in accordance with the technical parameters and terms and conditions of this authorization by the following dates:

| **Milestone** | **Deadline** |
|---|---|
| Enter Non-contingent Satellite Manufacturing Contract for System | February 24, 2010 |
| Complete Critical Design Review of System | February 24, 2011 |

| | |
|---|---|
| Begin Physical Construction of First NGSO Satellite | August 24, 2011 |

148. IT IS FURTHER ORDERED that each of Northrop Grumman Space & Mission Systems Corporation's four authorizations to construct, launch, and operate GSO satellites at the 125º W.L, 73º W.L., 68.5º E.L., and 116.5º E.L. orbital locations shall become NULL and VOID, with no further action on the Commission's part, in the event the space station at issue is not constructed, launched, and placed into operation in accordance with the technical parameters and terms and conditions of this authorization by the following dates:

| **Milestone** | **Deadline** |
|---|---|
| Enter Non-contingent Satellite Manufacturing Contract | February 24, 2010 |
| Complete Critical Design Review | February 24, 2011 |
| Begin Physical Construction | February 24, 2012 |
| Launch and Operate | February 24, 2014 |

149. IT IS FURTHER ORDERED, that Northrop Grumman Space and Mission Systems Corporation's request for a partial waiver of the Commission's bond requirement, 47 C.F.R § 25.165, IS DENIED. Northrop Grumman Space & Mission Systems Corporation must file bonds in the amounts of $5 million for the NGSO system and $3 million for each of the four GSO satellites, pursuant to the procedures set forth Section 25.165 of the Commission's rules, 47 C.F.R. § 25.165, within 30 days of the release date of this Order.

150. IT IS FURTHER ORDERED that Northrop Grumman Space & Mission Systems Corporation is afforded thirty days from the date of the release of this order and authorization to decline this authorization as conditioned. Failure to respond within that period will constitute formal acceptance of the authorization as conditioned.

151. This Order is issued pursuant to Section 0.261 of the Commission's rule on delegated authority, 47 C.F.R. § 0.261, and is effective upon release.

FEDERAL COMMUNICATIONS COMMISSION

John V. Giusti
Acting Chief
International Bureau

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## FEDERAL COMMUNICATIONS COMMISSION

### 47 CFR Part 25

**[IB Docket No. 00–248; FCC 08–246]**

### Satellite Licensing Procedures

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule; announcement of effective date.

**SUMMARY:** In this document, the Commission announces that the Office of Management and Budget (OMB) has approved, for a period of three years, the information collection requirements associated with Sections 25.115, 25.134, 25.218 and 25.220 of the Commission's rules, and that these rules will take effect as of the date of this notice. On November 24, 2008, the Commission published the summary document of the Report and Order, *The Part 25 Earth Station Streamlining Eight Report and Order*, IB Docket No. 00–248, FCC 08–246, at 73 FR 70897. The Report and Order stated that the Commission will publish a notice in the **Federal Register** announcing when OMB approval for the rule sections which contain information collection requirements has been received and when the revised rules will take effect. This notice is consistent with the statement in the Report and Order.

**DATES:** Effective March 9, 2009.

**FOR FURTHER INFORMATION CONTACT:** For additional information, please contact Steven Spaeth, International Bureau, telephone number (202) 418–1539 or via the Internet at *steven.spaeth@fcc.gov*.

**SUPPLEMENTARY INFORMATION:** This document announces that, on February 27, 2009, OMB approved, for a period of three years, the information collection requirements contained in Sections 25.115, 25.134, 25.218 and 25.220 of the Commission's rules. The Commission publishes this notice to announce the effective date of these rules. If you have any comments on the burden estimates listed below, or how the Commission can improve the collections and reduce any burdens caused thereby, please contact Cathy Williams, Federal Communications Commission, Room 1–C823, 445 12th Street, SW., Washington, DC 20554. Please include OMB Control Number, 3060–0678, in your correspondence. The Commission will also accept your comments via the Internet if you send them to *PRA@fcc.gov*.

To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to *fcc504@fcc.gov* or call the Consumer & Governmental Affairs Bureau at (202) 418–0530 (voice), (202) 418–0432 (TTY).

**Synopsis**

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507), the Commission is notifying the public that it received OMB approval on February 27, 2009, for the information collection requirements contained in the Commission's rules at 47 CFR Sections 25.115, 25.134, 25.218 and 25.220.

Under 5 CFR 1320, an agency may not conduct or sponsor a collection of information unless it displays a current, valid OMB Control Number.

No person shall be subject to any penalty for failing to comply with a collection of information subject to the Paperwork Reduction Act that does not display a valid OMB Control Number.

The OMB Control Number is 3060–0678 and the total annual reporting burdens and costs for respondents are as follows:

*OMB Control Numbers:* 3060–0678.

*OMB Approval Date:* February 27, 2009.

*Expiration Date:* February 29, 2012.

*Title:* Part 25 of the Commission's Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Stations and Space Stations.

*Form Number:* FCC Forms 312 and Schedule S.

*Type of Review:* Revision of a currently approved collection.

*Respondents:* Business or other for profit entities.

*Number of Respondents/Responses:* 4,112 respondents; 4,112 responses.

*Estimated Hours per Response:* 0.25–24 hours per response.

*Frequency of Response:* On occasion and annual reporting requirements; Third party disclosure requirement.

*Total Annual Burden:* 42,579 hours.

*Total Annual Cost:* $784,766,976.

*Obligation to Respond:* Required to obtain or retain benefits. The statutory authority for this information collection is contained in Sections 4(i), 7(a), 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157(a), 303(c), 303(f), 303(g), and 303(r).

*Nature and Extent of Confidentiality:* There is no need for confidentiality with this collection of information.

*Privacy Act Assessment:* No impact(s).

*Needs and Uses:* On October 17, 2008, the Federal Communications Commission (''Commission'') released an Eighth Report and Order and Order on Reconsideration titled, ''In the Matter of 2000 Biennial Regulatory Review—Streamlining and Other Revisions of Part 25 of the Commission's Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations; Streamlining the Commission's Rules and Regulations for Satellite Applications and Licensing Procedures'' (FCC 08–246), IB Docket No. 00–248. In the Eighth Report and Order, the Commission further streamlined the Commission's non-routine earth station processing rules by adopting a new earth station procedure that will enable the Commission to treat more applications routinely than is possible under the current earth station procedures. This rulemaking facilitates the provision of broadband Internet access services.

The PRA information collection requirements contained in the Eighth Report and Order are as follows:

1. The Commission plans to modify the ''Application for Satellite Space and Earth Station Authorizations'' (FCC Form 312), including Schedule B, in the International Bureau Filing System (''MyIBFS'') to reflect the off-axis equivalent isotropically radiated power (EIRP) envelope compliance requirement. In the interim, earth station applicants must submit a table as an attachment to the FCC Form 312 to show their compliance with the off-axis EIRP requirement.

2. Earth station licensees who plan to use a contention protocol must certify that their contention protocol usage will be reasonable. In the future, the Commission will revise the FCC Form 312 in MyIBFS to provide a streamlined method for earth station applicants planning to use a contention protocol to make this certification.

The information collection requirements accounted for in this collection are necessary to determine the technical and legal qualifications of applicants or licensees to operate a station, transfer or assign a license, and to determine whether the authorization is in the public interest, convenience and necessity. Without such information, the Commission could not determine whether to permit respondents to provide telecommunication services in the U.S. Therefore, the Commission would be unable to fulfill its statutory responsibilities in accordance with the Communications Act of 1934, as amended, and the obligations imposed on parties to the World Trade Organization (WTO) Basic Telecom Agreement.

Federal Communications Commission.

**Marlene H. Dortch,**

*Secretary.*

[FR Doc. E9–4905 Filed 3–6–09; 8:45 am]

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# FCC REPORT TO CONGRESS

# AS REQUIRED BY THE ORBIT ACT

# TENTH REPORT

Adopted: June 12, 2009 Released: June 15, 2009

## FCC REPORT TO CONGRESS AS REQUIRED BY THE ORBIT ACT

## TENTH REPORT

This report is submitted in accordance with Section 646 of the Open-Market Reorganization for the Betterment of International Telecommunications Act (the "ORBIT Act").[1]

Section 646 states:

> (a) ANNUAL REPORTS - The President and the Commission shall report to the Committees on Commerce and International Relations of the House of Representatives and the Committees on Commerce, Science, and Transportation and Foreign Relations of the Senate within 90 calendar days of the enactment of this title, and not less than annually thereafter, on the progress made to achieve the objectives and carry out the purposes and provisions of this title. Such reports shall be made available immediately to the public.
>
> (b) CONTENTS OF REPORTS - The reports submitted pursuant to subsection (a) shall include the following:
>
>> (1) Progress with respect to each objective since the most recent preceding report.
>>
>> (2) Views of the Parties with respect to privatization.
>>
>> (3) Views of the industry and consumers on privatization.
>>
>> (4) Impact privatization has had on United States industry, United States jobs, and United States industry's access to the global marketplace.

### I. Progress as to Objectives and Purposes

The purpose of the ORBIT Act is "to promote a fully competitive global market for satellite communication services for the benefit of consumers and providers of satellite services and equipment by fully privatizing the intergovernmental satellite organizations, INTELSAT and Inmarsat."[2]

The ORBIT Act, as originally passed in 2000: (1) mandates the privatization of INTELSAT and Inmarsat; (2) establishes criteria to ensure a pro-competitive privatization; (3) requires the Commission to determine whether INTELSAT, Inmarsat, and the INTELSAT spin-off New Skies Satellites N.V. ("New Skies"), have been privatized in a manner that will harm competition in the United States; (4) requires the Commission to use the privatization criteria specified in the ORBIT

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[1] 47 U.S.C. § 765e (2000).

[2] 47 U.S.C. § 761 NOTE.

Act as a basis for making its competition determination; and (5) directs the Commission to "limit through conditions or deny" applications or requests to provide "non-core" services to, from, or within the United States if it finds that competition will be harmed.[3] The Act provides for certain exceptions to limitations on non-core services in the event of such a determination. The Act also prohibits the Commission from authorizing certain "additional" services pending privatization consistent with the criteria in the Act.[4] In addition, the Act directs the Commission to undertake a rulemaking proceeding to assure users in the United States the opportunity for direct access to the INTELSAT system. In October 2004, Congress amended the ORBIT Act, adding Sections 621(5)(F) and (G), to provide a certification process as an alternative to the initial public offering ("IPO") requirements under Sections 621(5)(A) and (B). Additionally, in July 2005, Congress further amended the ORBIT Act, striking certain privatization criteria for Intelsat separated entities, removing certain restrictions on separated entities and successor to Intelsat and for other purposes.[5]

The Commission made its first report to Congress on its actions to implement the ORBIT Act on June 15, 2000, following enactment of the Act on March 17, 2000.[6] The Commission made its second report on June 15, 2001;[7] its third report on June 14, 2002;[8] its fourth report on June 11, 2003;[9] its fifth report on June 15, 2004; [10] its sixth report on June 15, 2005;[11] its seventh report on June 15, 2006;[12] its eighth report on June 15, 2007;[13] and its ninth report on June 13,

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[3] The Act defines "non-core" services as "services other than public-switched network voice telephony and occasional-use television" with respect to INTELSAT, and as "services other than global maritime distress and safety services or other existing maritime or aeronautical services for which there are not alternative providers" with respect to Inmarsat. 47 U.S.C. § 769(a)(11).

[4] The Act defines "additional" services as "direct-to-home" ("DTH") or direct broadcast satellite ("DBS") video services, or services in the Ka or V bands" for INTELSAT and as "those non-maritime or non-aeronautical mobile services in the 1.5 and 1.6 GHz band on planned satellites or the 2 GHz band" for Inmarsat. 47 U.S.C. § 769(a)(12).

[5] Open-Market Reorganization for the Betterment of International Telecommunications Act, Pub. L. No. 106-180, 114 Stat. 48 (2000), *as amended*, Pub. L. No. 107-233, 116 Stat. 1480 (2002), *as amended,* Pub. L. No. 108-228, 118 Stat. 644 (2004), *as amended,* Pub. L. No. 108-371, 118 Stat. 1752 (October 25, 2004), *as amended,* Pub. L. No. 109-34, 119 Stat. 377 (July 12, 2005). In the July 2005 amendment to the ORBIT Act, Congress added a requirement that the Commission submit to Congress a separate annual report that analyzes the competitive market conditions with respect to domestic and international satellite communications services. The first Annual Report was released on March 26, 2007. *FCC Annual Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services*, FCC 07-34, IB Docket No. 06-67 ("*Satellite Competition Report*").

[6] *FCC Report to Congress as Required by the ORBIT Act,* 15 FCC Rcd 11288 (2000).

[7] *FCC Report to Congress as Required by the ORBIT Act,* 16 FCC Rcd 12810 (2001).

[8] *FCC Report to Congress as Required by the ORBIT Act,* 17 FCC Rcd 11458 (2002).

[9] *FCC Report to Congress as Required by the ORBIT Act,* 18 FCC Rcd 12525 (2003).

[10] *FCC Report to Congress as Required by the ORBIT Act,* 19 FCC Rcd 10891 (2004).

[11] *FCC Report to Congress as Required by the ORBIT Act,* 20 FCC Rcd 11382 (2005).

2008.[14] In anticipation of this tenth report, the Commission issued a Public Notice on April 1, 2009 inviting public comment.[15] Comments were filed by Intelsat LLC ("Intelsat").[16] Reply comments were filed by Inmarsat PLC.[17]

### A. Commission Actions and Activities

The Commission has undertaken a number of actions required by the ORBIT Act, or related to its objectives and purposes. The Commission has taken the actions described below to ensure that INTELSAT, Inmarsat, and New Skies have been privatized in a procompetitive manner, consistent with the privatization criteria of the ORBIT Act.[18] The Commission has also taken actions to implement certain deregulatory measures in the ORBIT Act.[19]

***INTELSAT***

- In August 2000, the Commission granted conditional licensing authority to Intelsat LLC, ("Intelsat"), a separate, privately held U.S. corporation, created by INTELSAT to hold U.S. satellite authorizations and associated space segment assets.[20] Under this licensing authority, the Commission permitted Intelsat's licenses to become effective upon "privatization," meaning the transfer of INTELSAT's satellites and associated assets to Intelsat and the transfer of its International Telecommunications Union ("ITU") network filings to the U.S. registry. Intelsat received conditional U.S. authorizations for INTELSAT's existing satellites, planned satellites, and planned system modifications associated with INTELSAT's frequency assignments in the fixed satellite services ("FSS") C- and Ku- bands existing as of privatization.[21]

[12] *FCC Report to Congress as Required by the ORBIT Act,* 21 FCC Rcd 6740 (2006).

[13] *FCC Report to Congress as Required by the Orbit Act*, 22 FCC Rcd 11347 (2007).

[14] *FCC Report to Congress as Required by the Orbit Act*, June 13, 2008, available online at http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-08-152A1.pdf.

[15] Public Notice, Report No. SPB-230, DA 09-742, April 1, 2009.

[16] Comments of Intelsat LLC, filed on April 22, 2009 ("Intelsat Comments").

[17] Reply Comments of Inmarsat PLC, filed on April 29, 2008 ("Inmarsat Reply Comments");

[18] 47 U.S.C. §§ 761, 763, 763a, 763b, 763c, and 765g.

[19] 47 U.S.C. §§ 765 and 765d(1).

[20] Application of Intelsat LLC for Authority to Operate, and to Further Construct, Launch, and Operate C-band and Ku-band Satellites that Form a Global Communications System in Geostationary Orbit, *Memorandum Opinion, Order and Authorization*, 15 FCC Rcd 15460, *recon. denied,* 15 FCC Rcd 25234 (2000), *further proceedings,* 16 FCC Rcd 12280 (2001) ("*Intelsat Licensing Order*").

[21] *Intelsat Licensing Order,* 15 FCC Rcd 15460. The conventional C-band refers to the 3700-4200/5925-6425 MHz frequency bands. Intelsat is also authorized to operate in the extended C-band frequencies

- Later in 2000, INTELSAT adopted plans to distribute shares in Intelsat to its Signatories on July 18, 2001.[22] In May 2001, the Commission found that, although the IPO required under the privatization requirements of the ORBIT Act had not yet been completed, INTELSAT would privatize in a manner consistent with the non-IPO privatization provisions of the ORBIT Act, upon completion of its plans to distribute Intelsat shares to its Signatories.[23] INTELSAT later distributed shares to its Signatories, as it had planned.

- On July 28, 2003, Loral Satellite Inc. ("Debtor-in-Possession" or "DIP"), and Loral SpaceCom Corporation (DIP), and Intelsat North America, LLC filed an application seeking authority to assign five non-common carrier space station licenses to Intelsat North America. On February 11, 2004, the Commission granted authority to assign those licenses subject to certain conditions and limitations.[24] Loral was providing services, such as Direct-to-Home ("DTH"), that are "additional services" as defined in the ORBIT Act. Intelsat was granted authority to provide additional services to the then-existing Loral customers.[25]

- Intelsat was originally required by the ORBIT Act to conduct an IPO by October 1, 2001, in order to "substantially dilute" ownership by former INTELSAT

3625-3700/5850-5925/6425-6650 MHz on certain satellites at certain orbital locations. In addition, Intelsat is authorized to operate in the extended C-band frequencies 3420-3625 MHz on the Intelsat-805 satellite at 55.5º W.L. for service to non-US locations. The 3420-3600 MHz portion of this frequency band is not a satellite band in the United States and is operated by Intelsat outside the United States subject to potential interference from worldwide shipborne United States military radar operations. The conventional Ku-band refers to the 11.7-12.2/14.0-14.5 GHz frequency bands. Intelsat is also authorized to operate in the extended Ku-frequency bands 10.95-11.2/11.45-11.7/12.5-12.75/13.75-14.0 GHz on certain satellites at certain orbital locations.

[22] Upon privatization, former INTELSAT Signatories and non-Signatory investing entities were issued shares in Intelsat Ltd. according to their March 2001 investment shares in INTELSAT.

[23] Application of Intelsat LLC for Authority to Operate, and to Further Construct, Launch, and Operate C-band and Ku-band Satellites that Form a Global Communications System in Geostationary Orbit, *Memorandum Opinion, Order and Authorization*, 16 FCC Rcd 12313, 12290 (para. 71) (2001) (*"Intelsat LLC ORBIT Act Compliance Order")*.

[24] Loral Satellite, Inc. (Debtor-in-Possession) and Loral SpaceCom Corporation (Debtor-in-Possession), and Intelsat North America, LLC, Applications for Consent to Assignments of Space Station Authorizations and Petition for Declaratory Ruling Under Section 310(b)(4) of the Communications Act of 1934, as Amended, *Authorization and Order*, 19 FCC Rcd 2404 (Int'l Bur., 2004) ("*Loral/Intelsat Order")*. On March 4, 2004, the Commission adopted a Supplemental Order clarifying the date the Special Temporary Authority was to commence. Loral Satellite, Inc. (Debtor-in-Possession) and Loral SpaceCom Corporation (Debtor-in-Possession), and Intelsat North America, LLC, Applications for Consent to Assignments of Space Station Authorizations and Petition for Declaratory Ruling Under Section 310(b)(4) of the Communications Act of 1934, as Amended, *Supplemental Order*, 19 FCC Rcd 4029 (Int'l Bur., 2004).

[25] *Loral/Intelsat Order,* 19 FCC Rcd at 2429 (para. 65).

Signatories.[26] Subsequently, Congress amended the ORBIT Act several times to extend the deadline for Intelsat to conduct its IPO.[27] Ultimately, in May 2004, Congress amended the ORBIT Act, extending Intelsat's IPO deadline to June 30, 2005.[28] However, in October 2004, Congress added Sections 621(5)(F) and (G) to the ORBIT Act, to provide a certification process as an alternative to the IPO requirements under Sections 621(5)(A) and (B).[29]

- On December 22, 2004, the Commission authorized the transfer of control of Intelsat's licenses and authorizations to Zeus Holdings Limited ("Zeus"),[30] a private equity group, organized under the law of Bermuda, which would acquire 100 percent of the equity and voting interests of Intelsat ("Zeus/Intelsat Transaction").[31]

- On April 8, 2005, the Commission determined that (a) Intelsat was in compliance with the alternative certification process under Sections 621(5)(F) and 621(5)(G) of the ORBIT Act; (b) that Intelsat can forgo the requirement for an IPO and the public

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[26] Pub. L. No. 106-180, 114 Stat. 48 (2000). (Congress also gave the Commission discretion to extend the IPO deadline to no later than December 31, 2002). INTELSAT LLC, Request for Extension of Time Under Section 621(5) of the ORBIT Act, *Order,* 16 FCC Rcd. 18185 (2001).

[27] Pub. L. No. 107-233, 116 Stat. 1480 (2002) (In October 2002, Congress amended the ORBIT Act to extend Intelsat's IPO deadline to December 31, 2003, and gave the Commission the discretionary authority to further extend the deadline to no later than June 30, 2004). INTELSAT LLC, Request for Extension of Time Under Section 621(5) of the ORBIT Act, *Order,* 18 FCC Rcd. 26290 (2003).

[28] Public Law No. 108-228, 118 Stat. 644 (2004). (In May 2004, Congress amended the ORBIT Act to extend Intelsat's IPO deadline to June 30, 2005 and gave the Commission the discretionary authority to further extend the IPO deadline to December 31, 2005).

[29] Public Law No. 108-371, 118 Stat. 1752 (October 25, 2004).

[30] Zeus Holdings Limited subsequently changed its name to Intelsat Holdings, Ltd. See footnote 31 below.

[31] *Intelsat, Ltd., Transferor, and Zeus Holdings Limited, Transferee, Consolidated Application for Consent to Transfers of Control of Holders of Title II and Title III Authorizations and Petition for Declaratory Ruling Under Section 310 of the Communications Act of 1934, As Amended*, IB Docket No. 04-366, Order and Authorization, DA 04-4034, 19 FCC Rcd 24820 (Int'l Bur., WTB and OET 2004) ("*Intelsat-Zeus Order*"). In early 2005, the Commission granted authority to interpose Intelsat Subsidiary Holding Company Ltd. into the chain of ownership and modified its foreign ownership ruling to include new Bermuda-based intermediate parent Intelsat Subsidiary Holding Company Ltd. *Intelsat, Ltd*., File No. ISP-PDR-20050203-00004, Grant of Authority, Public Notice, Report No. TEL-00884, DA 05-479, 20 FCC Rcd 4052, 4053 (Int'l Bur., 2005); *Intelsat North America LLC*, File No. SAT-T/C-20050203-00022, and *Intelsat LLC*, File No. SAT-T/C-20050203-00023, Grant of Authority, Public Notice, Report No. SAT-00276, DA 05-594 (Int'l Bur., March 4, 2005), at 1-2; *Intelsat LLC*, File Nos. SES-T/C-20050203-00138, -00139 and -00140, and *Intelsat MTC LLC*, File No. SES-T/C-20050203-00141, Grant of Authority, Report No. SES-00691 (Int'l Bur.. March 2, 2005), at 26-27; *Intelsat USA License Corp*., File No. ITC-T/C-20050418-00279, *Intelsat General Corporation*, File No. ITC-T/C-20050418-00280, and *Intelsat MTC LLC*, File No. ITC-T/C-20050418-0281, Grant of Authority, Public Notice, Report No. TEL-00931, DA 05-2192 (Int'l Bur., 2005), at 3-4. During 2005, Zeus Holdings Limited changed its name to Intelsat Holdings, Ltd. *See, e.g., Intelsat USA License Corp*., Report No. TEL-00931, at 3.

listing of securities; and that (c) Intelsat was no longer subject to the provisions of Section 602 that prohibited Intelsat from providing "additional services."[32]

- On May 24, 2005, the Commission granted Intelsat's request for approval of the *pro forma* assignments of space station authorizations and related Tracking, Telemetry and Control ("TT&C") earth station licenses, from Intelsat to Intelsat North America LLC.[33]

- On June 19, 2006, the Commission approved the merger of Intelsat Holdings, Ltd. with PanAmSat Holding Corporation ("PanAmSat").[34] The FCC action approving the transaction granted applications for the transfer of control, to Intelsat, of Commission-issued licenses and authorizations held by PanAmSat and its subsidiaries. Upon consummation of the transaction on July 3, 2006, PanAmSat became a wholly-owned subsidiary of Intelsat continuing operation as a separate corporate entity.

- On December 19, 2007, the Commission granted a series of applications filed by Intelsat Holdings, Ltd. and Serafina Holdings Limited ("Serafina") seeking consent to transfer of control of Intelsat Holdings, Ltd., and its six subsidiary licensees from Intelsat's existing control group of four private equity firms to Serafina, a then newly-formed Bermuda company indirectly controlled by BC Partners Holdings Limited, a U.K.-based investment firm organized under the laws of Guernsey, a British Crown Dependency.[35] Serafina and Intelsat subsequently consummated the proposed transaction.

- On February 21, 2008, the Commission released an order[36] modifying certain space station licenses held by Intelsat North America to include two conditions requested

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[32] Intelsat, Ltd. Petition for Declaratory Ruling that Intelsat, Ltd. Complies With Section 621(5)(F) of the ORBIT Act, *Memorandum Opinion and Order*, FCC 05-86, IB Docket No. 05-18, 20 FCC Rcd 8604 ("*Intelsat Certification Order*").

[33] Intelsat LLC, Assignor, and Intelsat North America LLC, Assignee, Applications for Consent to Pro Forma Assignment of Space Station Authorizations and Related TT&C Earth Station Licenses, File Nos., SAT-ASG-20050418-00084, SAT-ASG-20050418-00085, SES-ASG-20050502-00519, SES-ASG-20050502-00520, SES-ASG-20050502-00562, DA-05-1545, Public Notice, Report No. SAT-00294, March 27, 2005.

[34] Constellation, LLC, Carlyle PanAmSat I, LLC, Carlyle PanAmSat II, LLC, PEP PAS, LLC, PEOP PAS, LLC, Transferors, Intelsat Holdings, LTD, Transferee, Consolidated Application for Authority to Transfer Control of PanAmSat Licensee Corp. and PanAmSat H-2 Licensee Corp., *Memorandum Opinion and Order*, 21 FCC Rcd 7368 (2006) ("*Intelsat-PanAmSat Order*").

[35] Intelsat Holdings, Ltd., Transferor, and Serafina Holdings Limited, Transferee, Consolidated Application for Consent to Transfer Control of Holders of Title II and Title III Authorizations, IB Docket No. 07-181, *Memorandum Opinion and Order*, 22 FCC Rcd 22151 (2007).

[36] Petition of the International Telecommunications Satellite Organization under Section 316 of the Communications Act, as Amended, IB Docket No. 06-137, *Order of Modification,* DA 08-444, 23 FCC Rcd 2764 (Int'l Bur., 2008). The modification implemented a Commission order, pursuant to Section 316

jointly by Intelsat and the International Telecommunications Satellite Organization (ITSO).[37] The conditions were two of three conditions initially proposed by ITSO.[38] The adoption of the two conditions was supported by the State Department, after consultations with NTIA.[39]

- Since the June 13, 2008 Ninth Annual Report, Intelsat has filed a number of requests for license modifications. The Commission has reviewed these requests and acted on them consistent with the U.S. licensing process.[40]

of the Communications Act of 1934, as amended, to impose the two conditions. *See* Petition of the International Telecommunications Satellite Organization under Section 316 of the Communications Act, as Amended, IB Docket No. 06-137, *Order Proposing Modification*, DA 07-4715, 22 FCC Rcd 20093 (Int'l Bur., 2007). Intelsat North America, while stating that it did not object to the proposed conditions in principle, filed a Limited Protest to Seek Clarification as to the circumstances in which the conditions would apply. Intelsat North America Limited Protest to Seek Clarification, IB Docket No. 06-137 (filed January 10, 2008) at 1-2. The request for clarification was granted in part, and denied in part, in the February 2008 modification order.

[37] ITSO is the residual, post-privatization intergovernmental organization, governed by international agreement ("ITSO Agreement") that oversees the Intelsat public service obligations established as part of the 2001 privatization. *See* Agreement Relating to the International Telecommunications Satellite Organization (ITSO Agreement) (November 17, 2000), Art. III(a) ("… the main purpose of ITSO is to ensure, through the Public Services Agreement, that the Company provides, on a commercial basis, international public telecommunications services, in order to ensure performance of the Core Principles."), *available at* http://www.itso.int. The United States is a party to the ITSO Agreement, with the State Department serving as the U.S. representative. *See Intelsat-PanAmSat Order*, 21 FCC Rcd at 7395, ¶ 53. The two conditions (1) explicitly obligate Intelsat to remain a signatory to the Public Services Agreement between Intelsat and ITSO approved by the ITSO Twenty-fifth Assembly of Parties and (2) provide, for licensing purposes, that no entity can be considered a successor-in-interest to Intelsat under the ITSO Agreement unless the entity has undertaken to perform the obligations of the Public Services Agreement.

[38] Petition of the International Telecommunications Satellite Organization (ITSO), IB Docket No. 06-137 (filed July 10, 2006) ("Petition").

[39] Letter from Ambassador David A. Gross, United States Coordinator, International Communications and Information Policy, U.S. Department of State, to The Honorable Kevin J. Martin, Chairman, Federal Communications Commission, IB Docket No. 06-137 (dated March 15, 2007) at 1, 3-4. *See also*, Letter from Steven W. Lett, Deputy United States Coordinator, International Communications and Information Policy, U.S. Department of State to Helen Domenici, Chief, International Bureau, Federal Communications Commission, IB Docket No. 06-137 (filed February 1, 2008).

[40] Intelsat North America, LLC, Modification Application, Request for modification to operate Intelsat 702, File No. SAT-MOD-20081217-00233, DA 09-815 (grant stamp on April 7, 2009, with conditions); Intelsat North America, LLC, Modification Application, Request for modification to operate Intelsat 706, File No. SAT-MOD-20081124-00218, DA 09-815 (grant stamp on March 20, 2009, with conditions); Intelsat North America, LLC, STA Application, Request for Special Temporary Authority for Intelsat 706, File No. SAT-STA-20090305-00032, DA 09-815 (dismissed as moot by grant stamp on March 20, 2009); Intelsat North America, LLC, STA Application, Request for Special Temporary Authority for Galaxy 26, File No. SAT-STA-20090303-00030, DA 09-651 (grant stamp on March 16, 2009, with conditions); Intelsat North America, LLC, STA Application, Request for Special Temporary Authority for Intelsat 702, File No. SAT-STA-20090206-00017, DA 09-583 (grant stamp by on March 6, 2009, with conditions);

***Inmarsat***

- Inmarsat privatized on April 15, 1999, prior to enactment of the ORBIT Act. The ORBIT Act specified a number of criteria for determining whether Inmarsat's privatization is pro-competitive. On October 9, 2001, the Commission released an Order in which it concluded that Inmarsat had privatized in a manner consistent with the non-IPO requirements of Sections 621 and 624 of the ORBIT Act.[41]

Intelsat North America, LLC, STA Application, Request for Amendment of Special Temporary Authority for Galaxy 26, File No. SAT-STA-20090220-00028, DA 09-522 (grant stamp on February 20, 2009, with conditions); Intelsat North America, LLC, STA Application, Request for Special Temporary Authority for Galaxy 26, File No. SAT-STA-20090212-00022 (grant stamp on February 19, 2009, with conditions); Intelsat North America, LLC, PPL Application, Request for Transfer of Control of Permitted List Satellite Galaxy 23, File No. SAT-PPL-20080213-00038, DA 09-201 (grant stamp on February 6, 2009); Intelsat North America, LLC, STA Application, Request for Special Temporary Authority for Intelsat 605, File No. SAT-STA-20081216-00232, DA 09-46 (grant stamp on January 14, 2009, with conditions); Intelsat New Dawn Company. Ltd., Request for Launch of Authority for New Dawn satellite, File No. SAT-LOA-20080509-00101, DA 09-46 (grant stamp on January 9, 2009, with conditions); Intelsat New Dawn Company, Ltd., Amendment Application, Request for Amendment to Launch and Operation for Galaxy 11, File No. SAT-AMD-20081205-00223, DA 09-46 (grant stamp on January 1, 2009, with conditions); Intelsat North America, LLC, STA Application, Request for Special Temporary Authority for Galaxy 25, File No. SAT-STA-20081111-00214, DA 08-2547 (grant stamp on November 20, 2008, with conditions); Intelsat North America, LLC, Modification Application, Request for modification of its license for Galaxy 25, File No. SAT-MOD-20080825-00159, DA 08-2547 (grant stamp on November 20, 2008, with conditions); Intelsat North America, LLC, STA Applications, Request for Special Temporary Authority for MARISAT-F2, File No. SAT-STA-20081021-00207, DA 08-2440 (grant stamp on October 29, 2008, with conditions); Intelsat North America, LLC, STA Application, Request for Special Temporary Authority for Galaxy 19, File No. SAT-STA-20080724-00148, DA 08-2157 (grant stamp on September 24, 2008, with conditions); Intelsat North America, LLC, STA Application, Request for Special Temporary Authority for Intelsat 602, File No. SAT-STA-20080722-00145 (grant stamp denial on August 4, 2008); Intelsat North America, LLC, Modification Application, Request for Modification to Relocate Intelsat 602, File No. SAT-MOD-20080512-00102, DA 08-1873 (grant stamp on August 4, 2008, with conditions).

Additionally, Intelsat North America LLC has filed four applications to operate in the 17/24 GHz BSS band. In January 2008, Intelsat North America LLC filed subsequent amendments to its pending applications. Intelsat North America LLC, Application for Authority to Construct, Launch and Operate a Direct Broadcast Satellite system comprised of four satellites in the 17 GHz and 25 GHz Bands, File Nos. SAT-LOA-20050210-00028, SAT-AMD-20051118-00241, SAT-AMD-20080114-00011 (Call Sign: S2659); SAT-LOA-20050210-00029, SAT-AMD-20051118-00240, SAT-AMD-20080114-00012 (Call Sign: S2660); SAT-LOA-20050210-00030, SAT-AMD-20051118-00239, SAT-AMD-20080114-00009 (Call Sign: S2661); and SAT-LOA-20050210-00031, SAT-AMD-20051118-00238, SAT-AMD-20080114-00008 (Call Sign: S2662). On May 26, 2009, the International Bureau granted Intelsat North America LLC authority to construct, launch, and operate a 17/24 GHz BSS satellite at the 95.15° W.L. orbital location. *See* Intelsat North America LLC, *Order and Authorization*, DA 09-1132 (Int'l Bur. rel. May 26, 2009).

[41] Comsat Corporation et. al., *Memorandum Opinion, Order and Authorization*, 16 FCC Rcd 21661 (2001) ("*Inmarsat ORBIT Act Compliance Order").*

- In its decision, having found that Inmarsat had privatized in a manner consistent with the non-IPO requirements of the Act,[42] the Commission granted Comsat Corporation; Stratos Mobile Networks, LLC; SITA Information Computing Canada, Inc.; Honeywell, Inc.; Marisat Communications Network, Inc.; and Deere & Company regular earth station authority to use certain Inmarsat satellites for communications services to, from, or within the United States.

- The ORBIT Act originally required Inmarsat to conduct an IPO no later than October 1, 2000.[43] Subsequently, Congress amended the ORBIT Act several times to extend the deadline for Inmarsat to conduct an IPO.[44] Ultimately, in October 2004, Congress amended the ORBIT Act, extending the IPO deadline until June 30, 2005 and adding Sections 621(5)(F) and (G) to provide a certification process as an alternative to the IPO requirements under Sections 621(5)(A) and (B).[45]

- On June 14, 2005, the Commission determined that Inmarsat was in compliance with the alternative certification process under Sections 621(5)(F) and 621(5)(G) of the ORBIT Act, that Inmarsat could forgo the requirement for an IPO and the public listing of securities, and that Inmarsat was no longer subject to the provisions of Section 602 that prohibited Inmarsat from providing additional services.[46]

- Beginning in 2005, resellers of Inmarsat satellite services filed applications to continue or, in some cases, to commence operations of mobile earth terminals ("METs") and gateway land earth stations ("LESs") in the United States via various Inmarsat satellites not covered by existing coordination agreements for the L-band over North America, including Inmarsat's fourth generation ("I-4") satellites.[47]

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[42] 47 U.S.C. § 761(a), which precludes Commission authorization of additional services by Inmarsat until Inmarsat has privatized in accordance with the Act.

[43] Pub. L. No. 106-180, 114 Stat. 48 (2000).

[44] On June 30, 2003, Congress extended Inmarsat's IPO deadline to June 30, 2004, and gave the Commission discretion to further extend this deadline to no later than December 31, 2004. ORBIT Technical Corrections Act of 2003, Pub. L. No. 108-39, § 763, 117 Stat. 835 (2003). Inmarsat Ventures Limited Request for Extension of Time under Section 621(5) of the Communications Satellite Act of 1962, as amended by the Open-Market Reorganization for the Betterment of International Telecommunications Act, *Order,* 19 FCC Rcd 11387 (2004).

[45] Public Law No. 108-371, 118 Stat. 1752 (October 25, 2004).

[46] Inmarsat Group Holdings Limited Petition for Declaratory Ruling that Intelsat, Ltd. Complies With Section 621(5)(F) of the ORBIT Act, *Memorandum Opinion and Order*, IB Docket 04-439, FCC 05-126 (2005) ("*Inmarsat Certification*"). Section 681(2) of the ORBIT Act defines "additional services" for Inmarsat as the non-maritime and non-aeronautical services in the 1.5 and 1.6 GHz band on planned satellites in the 2 GHz band. *See* Pub. L. 106-180 § 602(a) (precluding Commission authorization of additional services by Inmarsat until Inmarsat has privatized in accordance with the Act).

[47] The first two satellites of Inmarsat's I-4s were launched in 2005. *See* Inmarsat website, "About Inmarsat: Our Satellites", available online at http://www.inmarsat.com/About/Our_satellites/default.aspx. The third I-4 satellite was launched on August 18, 2008. Press Release, "Successful Launch for Third Inmarsat-4

These applications were opposed by Mobile Satellite Ventures Subsidiary LLC ("MSV"), the U.S.-licensed Mobile Satellite Service ("MSS") operator in the L-band.[48] In order to permit continuity of service to existing Inmarsat customers[49] and to allow use of new Broadband Global Area Network ("BGAN") [50] services in support of emergency operations, the Commission granted limited authority to resellers to operate via an I-4 satellite, the I-4F2, while their applications for permanent authorization were under consideration.[51]

- On December 21, 2007, Inmarsat and MSV signed a "Spectrum Coordination and Cooperation Agreement" that resolved outstanding differences between the parties regarding use of the L-band.[52] According to the parties, the agreement addresses operations in the L-band in North America, including re-banding of spectrum, coordination of next generation Inmarsat and MSV satellites, resolution of pending regulatory issues in the U.S. and Canada, and greater system technical flexibility.

- On March 26, 2008, the Commission reached government-to-government satellite coordination agreements with the United Kingdom and Canada, based upon the "Spectrum Coordination and Cooperation Agreement" of Inmarsat and MSV. In light of these developments, on March 27, 2008, the Commission granted nearly all pending applications for regular authority to continue existing services via Inmarsat satellites.[53] The Commission also granted one reseller's applications for regular

Satellite," dated August 18, 2009, available online at http://www.inmarsat.com/About/Investors/Press_releases/.

48 MSV subsequently changed its name to SkyTerra Communications. *See* Press Release, "Mobile Satellite Ventures Changes Name to SkyTerra," dated December 8, 2008, available online at http://www.skyterra.com/media/press-releases.cfm.

49 The Commission had previously authorized the requested operations via the third generation Inmarsat 3F4 satellite.

50 The BGAN service is a mobile or portable application that supports both Internet protocol ("IP") packet-switched data and circuit-switched applications. Inmarsat indicates that the BGAN data transmission rates will allow customers to access to e-mail, local area networks, the Internet, intranet/extranet, video conferencing services, video-on-demand, and voice communications (including Voice over IP) from almost anywhere in the world.

51 *See* Actions Taken, Satellite Communications Services Information, *Public Notice*, Report No. SES-00788 (rel. January 25, 2006); Actions Taken, Satellite Communications Services Information, *Public Notice*, Report No. SES-00821 (rel. May 17, 2006); Actions Taken, Satellite Communications Services Information, *Public Notice*, Report No. SES-00835 (rel. July 5, 2006); Actions Taken, Satellite Communications Services Information, *Public Notice*, Report No. SES-00990 (rel. December 19, 2007).

52 Press Release, "SkyTerra, Mobile Satellite Ventures and Inmarsat Sign Spectrum Coordination and Cooperation Agreement," December 21, 2007, available online at http://www.msvlp.com/media/press-releases-view.cfm?id=158&yr=2007.

53 Actions Taken, Satellite Communications Services Information, *Public Notice*, Report No. SES-01021 (rel. April 2, 2008).

authority to provide new BGAN services via the I-4F2 satellite on April 1, 2008.[54] An additional reseller's application for regular authority to provide BGAN services via the I-4F2 was granted in January 2009.[55]

- In June 2008, Inmarsat filed an application seeking approval of the indirect transfer of control of Stratos Global Corporation and its wholly-owned subsidiaries from an irrevocable trust to Inmarsat. In January 2009, the Bureau granted this application for transfer of control.[56] On February 17, 2009, Vizada filed an Application for Review, which is currently under consideration.

- On October 21, 2008, the Commission released an Order making administrative changes in the way by which the Commission specifies authorized points of communication in licenses for L-band MSS user terminals using Inmarsat space stations.[57] Specifically, the Commission established a list of Inmarsat satellites approved to serve the U.S. in the L-band (the "ISAT List"). The list includes all Inmarsat satellites that have been found to meet the Commission's legal, technical, and policy requirements to access the U.S. market. As a result, earth station licensees and applicants may seek authority to communicate with all Inmarsat satellites on the ISAT List by listing "ISAT" as the point of communication, rather than having to seek authorization to communicate with Inmarsat satellites on a satellite-by-satellite and orbital-location-by-orbital-location basis.

- Four Inmarsat satellites were included in the original ISAT List.[58] Since the creation of the ISAT List, two Inmarsat satellites have been added to the ISAT List,[59] and the orbital location of one satellite on the ISAT List has been changed to a different location.[60] At the time of this report, an application is pending to add an additional

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[54] *Id.*

[55] Actions Taken, Satellite Communications Services Information, *Public Notice*, Report No. SES-01103 (rel. January 14, 2009) (granting authority to provide BGAN services via Inmarsat 4F2 to MVS Fed, LLC)

[56] Application of Robert M. Franklin (transferor) and Inmarsat plc (transferee) Consolidated Application for Consent to Transfer of Control of Stratos Global Corporation and Its Subsidiaries from an Irrevocable Trust to Inmarsat, plc., DA 09-117, *Memorandum Opinion and Order and Declaratory Ruling*, 24 FCC Rcd 449 (Int'l Bur., rel. January 16, 2009), *application for review pending*.

[57] Inmarsat, Inc., *Order*, 23 FCC Rcd 15268 (Int'l Bur., 2008).

[58] The Inmarsat satellites included in the original ISAT List were the I-3F2 at 15.5° W.L., the I-3F3 at 178° E.L., the I-3F4 at 142° W.L., and the I-4F2 satellite at 52.75° W.L. *See id.*

[59] Inmarsat, Inc., Public Notice: Satellite Communications Services Information Re: Actions Taken, Report No. SES-01097 (Int'l Bur., rel. December 24, 2008) (adding Inmarsat 4F1 at 143.5° E.L. and Inmarsat 4F3 at 97.65° W.L. to ISAT List).

[60] Inmarsat plc, Petition for Declaratory Ruling to Modify ISAT List to Reflect Resumed Operations of I-3F4 at 54° W.L., File No. SAT-PPL-20090107-00003; SAT-APL-20090115-00005 (grant stamp on April 6, 2009, with conditions).

Inmarsat satellite to the ISAT List.[61] In addition, Inmarsat has an application pending for authority to operate METs with satellites on the ISAT List.[62]

- In April 2009, Inmarsat's prior distribution arrangements expired and Inmarsat entered into new arrangements with its distributors. Inmarsat also completed the acquisition of the shares of Stratos Global Corporation.

- In August 2008, SkyTerra Communications, Inc. and Harbinger Capital Partners Funds filed a series of applications seeking approval of a transfer of control of SkyTerra Subsidiary LLC from SkyTerra Communications to Harbinger. Harbinger holds approximately 29 percent of the issued and outstanding voting shares of Inmarsat plc and holds convertible bonds in Inmarsat plc. Subsequent amendments and ownership updates were filed. The Commission issued a public notice on May 1, 2009, establishing a pleading cycle.[63]

- In addition, Harbinger Capital Partners Funds has filed applications seeking transfer of control of Inmarsat Hawaii, Inc. and Inmarsat Inc. to Harbinger. Inmarsat is not part of the applications.

- Since the June 13, 2009 Ninth Annual Report, the Commission has granted several earth station applications to communicate with Inmarsat's satellites as a point of communication.[64]

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[61] Inmarsat plc, Petition for Declaratory Ruling to Add I2F1 to the ISAT List at 142° W.L., File No. SAT-PPL-20081219-00235.

[62] Inmarsat Hawaii Inc., Application for Inmarsat Hawaii Blanket MET License, File No. SES-LIC-20090217-00184.

[63] Public Notice, IB Docket No. 08-184, DA 09-996, May 1, 2009.

[64] *See, e.g.*, SkyBitz, Inc., File No. SES-MFS-20081107-01453 (granted on January 26, 2009 to access the Inmarsat 4F3 satellite at 97.65˚ W.L.); MVS Fed, LLC, File No. SES-LFS-20051123-01634 (granted on January 13, 2009 to access the Inmarsat 4F2 satellite at 52.75˚ W.L.); Inmarsat Hawaii Inc., File No. SES-MFS-20080228-00207 (granted on December 12, 2008 to access the Inmarsat 4F3 at 97.65˚W.L and 4F1 at 143˚E.L satellites); Honeywell International Inc., File No. SES-MFS-20080303-01499 (granted on November 19, 2008 to access the Inmarsat 4F2 satellite at 52.75˚W.L.); Stratos Communications, Inc., File No. SES-MFS-20051122-01615 (granted on October 27, 2008 to access the Inmarsat 4F2 satellite at 52.75˚ W.L.); Horizon Mobile Communications, Inc., File No. SES-LFS-20070109-00042 (granted on October 21, 2008 to access Inmarsat 4F2 at 52.75˚ W.L.); Amtech Systems LLC, File No. SES-MFS-20080303-01358 (granted on October 21, 2008 to access the Inmarsat 4F2 at 52.75˚ and Inmarsat 3F4 at 142˚ W.L. ); LXE Inc. File No. SES-MFS-20080303-01360 (granted on October 21, 2008 to access the Inmarsat 4F2 satellite at 52.75˚ W.L.); SkyWave Mobile Communications, Corp., File No. SES-MFS-20080303-01362 (granted on October 21, 2008 to access the Inmarsat 4F2 at 52.75˚ and Inmarsat 3F4 at 142˚ W.L. satellites); Vizada, Inc., File No. SES-MFS-20080303-01367 (granted on October 21, 2008 to access Inmarsat 4F2 at 52.75˚ W.L.); and Deere & Company, File No. SES-MFS-20080303-01421 (granted on October 21, 2008 to access the Inmarsat 3F4 satellite at 142˚ W.L.).

*New Skies Satellites*

- New Skies is the Netherlands-based INTELSAT spin-off, created in 1998 as INTELSAT's first step toward privatization. On March 29, 2001, the Satellite Division added four satellites operated by New Skies to the Commission's Permitted Space Station List[65] ("Permitted List") with conditions to remove secondary status requirements for certain New Skies' satellites.[66] This action enabled New Skies to provide satellite services to, from, and within the U.S. on a full-term basis.[67]

- On June 25, 2004, the Commission granted an application to transfer control of Commission licenses and authorizations held by New Skies Satellites N.V. and New Skies Networks, Inc. to New Skies Satellites B.V.[68]

- On March 29, 2006, the Commission approved the transfer of control from New Skies Networks, Inc. ("NSN") to SES GLOBAL S.A. of licenses for six non-common carrier earth stations for communication with non-U.S. licensed satellites that have been added to the Commission's Permitted List.[69] The Commission also approved the transfer of control of three non-U.S. satellites operated by New Skies that the Commission has authorized to provide service to the U.S. pursuant to the Permitted List.[70] The merger was consummated on March 30, 2006.

[65] The Permitted List denotes all satellites and services with which U.S. earth stations with "routinely" authorized technical parameters operating in the conventional C- and Ku-bands ("ALSAT" earth stations) are permitted to communicate, without additional Commission action, provided that those communications fall within the same technical parameters and conditions established in the earth stations' licenses. Amendment of the Commission's Regulatory Policies to Allow Non-U.S.-Licensed Space Stations to Provide Domestic International Satellite Service in the United States, *First Order on Reconsideration*, 15 FCC Rcd 7207 (1999).

[66] New Skies Satellites, N.V., DA 01-513, *Order*, 16 FCC Rcd 7482 (Int'l Bur., Sat. and Rad. Div., rel. March 29, 2001).

[67] New Skies Satellites, N.V., Petition for Declaratory Ruling, *Order*, 16 FCC Rcd 6740 (Sat. and Radio. Div., 2001).

[68] Application of New Skies Satellites N.V. (Transferor) and New Skies Satellites B.V. (Transferee) Transfer Control of FCC Licenses and Authorizations Held by New Skies Satellites N.V. and New Skies Networks, Inc., 19 FCC Rcd 21232 (2004).

[69] Permitted List, available online at http://www.fcc.gov/ib/sd/se/permitted.html.

[70] New Skies Satellites Holdings LTD, Transferor, and SES Global S.A., Transferee, Applications to Transfer Control of Authorizations Held By New Skies Networks, Inc. and Notification of Change to Permitted Space Station List, DA 06-699, IB Docket No. 06-23, 21 FCC Rcd 3194, *Public Notice* (Int'l Bur., approved the transfer of control with conditions) (2006).

- On February 10, 2009, the Commission granted the request of New Skies to add the NSS-9 satellite to the Commission's Permitted List at the 177º W.L. orbital location.[71]

- Since privatization, the Commission also granted several requests from earth station operators to add New Skies satellites as a point of communication.[72]

- In 2008, earth station operators with ALSAT authority continued to have authority to access New Skies Satellites on the Commission's Permitted List.[73] Further, the Commission granted one earth station specific authority to communicate with a New Skies satellite.[74]

***Status of Comsat***

- The ORBIT Act terminated the Communications Satellite Act of 1962's ownership restrictions on COMSAT Corporation ("Comsat"). As a result, Lockheed Martin and Comsat jointly filed an application with the Commission for transfer of control of

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[71] New Skies Satellites, B.V., File No. SAT-PPL-20080811-00152, SAT-APL-20081212-00230 (grant stamp on February 10, 2009, with conditions). A request for modification of this authorization is pending. *See* New Skies Satellites B.V., File No. SAT-MPL-20090331-00040, filed March 31, 2009. The NSS-9 replaces the NSS-5 satellite, which has been relocated to 183º E.L. *See* SES New Skies Satellite Fleet, available online at http://www.newskies.com/nss5.htm.

[72] The applications granted during the past year that list New Skies satellites as a point of communication are as follows: Intelsat North America LLC, File Nos. SES-RWL-20090129-00088, -00089, -00090, -00091, -00092, -00093, -00094, & -00095, granted February 2, 2009 (including New Skies 806 at 319.5° E.L. as a point of communication); Intelsat North America LLC, File Nos. SES-RWL-20090129-00096, & -00097, granted February 2, 2009 (including New Skies 513 at 183° E.L. as a point of communication); Pacific Satellite Connection, Inc., File No. SES-RWL-20081029-01426, granted October 31, 2008 (including New Skies K at 338.5° E.L. as appoint of communication); PetroCom License Corp., File No. SES-RWL-20080929-01260, granted October 1, 2008 (including New Skies 806 at 319.5° E.L. as a point of communication).

We note those earth stations that meet the Commission's two-degree spacing technical requirements and operate in the conventional C- or Ku frequency bands can obtain ALSAT authority which allows the earth station to communicate with any satellite on the Commission's Permitted List. *See* note 65 above. Currently, New Skies Satellites has three space stations on the Permitted List (NSS-806 @ 40.5° W.L., NSS-7 @ 22° W.L. and NSS-9 @ 177° W.L.). Therefore, of the more than 8360 earth stations that have ALSAT authority, any one of these earth stations can communicate with these New Skies satellites, in the conventional C-or Ku- frequency bands, without any further authorization.

[73] *See* note 65 above.

[74] An earth station must seek specific authority to communicate with a space station if the earth station does not meet the technical requirements for an ALSAT designation and/or if the earth station seeks to communicate with a satellite in frequency bands other than the conventional C and Ku-frequency bands. One example of an authorization granting specific access to a New Skies' Space Station is: Newcom International, Inc., SES-MOD-20070223-00275, authority granted on April 10, 2007 to communicate with the NSS-7 satellite at 22º W.L. orbital location. *See also* note 65 above.

Comsat's various licenses and authorizations. On July 31, 2000, the Commission found that Lockheed Martin's purchase of Comsat was in the public interest and authorized Comsat to assign its FCC licenses and authorizations to a wholly-owned subsidiary of Lockheed Martin Corporation.[75]

- On December 18, 2001, the Commission granted Lockheed Martin Global Telecommunications, COMSAT Corporation, and COMSAT General Corporation, together with Telenor Satellite Services Holdings, Inc., Telenor Satellite, Inc., and Telenor Broadband Services AS's request to assign certain Title II common carrier authorizations and Title III radio licenses held by COMSAT to Telenor.[76] The assignment was in connection with Telenor's acquisition of Comsat Mobile Communications ("CMC"), a business unit of COMSAT Corporation. On January 11, 2002, Telenor completed its purchase of substantially all of the assets of CMC, and all of CMC's licenses and authorizations were transferred to Telenor pursuant to Commission authorization.[77]

- On October 25, 2002, the Commission granted Comsat and Lockheed Martin's jointly filed applications to assign four non-common carrier earth station licenses and an Experimental License to Intelsat.[78]

- On October 29, 2004, Intelsat, Ltd completed the acquisition of the COMSAT General businesses from COMSAT General Corporation, COMSAT New Services, Inc., and Lockheed Martin.[79] The Commission approved the acquisition subject to compliance by Intelsat subsidiaries with the terms of the Intelsat Commitment letter

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[75] Lockheed Martin Corporation, Comsat Government Systems, LLC, and Comsat Corporation, Applications for Transfer of Control of Comsat Corporation and Its Subsidiaries, Licensees of Various Satellite, Earth Station Private Land Mobile Radio and Experimental Licenses, and Holders of International Section 214 Authorizations*, Order and Authorization*, 15 FCC Rcd 22910 (2000), *erratum*, 15 FCC Rcd 23506 (2000); *recon. denied*, 17 FCC Rcd 13160 (2002).

[76] Lockheed Martin Global Telecommunications, Comsat Corporation, and Comsat General Corporation, Assignor and Telenor Satellite Mobile Services, Inc. and Telenor Satellite, Inc., Assignee, Applications for Assignment of Section 214 Authorizations, Private Land Mobile Radio Licenses, Experimental Licenses, and Earth Station Licenses and Petition for Declaratory Ruling Pursuant to Section 310(b)(4) of the Communications Act*, Order and Authorization*, 16 FCC Rcd 22897 (2001), *erratum,* 17 FCC Rcd 2147 (2002).

[77] Comments Invited on Telenor Satellite Services Holdings, Inc. Petition for Declaratory Ruling on Inapplicability of Cost Accounting Requirements, *Public Notice*, 17 FCC Rcd 2444 (2002).

[78] Lockheed Martin Corporation, COMSAT Corporation, and COMSAT Digital Teleport, Inc., Assignors, and Intelsat, Ltd., Intelsat (Bermuda), Ltd., Intelsat LLC and Intelsat USA License Corp., Application for Assignment of Earth Station and Wireless Licenses and Section 214 Authorizations and Petition for Declaratory Ruling, IB Docket No. 02-87, *Order and Authorization,* DA 02-2254, 17 FCC Rcd 27732, (Int'l Bur. & Wireless Tel. Bur., 2002) (*"Lockheed/Comsat/Intelsat Order"*).

[79] *Intelsat, Ltd. Form 20-F, Annual Report Pursuant to Section 13 or 15(d) of the Securities and Exchange Act of 1934 for the fiscal year ended December 31, 2004*, at 94.

with the Criminal Division of the U.S. Department of Justice, the U.S. Department of Homeland Security, and the Federal Bureau of Investigation.[80]

***Direct Access***

- Section 641(a) of the ORBIT Act requires that users and service providers be permitted to obtain Level 3 direct access to INTELSAT capacity.[81] Previously, the Commission decided in a rulemaking proceeding, that Level 3 direct access is in the public interest.[82] The concept of direct access became moot with INTELSAT privatization on July 18, 2001, because Intelsat, as a private company, does not have Signatories.

- Prior to INTELSAT's privatization, the Commission implemented the requirement in Section 641(b) of the ORBIT Act that the Commission complete a rulemaking "to determine if users or providers of telecommunications services have sufficient opportunity to access INTELSAT space segment directly from INTELSAT to meet their service or capacity requirements."[83] In September 2000, the Commission released a Report and Order requiring Comsat and direct access customers to negotiate commercial solutions if possible to ensure that sufficient opportunity is available for parties to negotiate commercial solutions.[84]

- On March 13, 2001, Comsat submitted a report detailing the results of its negotiations and maintaining that direct access opportunities are increasing for those who want them. For example, the negotiations resulted in a commercial agreement between Comsat and WorldCom. The Commission placed Comsat's report on public notice, including Comsat's request to terminate the proceeding.[85] With INTELSAT's privatization and Intelsat Ltd.'s purchase of Comsat,[86] on November 21, 2002, the Commission released an Order that concluded that the underlying basis for Section

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[80] Applications of Comsat General Corporation, Lockheed Martin Global Telecommunications LLC, Comsat New Services, Inc., Intelsat LLC, and Intelsat MTC LLC to Assign Licenses and Authorizations and Request for a Declaratory Ruling on Foreign Ownership, Authorizations Granted, *Public Notice*, IB Docket No. 04-235, 19 FCC Rcd 21216 (2004).

[81] 47 U.S.C. § 765(a).

[82] Direct Access to the INTELSAT System, *Report and Order*, IB Docket No. 98-192, 15 FCC Rcd 15703 (1999). Level 3 direct access permits non-signatory users and service providers to enter into contractual agreements with INTELSAT for space segment capacity at the same rates that INTELSAT charges its Signatories without having to use a Signatory as a middleman.

[83] 47 U.S.C. § 765(b).

[84] Availability of INTELSAT Space Segment Capacity to Users and Service Providers Seeking to Access INTELSAT Directly*, Report and Order*, IB Docket No. 00-91, 15 FCC Rcd 19160 (2000).

[85] Public Notice, Report No. SPB-166, April 6, 2001.

[86] On October 25, 2002, the Commission approved the assignment of various earth station licenses, private land mobile radio licenses and international 214 applications from Comsat Corporation to Intelsat, Ltd.

641(b) no longer existed, and terminated the proceeding.[87] In terminating the proceeding, the Commission noted that the termination does not imply any abdication of the Commission's appropriate oversight of Intelsat Ltd., and that as a U.S. licensee, Intelsat Ltd., will be subject to the same Commission oversight as any similarly-situated company authorized to provide services in the U.S.

***Regulatory Fees***

- The ORBIT Act authorizes the Commission "to impose similar regulatory fees on the United States signatory which it imposes on other entities providing similar services."[88] On July 10, 2000, the Commission released an Order concluding that Comsat should pay a proportionate share of the fees applicable to holders of Title III authorizations to launch and operate geosynchronous space stations.[89] Consistent with past decisions, the Commission stated that the costs attributable to space station oversight include costs directly related to INTELSAT signatory activities and are distinct from those recovered by other fees that Comsat pays, such as application fees, fees applicable to international bearer circuits, fees covering Comsat's non-Intelsat satellites, and earth station fees.[90] In 2002, the Circuit Court of Appeals for the District of Columbia held that the Commission's actions to impose regulatory fees on Comsat were justified on the basis that the underlying policy of Section 9 of the Communications Act of 1934, as amended, favoring recovery of regulatory costs gave the Commission good reason to require Comsat to bear its proportionate share of space station fees.[91]

- Post-privatization, Intelsat, as a U.S. licensee, has paid the required regulatory fees mandated by Section 9 of the Communications Act 1934.

### B. Status of INTELSAT Privatization

Intelsat privatized and became a U.S. licensee, as of July 18, 2001, transferring its assets to a commercial corporation. Pursuant to international agreement, an intergovernmental organization known as the International Telecommunications Satellite Organization ("ITSO") remained. ITSO, through a "Public Services Agreement" with Intelsat, monitors the performance of the company's public service obligations to maintain global connectivity and global coverage, provide non-discriminatory access to the system, and honor the lifeline connectivity obligation to

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[87] Availability of INTELSAT Space Segment Capacity to Users and Service Providers Seeking to Access INTELSAT Directly*, Order,* IB Docket No. 00-91, 17 FCC Rcd 24242 (2002).

[88] 47 U.S.C. § 765a(c). A 1999 decision of the United States Court of Appeals for the District of Columbia Circuit in *PanAmSat Corp. v. FCC,* 198 F.3d 890 (D.C. Cir. 1999), set aside and remanded the Commission's 1998 fee order, which did not assess a fee against Comsat.

[89] *In re* Assessment and Collection of Regulatory Fees for Fiscal Year 2000, MD Docket No. 00-58, 15 FCC Rcd 6533 (para. 17) (2000).

[90] *Id.*

[91] *See Comsat Corporation vs. FCC and PanAmSat Corp.*, 283 F.3d 344 (D.C. Cir. 2002).

certain customers, specifically, those customers in poor or underserved countries that have a high degree of dependence on Intelsat.[92] Under these commitments, the privatized Intelsat has made capacity available to lifeline users at fixed pre-privatization costs for approximately 12 years. ITSO has no operational or commercial role.

Upon privatization, substantially all of INTELSAT's operational assets and liabilities were transferred to several companies within an affiliated group with a holding company structure. The companies have created fiduciary Boards of Directors and, based on the record before us, the selection procedure for members of the Board of Directors of Intelsat, Ltd. has resulted in a board that is compliant with the ORBIT Act. In addition, our review of the record before us supports our finding that privileges and immunities enjoyed by the pre-privatized INTELSAT had been terminated consistent with the requirements of the ORBIT Act. The licensed companies have licenses through notifying Administrations in countries (the United States and the United Kingdom) that have effective competition laws and have commitments under the WTO Agreement that include non-discriminatory access to their satellite markets.[93] These companies are subject to U.S. or U.K. licensing authorities and conduct satellite coordinations according to ITU procedures under the auspices of these authorities.

Additionally, as detailed above, at the end of 2004 the Commission authorized the transfer of control of Intelsat's licenses and authorizations to Zeus, and the transaction was consummated in 2005.[94] Also in 2005, the Commission determined that Intelsat's certification complied with the ORBIT Act and it could forgo an IPO and listing of securities.[95] Thus, the Commission concluded that the provisions relating to additional services under Section 602 of the ORBIT Act were no longer applicable to Intelsat.[96]

### II. Views of INTELSAT Parties on Privatization

The Commission, in response to the Public Notice for this Report, has not received any views directly from the INTELSAT Parties[97] regarding privatization.

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[92] *INTELSAT Assembly of Parties Record of Decisions of the Twenty-Fifth (Extraordinary) Meeting,* AP-25-3E FINAL W/11/00, paras. 6-8 (November 27, 2000) ("2000 Assembly Decision").

[93] *Applications of Intelsat LLC for Authority to Operate, and to Further Construct, Launch and Operate C-band and Ku-band Satellites that form a Global Communications System in Geostationary Orbit*, Intelsat LLC Supplemental Information, at 3 (August 17, 2001).

[94] *See* page 6 above.

[95] *See* page 7 above.

[96] *Id*.

[97] The INTELSAT Parties are nations for which the INTELSAT agreement has entered into force. 47 U.S.C. § 769(a)(4)(A). Following privatization, the ITSO Agreement defines "Party" to mean a State for which the ITSO Agreement has entered into force or has been provisionally applied. *See* Agreement Relating to the International Telecommunications Satellite Organization, As Amended by the Twenty-Fifth (Extraordinary) Assembly of Parties in Washington, D.C. (November 17, 2000), at Art. I(p).

## III. Views of Industry and Consumers on Privatization

Intelsat filed comments and Inmarsat filed reply comments in response to the Commission's April 1, 2009 public notice inviting comments related to the development of this Report to Congress.[98] The Commission did not receive any comments from other industry members or consumers regarding privatization.

***Intelsat Privatization Comments***

Intelsat contends that demand for satellite services remains strong and that, in the past year, several new satellite service providers have launched new satellites or have plans to launch new satellites. Intelsat notes that in April 2008, Vietnam Posts and Telecommunications Corporation launched its first satellite, serving South East Asia, part of China, India, Korea, Japan, Australia and Hawaii, and in October 2008, the Government of Venezuela launched a commercial satellite serving portions of South America and the Caribbean.[99] Intelsat also describes a partnership between SES Astra and satellite operator Al Yah Satellite Communications Company to offer DTH television capacity and services in the Middle East, North Africa, and South West Asia with a launch scheduled for the end of 2010.[100] In addition, Intelsat describes a planned launch in 2009 by Avanti Communications[101] to provide broadband and corporate data network services in Europe, and a planned launch in early 2011 by Asia Broadcast Satellite for a replacement and expansion satellite.[102]

Intelsat also notes that, since privatization, it has faced and responded to competition from terrestrial sources, including fiber-optic cable, broadband-enabled IP applications and terrestrial wireless platforms.[103]

***Inmarsat Privatization Comments***

Inmarsat notes that in June 2005, the Commission found that Inmarsat had satisfied the requirement to effectuate a substantial dilution of former Signatory financial interests. Inmarsat further states that, shortly thereafter, Inmarsat completed a successful IPO. Inmarsat's shares trade on the London Stock Exchange. According to Inmarsat, no former Inmarsat Signatory owns five percent or more of the company, and the aggregate ownership of foreign governments is nominal.[104]

Inmarsat outlines its recent investments in new technologies, including its investment in the deployment of the Inmarsat 4 ("I-4") satellite network. In 2008, Inmarsat launched its third I-

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[98] *See* footnotes 16-17 above. Copies of these comments and reply comments are enclosed in this Report.

[99] Intelsat Comments at 1-2. We note that the Vietnamese satellite referenced by Intelsat is not authorized to serve the U.S. market.

[100] Intelsat Comments at 2.

[101] Avanti Communications currently leases Intelsat capacity.

[102] Intelsat Comments at 2.

[103] Intelsat Comments at 3.

[104] Inmarsat Reply Comments at 1-2.

4 satellite, and now has world-wide coverage with broadband capabilities, including BGAN. After the launch, Inmarsat undertook a fleet repositioning process to provide more efficient coverage.[105] Inmarsat reports it also completed construction and was granted authorization for a Satellite Access Station in Hawaii to connect user terminal traffic to the public switched network and the Internet.[106] Inmarsat also notes that BGAN service uses portable antennas that are one-third the size, weight, and price of traditional Inmarsat terminals. In 2007, Inmarsat launched companion BGAN services for aeronautical and maritime customers. Inmarsat plans to introduce a world-wide Global Satellite Phone Service using the I-4 satellite network and a modernized handset. Inmarsat anticipates that the new handset will be available in the United States in 2010.[107] Inmarsat also describes the introduction of a land BGAN service that broadcasters can use for mobile streaming video among its new services.

Inmarsat further notes that on April 14, 2009, with the expiration of Inmarsat's prior distribution arrangements, Inmarsat entered into new, long-term arrangements with all its distributors. According to Inmarsat, these new arrangements will allow all distributors to compete on an even footing. Moreover, Inmarsat points out that is has completed the acquisition of the shares of Stratos Global Corporation, thereby providing Inmarsat with the same type of retail distribution arm enjoyed by other satellite operators.[108]

## IV. Impact of Privatization

Section 646 requires that the Commission report on the impact of privatization on U.S. industry, jobs, and industry access to the global market.

INTELSAT's privatization from an intergovernmental organization to a fully commercial operation has enabled it to more effectively compete to provide services to U.S. commercial and governmental customers. Privatization has enabled Intelsat to compete freely for U.S. satellite business opportunities, thereby increasing competition in the U.S. market and encouraging the development of service offerings to U.S. customers.

Inmarsat's privatization also appears to have had a positive impact on the domestic market.[109] With privatization, Inmarsat has continued to invest in new technologies for mobile satellite service customers. On August 18, 2008, Inmarsat launched its third satellite in the I-4

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[105] *Id.* at 2.

[106] *Id.* at 2. Parts of Inmarsat's request for authorization of its Hawaii earth stations regarding use of the 3945-3955 and 6338-6342 MHz bands for telemetry, tracking & control ("TT&C") functions were dismissed without prejudice to re-filing. *See* DA 08-2730, dated December 18, 2008. Inmarsat subsequently filed amendments regarding this aspect of its request, which are pending before the Commission. *See* File No. SES-AMD-20090116-00052 & SES-AMD-20090116-00053, filed January 16, 2009.

[107] Inmarsat Reply Comments at 2-3.

[108] *Id.* at 3. The International Bureau granted the transfer of control of Stratos Global Corporation to Inmarsat in January 2009. See footnote 56 above, and accompanying text.

[109] *Id.*

satellite network. The third satellite completes worldwide coverage for Inmarsat's I-4 network, which provides broadband service, including BGAN.

Pursuant to the U.S.' obligations as the Notifying Administration to the ITU for Intelsat's fixed satellite service C-and Ku-band frequency assignments transferred at privatization, the Commission has participated in a number of international satellite coordination negotiations as Intelsat's licensing Administration. Since the 2008 Orbit Act Report to Congress, the Commission has participated in coordination meetings with Japan, the Russian Federation and Uruguay on behalf of Intelsat and a number of other U.S. licensees. Over the past reporting period, satellite coordination agreements have been concluded via correspondence with the Russian Federation.

The U.S. has a coordination process whereby U.S. operators may reach operational arrangements with operators of other Administrations. These operational arrangements are then submitted to the operators' respective Administrations for approval. Once approved by both Administrations, the operational arrangements become, or form the basis for, a coordination agreement between the Administrations under the ITU procedures. Since the 2008 Orbit Act Report to Congress, Intelsat has concluded operational arrangements by correspondence with the U.K. In due course, this process will lead to coordination agreements between the U.S. and the foreign Administration.

Finally, both Inmarsat's and INTELSAT's privatization appears to have had a positive impact on the global marketplace for communications services by ensuring increased competition and increased access. Inmarsat and Intelsat have placed a priority on continued provision of service to all portions of the globe. Additionally, Inmarsat remains committed to its support of global maritime distress and safety services ("GMDSS").[110] Intelsat remains committed to ensuring continued global connectivity and service to countries dependent on Intelsat's satellite services. The Commission has taken action to assure this enduring commitment by Intelsat. The Commission conditioned Intelsat's licenses to require that Intelsat remain a signatory to the Public Services Agreement between Intelsat and ITSO that was approved by the ITSO Twenty-fifth Assembly of Parties.[111] The Commission also conditioned Intelsat's licenses to provide that no entity can be considered a successor-in-interest to Intelsat under the ITSO Agreement unless the entity has undertaken to perform the obligations of the Public Services Agreement.

## V. Summary

The Commission has undertaken a number of proceedings required by or related to the ORBIT Act. The Commission will continue to implement and enforce the requirements of the ORBIT Act. On the whole, we believe that U.S. policy goals regarding the promotion of a fully

[110] *See Inmarsat plc. Annual Report and Accounts 2008* at 8, available online at http://www.inmarsat.com/Downloads/English/Investors/Inmarsat_Annual_Report_2008.pdf?language=EN&textonly=False.

[111] Petition of the International Telecommunications Satellite Organization under Section 316 of the Communications Act, as Amended, *Order of Modification*, 23 FCC Rcd 2764, 2770 (Int'l Bur., 2008).

competitive global market for satellite communications services are being met in accordance with the ORBIT Act. The Commission will continue to inform Congress of the actions it takes to implement the requirements of the ORBIT Act and the impact of those actions in its next annual report.

Attachments:

Comments, April 22, 2009

Comments of Intelsat LLC

Reply Comments, April 29, 2009

Reply Comments of Inmarsat PLC

**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C. 20554**

| | | |
|---|---|---|
| In re: | ) | |
| | ) | |
| Report to Congress Regarding the Orbit Act | ) | IB Docket No. 09-48 |
| | ) | |

## COMMENTS OF INTELSAT

Intelsat LLC and its affiliated entities (collectively "Intelsat") hereby respond to the Federal Communications Commission's ("FCC" or "Commission") request for comments in the above referenced proceeding.[1] The Commission seeks comments in order to compile its tenth report to Congress pursuant to Section 646 of the Open-Market Reorganization for the Betterment of International Telecommunications Act ("ORBIT Act").[2]

The global demand for satellite services remains strong. Indeed, since Intelsat last filed comments in April 2008, several new satellite service providers have entered—or are poised to enter—the already competitive market for communications services. For example, the Vietnam Posts and Telecommunications Corporation ("VNPT") launched its first satellite to 132° E.L. in April 2008.[3] This satellite, known as Vinasat-1, serves South East Asia, part of China, India, Korea, Japan, Australia and Hawaii. Similarly, in October 2008, the Government of Venezuela

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1 *Int'l Bureau Information: Report to Congress Regarding the ORBIT Act*, Report No. SPB-230, DA 09-742 (Apr. 01, 2009) (Public Notice).

2 Open-Market Reorganization for the Betterment of Int'l Telecomms. Act, 47 U.S.C. § 646, Pub. L. 106-180, 114 Stat. 48 (2000), *as amended*, Pub. L. No. 107-233, 116 Stat. 1480 (2002), *as amended*, Pub. L. No. 108-228, 118 Stat. 644 (2004), *as amended*, Pub. L. No. 108-371, 118 Stat. 1752 (2004).

3 *See* http://www.spacemart.com/reports/Vietnam_First_Satellite_Launched_After_13_Year_Preparation_999.html (last visited Apr. 21, 2009).

launched the Venesat-1 satellite, a commercial C-, Ku- and Ka-band satellite serving most of the regions of South America and the Caribbean from the nominal 78° E.L. orbital location.[4] In addition, SES Astra has partnered with the Arabic satellite operator Al Yah Satellite Communications Company ("Yahsat") to offer Direct-to-Home ("DTH") television capacity and services to more than two dozen countries in the Middle East, North Africa and South West Asia using the Yahsat 1A Ku-band spacecraft to be launched in the fourth quarter of 2010 to 52.5° E.L.[5] Another operator, Avanti Communications ("Avanti"), which currently leases capacity on the Intelsat 903 satellite, plans to launch its own satellite in 2009.[6] Avanti's satellite, known as HYLAS, will deliver broadband and corporate data network services across Europe. Finally, Asia Broadcast Satellite operates the ABS-1 satellite at the 75° E.L. orbital location in the Indian Ocean Region and plans to launch ABS-2, a replacement and expansion satellite, in the same location in the first quarter of 2011.[7] Under applicable US domestic procedure, and subject to the ultimate authority of the Commission to make notifications to the ITU, Intelsat has engaged in network coordination discussions with some of these new satellite systems with a view to permitting them to compete fairly without limiting Intelsat's global connectivity or ability to provide service to lifeline users.

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4 *Simon Bolivar Satellite Launched by China for Venezuela*, Satnews Daily, Oct. 30, 2008.

5 *See* http://www.ses.com/ses/siteSections/mediaroom/Latest_News/index.php?pressRelease=/pressReleases/pressReleaseList/09-04-20/index.php (last visited Apr. 21, 2009).

6 *See* http://www.avantiplc.com/satellite.htm (last visited Apr. 21, 2009).

7 *See* http://www.absatellite.net/about/index.html (last visited Apr. 21, 2009).

Intelsat also remains subject to intense competition in the market for communications services from terrestrial sources, such as fiber optic cable, broadband-enabled IP applications and terrestrial wireless platforms. Since privatization, Intelsat has responded, and will continue to respond, to these competitive market forces.

Respectfully submitted,

Intelsat LLC

By: _/s/ Jennifer D. Hindin_

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202.719.7000

Its Attorneys

April 22, 2009

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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| In the matter of | ) | |
| | ) | |
| Report to Congress Regarding the ORBIT Act | ) | IB Docket No. 09-48 |
| | ) | |

REPLY COMMENTS OF INMARSAT PLC

Inmarsat plc ("Inmarsat") submits these Reply Comments in response to the Public Notice inviting input to be reflected in the Commission's progress report to Congress on implementing the Open-Market Reorganization for the Betterment of International Telecommunications Act (the "ORBIT Act").[1] The purpose of the ORBIT Act is to "promote a fully competitive global market for satellite communications services for the benefit of consumers and providers of satellite services and equipment by fully privatizing…INTELSAT and Inmarsat."[2]

Inmarsat converted from an intergovernmental organization ("IGO") to a private company in 1999 in a manner that was ORBIT Act-compliant.[3] In June 2005, the Commission found that Inmarsat had satisfied the requirement to effectuate a substantial dilution of former Signatory financial interests in the company.[4] Just days later, Inmarsat reduced former signatory and foreign government ownership even further, by completing one of the most successful equity IPOs by a satellite services company. Today, Inmarsat's shares are traded on the London Stock

1 Public Notice, Report No. SPB-230, DA 09-742 (rel. Apr. 1, 2009).

2 *Id.* at 1; *see also* ORBIT Act, Pub. L. No. 106-180, 114 Stat 48, §2 (2000).

3 *See Comsat Corp .d/b/a Comsat Mobile Communications et.al.* 16 FCC Rcd 21661 (2001)("Comsat").

4 *Inmarsat Group Holdings Limited, Petition for Declaratory Ruling Pursuant to Section 621(5)(F) of the ORBIT Act,* 20 FCC Rcd 11366 (2005).

Exchange and no former Inmarsat Signatory owns five percent or more of the company and the aggregate ownership by foreign governments is nominal.

Inmarsat, in an effort to respond to aggressive, highly competitive market forces, has continued to invest in new technologies for the diverse customer base who utilizes satellite services. Over the last several years, Inmarsat has invested well over $1.5 billion in the deployment of its fourth-generation, Inmarsat 4 ("I-4") satellite network, which is today providing innovative satellite services to the United States and globally on one of the most advanced mobile commercial communications satellites now in orbit. In 2008, Inmarsat launched the third of its fourth generation satellites, the I4F3, completing world-wide coverage for our broadband capabilities, including Broadband Global Area Network (BGAN). After the successful launch of the I4F3, Inmarsat undertook a major satellite fleet repositioning process that is now providing more efficient coverage for Inmarsat users.[5] In addition, Inmarsat completed construction of and was granted Commission authorization for a Satellite Access Station in Paumalu, Hawaii to connect user terminal traffic to the public switched network and the Internet.[6]

In order to remain competitive in the dynamic market for satellite services, Inmarsat's I-4 fleet has been designed and adapted to support a new class of novel IP-based communications, including BGAN service. Using highly portable and easily deployed "notebook sized" antennas that are one-third the size, weight, and price of traditional Inmarsat terminals, BGAN provides voice and broadband service at speeds of almost half a megabit per second. In 2007, Inmarsat

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5 *See*, Inmarsat Press Release, Inmarsat Broadband Goes Global (Feb. 26, 2009) announcing completion of global coverage for Inmarsat broadband services.

6 *See*, File No. SES-LIC-20080306-00242, Call Sign E080059 (granted Dec.18, 2008); File No. SES-MFS-20080228-00207, Call Sign KA 25 (granted Dec. 18, 2008).

launched companion BGAN services for aeronautical and maritime customers, known as SwiftBroadband and FleetBroadband and continues to improve service for its customers. Inmarsat will soon introduce world-wide Global Satellite Phone Service (GSPS) over its I-4 geostationary fleet with a modernized handset. This device is being optimized to operate over the I-4 network and is expected to be available in the United States in 2010.

At the same time, Inmarsat continues to provide innovative and reliable services for its aeronautical, maritime and land users. In February 2009, European carrier Ryanair joined other carriers and began offering GSM mobile phone service on several of its aircraft to passengers in the cabin using Inmarsat services for the link to the ground.[7] Also in February 2009, Inmarsat service was used to repell pirates who tried to attack a bulk carrier in the Indian Ocean by allowing the ship to alert naval units in the vicinity as well as to provide piracy warnings in order to alert ships to incidents in the area.[8] This month, in response to demand from broadcasters, Inmarsat announced the enhancement of land BGAN service to provide access to the world's fastest mobile video streaming by satellite.[9]

Most recently, on April 14, 2009, the last vestige of Inmarsat's IGO legacy came to an end with the expiration of Inmarsat's prior distribution arrangements, which favored the businesses established by former Signatories. Inmarsat has now entered into new, long-term arrangements that will enable all distributors of its services to compete on an even footing. Moreover, Inmarsat has completed the acquisition of the shares of Stratos Global Corporation,

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[7] *See,* Inmarsat News, Ryanair to Relay Passenger Mobile Phone Calls via Inmarsat (Feb. 19, 2009).

[8] *See,* Inmarsat News, Pirates Thwarted Thanks to Inmarsat C (Feb. 13, 2009).

[9] *See,* Inmarsat News, BGAN X-Stream Delivers Fastest Video Streaming (Apr. 20, 2009) announcing launch of BGAN X-Stream service offering video streaming rates of up to 450kbps.

thereby providing Inmarsat with the same type of mature retail distribution arm that its satellite operator competitors currently enjoy.

Inmarsat respectfully submits the above information to assist the Commission in preparing its forthcoming report to Congress.

Respectfully submitted,

/s/

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April 29, 2009

**FEDERAL COMMUNICATIONS COMMISSION**

**47 CFR Part 25**

**[IB Docket No. 02–10; FCC 09–63]**

## Procedures To Govern the Use of Satellite Earth Stations on Board Vessels in the 5925–6425 MHz/3700–4200 MHz Bands and 14.0–14.5 GHz/11.7–12.2 GHz Bands

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule.

**SUMMARY:** In this document, the Federal Communications Commission (Commission) modifies its C-band and Ku-band licensing and service rules for Earth Stations on Board Vessels (ESVs) in order to promote greater ESV operational flexibility without causing harmful interference to the fixed service (FS) and fixed-satellite service (FSS) operators and a limited number of Government operations in those bands.

**DATES:** Effective October 15, 2009, except for §§ 25.221(b)(1)(i) through (iii), 25.222(b)(1)(i) through (iii), 25.221(b)(1)(iv)(A), (B); 25.222(b)(1)(iv)(A), (B), 25.221(b)(2)(i) through (v), 25.222(b)(2)(i) through (v), 25.221(b)(4); 25.222(b)(4), which contain information collection requirements that are not effective until approved by the Office of Management and Budget. The Commission will publish a document in the **Federal Register** announcing the effective date for those sections. The Commission will send a copy of this *Order on Reconsideration* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. 801(a)(1)(A).

**FOR FURTHER INFORMATION CONTACT:** Jennifer Balatan or Howard Griboff, Policy Division, International Bureau, (202) 418–1460.

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission's *Order on Reconsideration,* adopted on July 30, 2009, and released on July 31, 2009 (FCC 09–63). The full text of this document is available for inspection and copying during normal business hours in the Commission Reference Center, 445 12th Street, SW., Washington, DC 20554. The document is also available for download over the Internet at *http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-09-63A1.doc.* The complete text may also be purchased from the Commission's copy contractor, Best Copy and Printing, in person at 445 12th Street, SW., Room CY–B402, Washington, DC 20554, via telephone at (202) 488–5300, via facsimile at (202) 488–5563, or via e-mail at *Commission@bcpiweb.com.*

**Summary of the Order on Reconsideration**

On December 15, 2004, the Commission adopted the *ESV Report and Order* in IB Docket No. 02–10 (*ESV Order*) (70 FR 4775–01, January 31, 2005, as amended at 40 FR 34665–01, June 15, 2005), establishing licensing and service rules for ESVs operating in the 5925–6425 MHz/3700–4200 MHz (C-band) and 14.0–14.5 GHz/11.7–12.2 GHz (Ku-band) frequencies. On July 30, 2009, the Commission adopted this *Order on Reconsideration,* which considers four petitions seeking reconsideration and/or clarification of the *ESV Order.* In particular, with respect to measures for protecting the FSS, the Commission: (1) Allows ESV operators to operate at higher power levels as long as they satisfy certain conditions; (2) permits ESVs operating below the off-axis e.i.r.p. spectral-density limits to declare their own antenna pointing error and; (3) modifies the starting angle of the off-axis e.i.r.p.-density envelope to 1.5 degrees. With respect to measures protecting the FS, the Commission amends § 25.221(a)(11) to clarify that the phrase ''a fixed service offshore installation'' refers to U.S.-licensed FS offshore installations and that ESVs must coordinate with U.S.-licensed FS operators prior to operation. The Commission also clarifies that the public notice requirement should specify that only the FS operators that have been excluded from the coordination are allowed to object in response to the public notice and only with respect to being excluded from the coordination, and that ESVs should be required to shut down only those frequencies used by the objecting FS operator that has been excluded from the coordination. In addition, the Commission reduces the distance from the U.S. coastline (from 300 kilometers to 125 kilometers) within which Ku-band foreign-registered vessels with non-U.S. hubs must operate pursuant to a bilateral agreement or ITU 4.4.

Finally, the Commission makes procedural changes to the ESV rules, such as separating the ESV operational requirements from the ESV application requirements, in order to simplify the organization of those rules.

**Final Regulatory Flexibility Certification—Order on Reconsideration**

The Regulatory Flexibility Act of 1980, as amended (RFA), requires that a regulatory flexibility analysis be prepared for notice-and-comment rule making proceedings, unless the agency certifies that ''the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.'' The RFA generally defines the term ''small entity'' as having the same meaning as the terms ''small business,'' ''small organization,'' and ''small governmental jurisdiction.'' In addition, the term ''small business'' has the same meaning as the term ''small business concern'' under the Small Business Act. A ''small business concern'' is one which: (1) Is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the U.S. Small Business Administration (SBA).

In light of the rules adopted in the *ESV Order,* we find that there are only two categories of licensees that would be affected by the new rules. These categories of licensees are Satellite Telecommunications and Fixed-Satellite Transmit/Received Earth Stations. The SBA has determined that the small business size standard for Satellite Telecommunications is a business that has $15 million or less in average annual receipts. Currently there are approximately 3,390 operational fixed-satellite transmit/received earth stations authorized for use in the C- and Ku-bands. The Commission does not request or collect annual revenue information, and thus is unable to estimate the number of earth stations that would constitute a small business under the SBA definition. Of the two classifications of licensees, we estimate that only 15 entities will provide ESV service. For the reasons described below, we certify that the policies and rules adopted in this *Order on Reconsideration* will not have a significant economic impact on a substantial number of small entities. In the *ESV Order,* the Commission established licensing and service rules for ESVs operating in the 5925–6425 MHz/3700–4200 MHz (C-band) and 14.0–14.5 GHz/11.7–12.2 GHz (Ku-band) frequencies. These rules allow ESV operations in the C- and Ku-bands, while ensuring that ESVs protect FS, FSS operators, and a limited number of Government operations in these bands from harmful interference. In this *Order on Reconsideration,* the Commission clarifies and modifies certain ESV rules designed to protect the FSS and the FS in the C- and Ku-bands. In particular, we modify our rules to protect the FSS by allowing greater operational flexibility for ESVs. For example, ESVs may operate at higher off-axis power-density levels as long as the ESV remains within the parameters of the coordination agreements between the target satellite and adjacent satellites. With regard to protecting the FS in the C-band, we clarify the ESV requirement to protect offshore FS and clarify and modify the requirement for an ESV to cease emissions if an FS at a particular location has been excluded from the coordination with the ESV. Finally, to further promote flexibility in the Ku-band, we shorten the distance from the U.S. coastline within which foreign-registered vessels that operate with non-U.S. hubs must comply with a bilateral agreement or ITU RR 4.4.

The Commission does not expect small entities to incur significant costs associated with the changes adopted in this *Order on Reconsideration.* The changes will benefit both large and small entities by allowing greater operational flexibility in providing ESV service. We believe these requirements are nominal and do not impose a significant economic impact on small entities. Therefore, we certify that the requirements adopted in this *Order on Reconsideration* will not have a significant economic impact on a substantial number of small entities.

**Final Paperwork Reduction Act of 1995 Analysis—Order on Reconsideration**

This *Order on Reconsideration* contains new information collections subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104–13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies were invited to comment on the modified information collection contained in this proceeding (74 FR 41698, August 18, 2009).

**Ordering Clauses**

Pursuant to Sections 4(i), 7, 302, 303(c), 303(e), 303(f) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 157, 302, 303(c), 303(e), 303(f) and 303(r), this Order on Reconsideration *is adopted*. Part 25 of the Commission's rules *is amended*, as specified below in the rule revisions, effective October 15, 2009 except for §§ 25.221(b)(1)(i) through (iii), 25.222(b)(1)(i) through (iii), 25.221(b)(1)(iv)(A), (B); 25.222(b)(1)(iv)(A), (B), 25.221(b)(2)(i) through (v), 25.222(b)(2)(i) through (v), 25.221(b)(4); 25.222(b)(4), which contain information collection requirements that are not effective until approved by the Office of Management and Budget.

The Petition for Reconsideration filed by ARINC Incorporated *is granted* in part to the extent described above and *is denied* in all other respects.

The Petition for Reconsideration filed by The Boeing Company *is granted* in part to the extent described above and *is denied* in all other respects.

The Petition for Reconsideration filed by the Fixed Wireless Communications Coalition *is denied* in part to the extent described above and *is dismissed* in all other respects.

The Petition for Reconsideration filed by the Maritime Telecommunications Network *is granted* in part to the extent described above and *is denied* in all other respects.

The Final Regulatory Flexibility Certification, as required by Section 604 of the Regulatory Flexibility Act, IS ADOPTED.

The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, *shall send* a copy of this Order on Reconsideration including the Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

**List of Subjects in 47 CFR Part 25**

Satellites.

Federal Communications Commission.

**Marlene Dortch,**

*Secretary.*

**Rule Revisions**

■ For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR part 25 as follows:

## PART 25—SATELLITE COMMUNICATIONS

■ 1. The authority citation for part 25 continues to read as follows:

**Authority:** 47 U.S.C. 701–744. Interprets or applies Sections 4, 301, 302, 303, 307, 309 and 332 of the Communications Act, as amended, 47 U.S.C. 154, 301, 302, 303, 307, 309, 332, unless otherwise noted.

■ 2. Section 25.132 is amended by revising paragraph (b)(3) as follows:

**§ 25.132 Verification of earth station antenna performance standards.**

* * * * *

(b) * * *

(b)(3) Applicants seeking authority to use an antenna that does not meet the standards set forth in § 25.209(a) and (b), pursuant to the procedure set forth in § 25.220, § 25.221, § 25.222, or § 25.223(c), are required to submit a copy of the manufacturer's range test plots of the antenna gain patterns specified in paragraph (b)(1) of this section.

* * * * *

■ 3. Section 25.221 is revised to read as follows:

**§ 25.221 Blanket Licensing provisions for Earth Stations on Vessels (ESVs) receiving in the 3700–4200 MHz (space-to-Earth) frequency band and transmitting in the 5925–6425 MHz (Earth-to-space) frequency band, operating with Geostationary Satellite Orbit (GSO) Satellites in the Fixed-Satellite Service.**

(a) The following ongoing requirements govern all ESV licensees and operations in the 3700–4200 MHz (space-to-Earth) and 5925–6425 MHz (Earth-to-space) bands transmitting to GSO satellites in the fixed-satellite service. ESV licensees must comply with the requirements in either paragraph (a)(1) or (a)(2) of this section and all of the requirements set forth in paragraphs (a)(3) through (a)(12) of this section. Paragraph (b) of this section identifies items that must be included in the application for ESV operations to demonstrate that these ongoing requirements will be met.

(1) The following requirements shall apply to an ESV that uses transmitters with off-axis effective isotropically radiated power (EIRP) spectral-densities lower than or equal to the levels in paragraph (a)(1)(i) of this section. An ESV, or ESV system, operating under this section shall provide a detailed demonstration as described in paragraph (b)(1) of this section. The ESV transmitter must also comply with the antenna pointing and cessation of emission requirements in paragraphs (a)(1)(ii) and (a)(1)(iii) of this section.

(i) An ESV system shall not exceed the off-axis EIRP spectral-density limits and conditions defined in paragraphs (a)(1)(i)(A) through (a)(1)(i)(D) of this section.

(A) The off-axis EIRP spectral-density emitted from the ESV, in the plane of the GSO as it appears at the particular earth station location, shall not exceed the following values:

| | | | |
|---|---|---|---|
| $26.3 - 10\log(N) - 25\log\theta$ | dBW/4 kHz | for | $1.5° \leq \theta \leq 7°$ |
| $5.3 - 10\log(N)$ | dBW/4 kHz | for | $7° < \theta \leq 9.2°$ |
| $29.3 - 10\log(N) - 25\log\theta$ | dBW/4 kHz | for | $9.2° < \theta \leq 48°$ |
| $-12.7 - 10\log(N)$ | dBW/4 kHz | for | $48° < \theta \leq 180°$ |

Where theta (θ) is the angle in degrees from the line connecting the focal point of the antenna to the orbital location of the target satellite, the plane of the GSO is determined by the focal point of the antenna and the line tangent to the arc of the GSO at the orbital location of the target satellite. For an ESV network using frequency division multiple access (FDMA) or time division multiple access (TDMA) techniques, N is equal to one. For ESV networks using multiple co-frequency transmitters that have the same EIRP, N is the maximum expected number of co-frequency simultaneously transmitting ESV earth stations in the same satellite receiving beam. For the purpose of this section, the peak EIRP of an individual sidelobe may not exceed the envelope defined above for θ between 1.5° and 7.0°. For θ greater than 7.0°, the envelope may be exceeded by no more than 10% of the sidelobes, provided no individual sidelobe exceeds the envelope given above by more than 3 dB.

(B) In all directions other than along the GSO, the off-axis EIRP spectral-density for co-polarized signals emitted from the ESV shall not exceed the following values:

| | | | |
|---|---|---|---|
| $29.3 - 10\log(N) - 25\log\theta$ | dBW/4 kHz | for | $3.0° \leq \theta \leq 48°$ |
| $-12.7 - 10\log(N)$ | dBW/4 kHz | for | $48° < \theta \leq 180°$ |

Where θ and N are defined in paragraph (a)(1)(i)(A) of this section. This off-axis EIRP spectral-density applies in any plane that includes the line connecting the focal point of the antenna to the orbital location of the target satellite with the exception of the plane of the GSO as defined in paragraph (a)(1)(i)(A) of this section. For the purpose of this section, the envelope may be exceeded by no more than 10% of the sidelobes provided no individual sidelobe exceeds the gain envelope given above by more than 6 dB. The region of the main reflector spillover energy is to be interpreted as a single lobe and shall not exceed the envelope by more than 6 dB.

(C) In all directions, the off-axis EIRP spectral-density for cross-polarized signals emitted from the ESV shall not exceed the following values:

| | | | |
|---|---|---|---|
| $16.3 - 10\log(N) - 25\log\theta$ | dBW/4 kHz | for | $1.8° \leq \theta \leq 7.0°$ |
| $-4.7 - 10\log(N)$ | dBW/4 kHz | for | $7.0° < \theta \leq 9.2°$ |

Where θ and N are defined as set forth in paragraph (a)(1)(i)(A) of this section. This EIRP spectral-density applies in any plane that includes the line connecting the focal point of the antenna to the orbital location of the target satellite.

(D) For non-circular ESV antennas, the major axis of the antenna will be aligned with the tangent to the arc of the GSO at the orbital location of the target satellite, to the extent required to meet the specified off-axis EIRP spectral-density criteria.

(ii) Each ESV transmitter must meet one of the following antenna pointing requirements:

(A) Each ESV transmitter shall maintain a pointing error of less than or equal to 0.2° between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna, or

(B) Each ESV transmitter shall maintain the declared maximum antenna pointing error that may be greater than 0.2° provided that the ESV does not exceed the off-axis EIRP spectral-density limits in paragraph (a)(1)(i) of this section, taking into account the antenna pointing error.

(iii) Each ESV transmitter must meet one of the following cessation of emission requirements:

(A) For ESVs operating under paragraph (a)(1)(ii)(A) of this section, all emissions from the ESV shall automatically cease within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°, and transmission will not resume until such angle is less than or equal to 0.2°, or

(B) For ESV transmitters operating under paragraph (a)(1)(ii)(B) of this section, all emissions from the ESV shall automatically cease within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds the declared maximum antenna pointing error and shall not resume transmissions until such angle is less than or equal to the declared maximum antenna pointing error.

(2) The following requirements shall apply to an ESV that uses off-axis EIRP spectral-densities in excess of the levels in paragraph (a)(1)(i) of this section. An ESV, or ESV system, operating under this section shall file certifications and provide a detailed demonstration as described in paragraph (b)(2) of this section.

(i) The ESV shall transmit only to the target satellite system(s) referred to in the certifications required by paragraph (b)(2) of this section.

(ii) If a good faith agreement cannot be reached between the target satellite operator and the operator of a future satellite that is located within 6 degrees longitude of the target satellite, the ESV operator shall accept the power-density levels that would accommodate that adjacent satellite.

(iii) The ESV shall operate in accordance with the off-axis EIRP spectral-densities that the ESV supplied to the target satellite operator in order to obtain the certifications listed in paragraph (b)(2) of this section. The ESV shall automatically cease emissions within 100 milliseconds if the ESV transmitter exceeds the off-axis EIRP spectral-densities supplied to the target satellite operator.

(3) There shall be a point of contact in the United States, with phone number and address, available 24 hours a day, seven days a week, with authority and ability to cease all emissions from the ESVs, either directly or through the facilities of a U.S. Hub or a Hub located in another country with which the United States has a bilateral agreement that enables such cessation of emissions.

(4) For each ESV transmitter, a record of the ship location (*i.e.,* latitude/longitude), transmit frequency, channel bandwidth and satellite used shall be time annotated and maintained for a period of not less than 1 year. Records will be recorded at time intervals no greater than every 20 minutes while the ESV is transmitting. The ESV operator will make this data available upon request to a coordinator, fixed system operator, fixed-satellite system operator, or the Commission within 24 hours of the request.

(5) ESV operators communicating with vessels of foreign registry must maintain detailed information on each vessel's country of registry and a point of contact for the relevant administration responsible for licensing ESVs.

(6) ESV operators shall control all ESVs by a Hub earth station located in the United States, except that an ESV on U.S.-registered vessels may operate under control of a Hub earth station location outside the United States provided the ESV operator maintains a point of contact within the United States that will have the capability and authority to cause an ESV on a U.S.-registered vessel to cease transmitting if necessary.

(7) ESV operators transmitting in the 5925–6425 MHz (Earth-to-space) frequency bands to GSO satellites in the fixed-satellite service (FSS) shall not seek to coordinate, in any geographic location, more than 36 megahertz of uplink bandwidth on each of no more than two GSO FSS satellites.

(8) ESVs shall not operate in the 5925–6425 MHz (Earth-to-space) and 3700–4200 MHz (space-to-Earth) frequency bands on vessels smaller than 300 gross tons.

(9) ESVs, operating while docked, that complete coordination with terrestrial stations in the 3700–4200 MHz band in accordance with § 25.251, shall receive protection from such terrestrial stations in accordance with the coordination agreements, for 180 days, renewable for 180 days.

(10) ESVs in motion shall not claim protection from harmful interference from any authorized terrestrial stations

or lawfully operating satellites to which frequencies are either already assigned, or may be assigned in the future in the 3700–4200 MHz (space-to-Earth) frequency band.

(11) ESVs operating within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation, shall complete coordination with potentially affected U.S.-licensed fixed service operators prior to operation. The coordination method and the interference criteria objective shall be determined by the frequency coordinator. The details of the coordination shall be maintained and available at the frequency coordinator, and shall be filed with the Commission to be placed on public notice. Operation of each individual ESV may commence immediately after the public notice is released that identifies the notification sent to the Commission. Continuance of operation of that ESV for the duration of the coordination term shall be dependent upon successful completion of the normal public notice process. If, prior to the end of the 30-day comment period of the public notice, any objections are received from U.S.-licensed fixed service operators that have been excluded from coordination, the ESV licensee shall immediately cease operation of that particular station on frequencies used by the affected U.S.-licensed fixed service station until the coordination dispute is resolved and the ESV licensee informs the Commission of the resolution.

(12) ESV operators must automatically cease transmission if the ESV operates in violation of the terms of its coordination agreement, including, but not limited to, conditions related to speed of the vessel or if the ESV travels outside the coordinated area, if within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation. Transmissions may be controlled by the ESV network. The frequency coordinator may decide whether ESV operators should automatically cease transmissions if the vessel falls below a prescribed speed within a prescribed geographic area.

(b) Applications for ESV operation in the 5925–6425 MHz (Earth-to-space) band to GSO satellites in the fixed-satellite service must include, in addition to the particulars of operation identified on Form 312, and associated Schedule B, the applicable technical demonstrations in paragraphs (b)(1) or (b)(2) of this section and the documentation identified in paragraphs (b)(3) through (b)(5) of this section.

(1) An ESV applicant proposing to implement a transmitter under paragraph (a)(1) of this section must demonstrate that the transmitter meets the off-axis EIRP spectral-density limits contained in paragraph (a)(1)(i) of this section. To provide this demonstration, the application shall include the tables described in paragraph (b)(1)(i) of this section or the certification described in paragraph (b)(1)(ii) of this section. The ESV applicant also must provide the value N described in paragraph (a)(1)(i)(A) of this section. An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section must provide the certifications identified in paragraph (b)(1)(iii) of this section. An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must provide the demonstrations identified in paragraph (b)(1)(iv) of this section.

(i) Any ESV applicant filing an application pursuant to paragraph (a)(1) of this section must file three tables showing the off-axis EIRP level of the proposed earth station antenna in the direction of the plane of the GSO; the co-polarized EIRP in the elevation plane, that is, the plane perpendicular to the plane of the GSO; and cross polarized EIRP. In each table, the EIRP level must be provided at increments of 0.1° for angles between 0° and 10° off-axis, and at increments of 5° for angles between 10° and 180° off-axis.

(A) For purposes of the off-axis EIRP table in the plane of the GSO, the off-axis angle is the angle in degrees from the line connecting the focal point of the antenna to the orbital position of the target satellite, and the plane of the GSO is determined by the focal point of the antenna and the line tangent to the arc of the GSO at the orbital position of the target satellite.

(B) For purposes of the off-axis co-polarized EIRP table in the elevation plane, the off-axis angle is the angle in degrees from the line connecting the focal point of the antenna to the orbital position of the target satellite, and the elevation plane is defined as the plane perpendicular to the plane of the GSO defined in paragraph (b)(1)(i)(A) of this section.

(C) For purposes of the cross-polarized EIRP table, the off-axis angle is the angle in degrees from the line connecting the focal point of the antenna to the orbital position of the target satellite and the plane of the GSO as defined in paragraph (b)(1)(i)(A) of this section will be used.

(ii) A certification, in Schedule B, that the ESV antenna conforms to the gain pattern criteria of § 25.209(a) and (b), that, combined with the maximum input power density calculated from the EIRP density less the antenna gain, which is entered in Schedule B, demonstrates that the off-axis EIRP spectral density envelope set forth in paragraphs (a)(1)(i)(A) through (a)(1)(i)(C) of this section will be met under the assumption that the antenna is pointed at the target satellite.

(iii) An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section, must provide a certification from the equipment manufacturer stating that the antenna tracking system will maintain a pointing error of less than or equal to 0.2° between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna and that the antenna tracking system is capable of ceasing emissions within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°.

(iv) An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must:

(A) Declare, in its application, a maximum antenna pointing error and demonstrate that the maximum antenna pointing error can be achieved without exceeding the off-axis EIRP spectral-density limits in paragraph (a)(1)(i) of this section; and

(B) Demonstrate that the ESV transmitter can detect if the transmitter exceeds the declared maximum antenna pointing error and can cease transmission within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds the declared maximum antenna pointing error, and will not resume transmissions until the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna is less than or equal to the declared maximum antenna pointing error.

(2) An ESV applicant proposing to implement a transmitter under paragraph (a)(2) of this section and using off-axis EIRP spectral-densities in excess of the levels in paragraph (a)(1)(i) of this section shall provide the following certifications and demonstration as exhibits to its earth station application:

(i) A statement from the target satellite operator certifying that the proposed operation of the ESV has the potential to create harmful interference to satellite networks adjacent to the target satellite(s) that may be unacceptable.

(ii) A statement from the target satellite operator certifying that the power-density levels that the ESV applicant provided to the target satellite operator are consistent with the existing coordination agreements between its satellite(s) and the adjacent satellite systems within 6° of orbital separation from its satellite(s).

(iii) A statement from the target satellite operator certifying that it will include the power-density levels of the ESV applicant in all future coordination agreements.

(iv) A demonstration from the ESV operator that the ESV system is capable of detecting and automatically ceasing emissions within 100 milliseconds when the transmitter exceeds the off-axis EIRP spectral-densities supplied to the target satellite operator.

(v) A certification from the ESV operator that the ESV system complies with the power limits in § 25.204(h).

(3) There shall be an exhibit included with the application describing the geographic area(s) in which the ESVs will operate.

(4) The point of contact information referred to in paragraph (a)(3) of this section and, if applicable, paragraph (a)(6) of this section, must be included in the application.

(5) ESVs that exceed the radiation guidelines of § 1.1310 of this chapter, Radiofrequency radiation exposure limits, must provide, with their environmental assessment, a plan for mitigation of radiation exposure to the extent required to meet those guidelines.

■ 4. Section 25.222 is revised to read as follows:

**§ 25.222 Blanket Licensing provisions for Earth Stations on Vessels (ESVs) receiving in the 10.95–11.2 GHz (space-to-Earth), 11.45–11.7 GHz (space-to-Earth), 11.7–12.2 GHz (space-to-Earth) frequency bands and transmitting in the 14.0–14.5 GHz (Earth-to-space) frequency band, operating with Geostationary Orbit (GSO) Satellites in the Fixed-Satellite Service.**

(a) The following ongoing requirements govern all ESV licensees and operations in the 10.95–11.2 GHz (space-to-Earth), 11.45–11.7 GHz (space-to-Earth), 11.7–12.2 GHz (space-to-Earth) frequency bands and 14.0–14.5 GHz (Earth-to-space) bands transmitting to GSO satellites in the fixed-satellite service. ESV licensees must comply with the requirements in either paragraph (a)(1) or (a)(2) of this section and all of the requirements set forth in paragraphs (a)(3) through (a)(7) of this section. Paragraph (b) of this section identifies items that must be included in the application for ESV operations to demonstrate that these ongoing requirements will be met.

(1) The following requirements shall apply to an ESV that uses transmitters with off-axis effective isotropically radiated power (EIRP) spectral-densities lower than or equal to the levels in paragraph (a)(1)(i)(A) of this section. An ESV, or ESV system, operating under this section shall provide a detailed demonstration as described in paragraph (b)(1) of this section. The ESV transmitter also must comply with the antenna pointing and cessation of emission requirements in paragraphs (a)(1)(ii) and (a)(1)(iii) of this section.

(i) An ESV system shall not exceed the off-axis EIRP spectral-density limits and conditions defined in paragraphs (a)(1)(i)(A) through (a)(1)(i)(D) of this section.

(A) The off-axis EIRP spectral-density emitted from the ESV, in the plane of the GSO as it appears at the particular earth station location, shall not exceed the following values:

| | | | |
|---|---|---|---|
| $15 - 10\log(N) - 25\log\theta$ | dBW/4 kHz | for | $1.5° \le \theta \le 7°$ |
| $-6 - 10\log(N)$ | dBW/4 kHz | for | $7° < \theta \le 9.2°$ |
| $18 - 10\log(N) - 25\log\theta$ | dBW/4 kHz | for | $9.2° < \theta \le 48°$ |
| $-24 - 10\log(N)$ | dBW/4 kHz | for | $48° < \theta \le 85°$ |
| $-14 - 10\log(N)$ | dBW/4 kHz | for | $85° < \theta \le 180°$ |

Where theta (θ) is the angle in degrees from the line connecting the focal point of the antenna to the orbital location of the target satellite, the plane of the GSO is determined by the focal point of the antenna and the line tangent to the arc of the GSO at the orbital location of the target satellite. For ESV networks using frequency division multiple access (FDMA) or time division multiple access (TDMA) techniques, N is equal to one. For ESV networks using multiple co-frequency transmitters that have the same EIRP, N is the maximum expected number of co-frequency simultaneously transmitting ESV earth stations in the same satellite receiving beam. For the purpose of this section, the peak EIRP of an individual sidelobe may not exceed the envelope defined above for θ between 1.5° and 7.0°. For θ greater than 7.0°, the envelope may be exceeded by no more than 10% of the sidelobes, provided no individual sidelobe exceeds the envelope given above by more than 3 dB.

(B) In all directions other than along the GSO, the off-axis EIRP spectral-density for co-polarized signals emitted from the ESV shall not exceed the following values:

| | | | |
|---|---|---|---|
| $18 - 10\log(N) - 25\log\theta$ | dBW/4 kHz | for | $3.0° \le \theta \le 48°$ |
| $-24 - 10\log(N)$ | dBW/4 kHz | for | $48° < \theta \le 85°$ |
| $-14 - 10\log(N)$ | dBW/4 kHz | for | $85° < \theta \le 180°$ |

Where θ and N are defined in paragraph (a)(1)(i)(A) of this section. This off-axis EIRP spectral-density applies in any plane that includes the line connecting the focal point of the antenna to the orbital location of the target satellite with the exception of the plane of the GSO as defined in paragraph (a)(1)(i)(A) of this section. For the purpose of this section, the envelope may be exceeded by no more than 10% of the sidelobes provided no individual sidelobe exceeds the gain envelope given above by more than 6 dB. The region of the main reflector spillover energy is to be interpreted as a single lobe and shall not exceed the envelope by more than 6 dB.

(C) In all directions, the off-axis EIRP spectral-density for cross-polarized signals emitted from the ESV shall not exceed the following values:

| | | | |
|---|---|---|---|
| $5 - 10\log(N) - 25\log\theta$ | dBW/4 kHz | for | $1.8° \le \theta \le 7.0°$ |
| $-16 - 10\log(N)$ | dBW/4 kHz | for | $7.0° < \theta \le 9.2°$ |

Where θ and N are defined as set forth in paragraph (a)(1)(i)(A) of this section. This EIRP spectral-density applies in any plane that includes the line connecting the focal point of the antenna to the target satellite.

(D) For non-circular ESV antennas, the major axis of the antenna will be aligned with the tangent to the arc of the GSO at the orbital location of the target satellite, to the extent required to meet the specified off-axis EIRP spectral-density criteria.

(ii) Each ESV transmitter must meet one of the following antenna pointing requirements:

(A) Each ESV transmitter shall maintain a pointing error of less than or equal to 0.2° between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna, or

(B) Each ESV transmitter shall declare a maximum antenna pointing error that may be greater than 0.2° provided that the ESV does not exceed the off-axis EIRP spectral-density limits in paragraph (a)(1)(i) of this section, taking into account the antenna pointing error.

(iii) Each ESV transmitter must meet one of the following cessation of emission requirements:

(A) For ESVs operating under paragraph (a)(1)(ii)(A) of this section, all emissions from the ESV shall automatically cease within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°, and transmission will not resume until such angle is less than or equal to 0.2°, or

(B) For ESV transmitters operating under paragraph (a)(1)(ii)(B) of this section, all emissions from the ESV shall automatically cease within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds the declared maximum antenna pointing error and shall not resume transmissions until such angle is less than or equal to the declared maximum antenna pointing error.

(2) The following requirements shall apply to an ESV that uses off-axis EIRP spectral-densities in excess of the levels in paragraph (a)(1)(i) of this section. An ESV, or ESV system, operating under this section shall file certifications and provide a detailed demonstration as described in paragraph (b)(2) of this section.

(i) The ESV shall transmit only to the target satellite system(s) referred to in the certifications required by paragraph (b)(2) of this section.

(ii) If a good faith agreement cannot be reached between the target satellite operator and the operator of a future satellite that is located within 6 degrees longitude of the target satellite, the ESV operator shall accept the power-density levels that would accommodate that adjacent satellite.

(iii) The ESV shall operate in accordance with the off-axis EIRP spectral-densities that the ESV supplied to the target satellite operator in order to obtain the certifications listed in paragraph (b)(2) of this section. The ESV shall automatically cease emissions within 100 milliseconds if the ESV transmitter exceeds the off-axis EIRP spectral-densities supplied to the target satellite operator.

(3) There shall be a point of contact in the United States, with phone number and address, available 24 hours a day, seven days a week, with authority and ability to cease all emissions from the ESVs, either directly or through the facilities of a U.S. Hub or a Hub located in another country with which the United States has a bilateral agreement that enables such cessation of emissions.

(4) For each ESV transmitter, a record of the ship location (*i.e.,* latitude/longitude), transmit frequency, channel bandwidth and satellite used shall be time annotated and maintained for a period of not less than 1 year. Records will be recorded at time intervals no greater than every 20 minutes while the ESV is transmitting. The ESV operator will make this data available upon request to a coordinator, fixed system operator, fixed-satellite system operator, NTIA, or the Commission within 24 hours of the request.

(5) ESV operators communicating with vessels of foreign registry must maintain detailed information on each vessel's country of registry and a point of contact for the relevant administration responsible for licensing ESVs.

(6) ESV operators shall control all ESVs by a Hub earth station located in the United States, except that an ESV on U.S.-registered vessels may operate under control of a Hub earth station location outside the United States provided the ESV operator maintains a point of contact within the United States that will have the capability and authority to cause an ESV on a U.S.-registered vessel to cease transmitting if necessary.

(7) In the 10.95–11.2 GHz (space-to-Earth) and 11.45–11.7 GHz (space-to-Earth) frequency bands ESVs shall not claim protection from interference from any authorized terrestrial stations to which frequencies are either already assigned, or may be assigned in the future.

(b) Applications for ESV operation in the 14.0–14.5 GHz (Earth-to-space) band to GSO satellites in the fixed-satellite service must include, in addition to the particulars of operation identified on Form 312, and associated Schedule B, the applicable technical demonstrations in paragraphs (b)(1) or (b)(2) of this section and the documentation identified in paragraphs (b)(3) through (b)(5) of this section.

(1) An ESV applicant proposing to implement a transmitter under paragraph (a)(1) of this section must demonstrate that the transmitter meets the off-axis EIRP spectral-density limits contained in paragraph (a)(1)(i) of this section. To provide this demonstration, the application shall include the tables described in paragraph (b)(1)(i) of this section or the certification described in paragraph (b)(1)(ii) of this section. The ESV applicant also must provide the value N described in paragraph (a)(1)(i)(A) of this section. An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section must provide the certifications identified in paragraph (b)(1)(iii) of this section. An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must provide the demonstrations identified in paragraph (b)(1)(iv) of this section.

(i) Any ESV applicant filing an application pursuant to paragraph (a)(1) of this section must file three tables showing the off-axis EIRP level of the proposed earth station antenna in the direction of the plane of the GSO; the co-polarized EIRP in the elevation plane, that is, the plane perpendicular to the plane of the GSO; and cross polarized EIRP. In each table, the EIRP level must be provided at increments of 0.1° for angles between 0° and 10° off-axis, and at increments of 5° for angles between 10° and 180° off-axis.

(A) For purposes of the off-axis EIRP table in the plane of the GSO, the off-axis angle is the angle in degrees from the line connecting the focal point of the antenna to the orbital location of the target satellite, and the plane of the GSO is determined by the focal point of the antenna and the line tangent to the arc of the GSO at the orbital position of the target satellite.

(B) For purposes of the off-axis co-polarized EIRP table in the elevation plane, the off-axis angle is the angle in degrees from the line connecting the focal point of the antenna to the orbital location of the target satellite, and the elevation plane is defined as the plane perpendicular to the plane of the GSO defined in paragraph (b)(1)(i)(A) of this section.

(C) For purposes of the cross-polarized EIRP table, the off-axis angle is the angle in degrees from the line connecting the focal point of the antenna to the orbital location of the target satellite and the plane of the GSO as defined in paragraph (b)(1)(i)(A) of this section will be used.

(ii) A certification, in Schedule B, that the ESV antenna conforms to the gain pattern criteria of § 25.209(a) and (b), that, combined with the maximum input power density calculated from the EIRP density less the antenna gain, which is entered in Schedule B, demonstrates that the off-axis EIRP spectral density envelope set forth in paragraphs (a)(1)(i)(A) through (a)(1)(i)(C) of this section will be met under the assumption that the antenna is pointed at the target satellite.

(iii) An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section, must provide a certification from the equipment manufacturer stating that the antenna tracking system will maintain a pointing error of less than or equal to 0.2° between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna and that the antenna tracking system is capable of ceasing emissions within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds 0.5°.

(iv) An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must:

(A) Declare, in their application, a maximum antenna pointing error and demonstrate that the maximum antenna pointing error can be achieved without exceeding the off-axis EIRP spectral-density limits in paragraph (a)(1)(A) of this section; and

(B) Demonstrate that the ESV transmitter can detect if the transmitter exceeds the declared maximum antenna pointing error and can cease transmission within 100 milliseconds if the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna exceeds the declared maximum antenna pointing error, and will not resume transmissions until the angle between the orbital location of the target satellite and the axis of the main lobe of the ESV antenna is less than or equal to the declared maximum antenna pointing error.

(2) An ESV applicant proposing to implement a transmitter under paragraph (a)(2) of this section and using off-axis EIRP spectral-densities in excess of the levels in paragraph (a)(1)(i) of this section shall provide the following certifications and demonstration as exhibits to its earth station application:

(i) A statement from the target satellite operator certifying that the proposed operation of the ESV has the potential to create harmful interference to satellite networks adjacent to the target satellite(s) that may be unacceptable.

(ii) A statement from the target satellite operator certifying that the power-density levels that the ESV applicant provided to the target satellite operator are consistent with the existing coordination agreements between its satellite(s) and the adjacent satellite systems within 6° of orbital separation from its satellite(s).

(iii) A statement from the target satellite operator certifying that it will include the power-density levels of the ESV applicant in all future coordination agreements.

(iv) A demonstration from the ESV operator that the ESV system is capable of detecting and automatically ceasing emissions within 100 milliseconds when the transmitter exceeds the off-axis EIRP spectral-densities supplied to the target satellite operator.

(3) There shall be an exhibit included with the application describing the geographic area(s) in which the ESVs will operate.

(4) The point of contact referred to in paragraph (a)(3) of this section and, if applicable paragraph (a)(6) of this section, must be included in the application.

(5) ESVs that exceed the radiation guidelines of § 1.1310 of this chapter, Radiofrequency radiation exposure limits, must provide, with their environmental assessment, a plan for mitigation of radiation exposure to the extent required to meet those guidelines.

(c) Operations of ESVs in the 14.0–14.2 GHz (Earth-to-space) frequency band within 125 km of the NASA TDRSS facilities on Guam (located at latitude: 13°36′55″ N, longitude 144°51′22″ E) or White Sands, New Mexico (latitude: 32°20′59″ N, longitude 106°36′31″ W and latitude: 32°32′40″ N, longitude 106°36′48″ W) are subject to coordination through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee (IRAC). When NTIA seeks to provide similar protection to future TDRSS sites that have been coordinated through the IRAC Frequency Assignment Subcommittee process, NTIA will notify the Commission that the site is nearing operational status. Upon public notice from the Commission, all Ku-band ESV operators must cease operations in the 14.0–14.2 GHz band within 125 km of the new TDRSS site until after NTIA/IRAC coordination for the new TDRSS facility is complete. ESV operations will then again be permitted to operate in the 14.0–14.2 GHz band within 125 km of the new TDRSS site, subject to any operational constraints developed in the coordination process.

(d) Operations of ESVs in the 14.47–14.5 GHz (Earth-to-space) frequency band within (a) 45 km of the radio observatory on St. Croix, Virgin Islands (latitude 17°46′ N, longitude 64°35′ W); (b) 125 km of the radio observatory on Mauna Kea, Hawaii (at latitude 19°48′ N, longitude 155°28′ W); and (c) 90 km of the Arecibo Observatory on Puerto Rico (latitude 18°20′46″ W, longitude 66°45′11″ N) are subject to coordination through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee (IRAC).

■ 5. Section 25.271 is amended by revising paragraphs (b) and (c) introductory text and by removing paragraph (f).

The revisions read as follows:

**§ 25.271 Control of transmitting stations.**

* * * * *

(b) The licensee of a transmitting earth station licensed under this part shall ensure that a trained operator is present on the earth station site, or at a designated remote control point for the earth station, at all times that transmissions are being conducted. No operator's license is required for a person to operate or perform maintenance on facilities authorized under this part.

(c) Authority will be granted to operate a transmitting earth station by remote control only on the conditions that:

* * * * *

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## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

**[Notice: (09–059)]**

### National Environmental Policy Act (NEPA): Nuclear Spectroscopic Telescope Array (NuSTAR) Mission

**AGENCY:** National Aeronautics and Space Administration (NASA).

**ACTION:** Finding of No Significant Impact (FONSI).

**SUMMARY:** Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 43321 *et seq.*), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR parts 1500–1508), and NASA policy and procedures (14 CFR part 1216 subpart 1216.3), NASA has made a Finding of No Significant Impact (FONSI) with respect to the proposed NuSTAR mission. The proposed action would be the launch of the NuSTAR mission on a Pegasus XL launch vehicle from the Reagan Test Site (RTS) at U.S. Army Kwajalein Atoll (USAKA), the Republic of the Marshall Islands (RMI) in August 2011. The only other alternative that was considered in detail was No Action.

**DATES:** Written comments on this FONSI should be submitted to Mark Sistilli at the address provided below and must be postmarked no later than 30 days from publication of this FONSI. While hard copy comments are preferred, NASA will accept e-mail addressed to Mark Sistilli at the address provided below so long as the e-mail is sent no later than 30 days from publication of this FONSI.

**ADDRESSES:** The environmental documentation that supports and serves as a basis for this FONSI may be reviewed at the locations listed under the **SUPPLEMENTARY INFORMATION** in this notice.

**FOR FURTHER INFORMATION CONTACT:** Mr. Mark Sistilli, NASA Headquarters, Science Mission Directorate, Astrophysics Division, NASA Headquarters, 300 E St., SW., Mail Suite 3Y33, Washington, DC 20546–0001, Phone: 202–358–2242, E-mail: *mark.j.sistilli@nasa.gov.*

**SUPPLEMENTARY INFORMATION:** The proposed NuSTAR spacecraft has been reviewed in accordance with the Routine Payload criteria established by the ''Final Environmental Assessment for Launch of NASA Routine Payloads on Expendable Launch Vehicles from Cape Canaveral Air Force Station Florida and Vandenberg Air Force Base California,'' (NRP EA) dated June 2002 and FONSI dated June 18, 2002. This review shows that the NuSTAR spacecraft meets all of the Routine Payload Criteria, with the exception of criteria 3 which specifies the launch vehicle and launch site conditions. The baseline launch vehicle for NuSTAR is the Pegasus XL, which is also covered under the Routine Payload criteria. However, the launch site proposed is USAKA, in the RMI. Council of Environmental Quality (CEQ) regulations encourages adoption of existing documents where applicable ('' * * * an agency may adopt appropriate environmental documents prepared by another agency (Sec. 1506.3)''). In addition, NASA Procedural Requirements (NPR) 8580.1, section K.2.17 encourages the adoption of other agency existing NEPA documents. The environmental impacts of the launch of spacecraft from USAKA have been reported in previous NEPA documentation, therefore these NEPA documents are hereby incorporated by reference in this FONSI. This FONSI formally adopts existing FAA and DOD environmental documentation for Pegasus launches from USAKA.

At a minimum, NASA will take no final action prior to 30 days following the publication of this FONSI. Public comments on the environmental aspects of the proposed NuSTAR mission are hereby solicited and will be considered before NASA makes its final decision.

The NuSTAR mission was proposed and selected in response to NASA's Announcement of Opportunity for the Explorer Program in 2003. The Explorer program provides frequent, low-cost access to space missions for small-to mid-sized spacecraft. The Explorer program enables the definition, development and implementation of mission concepts through a variety of modes to meet the need of the scientific community and the NASA space science enterprise. NuSTAR's scientific goals include helping scientists answer fundamental questions about the universe, such as:

1. How black holes are distributed throughout the cosmos?
2. How the elements of the universe were created?
3. What powers the most extreme active galaxies?

With answers to these and other questions, NuSTAR would expand NASA's understanding of the origins and destinies of stars and galaxies.

NuSTAR would study the sky through the use of high energy x-rays. It consists of a single spacecraft which would be placed into an equatorial orbit around the Earth. The objective of the NuSTAR mission is to conduct a census for black holes on all scales, achieved through deep, wide-field surveys of extragalactic fields and the Galactic center, map radioactive material in young supernova remnants in order to study the birth of the elements and to understand how stars explode, to expose relativistic jets of particles from the most extreme active galaxies in order to understand what powers giant cosmic accelerators, to study cosmic ray origins and the extreme physics around collapsed stars and would respond to targets of opportunity including supernovae and gamma-ray bursts.

NuSTAR would achieve its science objectives with a combination of surveys and pointed observations. It would consist of a single instrument containing two identical grazing incidence hard X-ray telescopes that would effectively enlarge the X-ray collecting area. The grazing incidence mirrors would focus onto two shielded solid-state pixel detectors, separated by a mast that would extend the focal length to ten meters (33 feet) after launch. A laser metrology system (class 3B) would monitor the mast alignment and remove mast flexure that would ease mast stability requirements. The optics would extend the frequency range and field of view over that achievable with standard metal surfaces. Cadmium Zinc Telluride (CdZnTe) detectors would provide excellent spectral resolution and high quantum efficiency without requiring cryogenic operation. There would be a single mechanical interface to the 3-axis stabilized spacecraft bus provided by Orbital Sciences Corporation, who also manufactures the Pegasus launch vehicle. NuSTAR would launch from United States Army Kwajalein Atoll, Republic of the Marshall Islands, aboard a single Pegasus XL launch vehicle in August 2011.

**NuSTAR Adoption of Existing Environmental Documentation Applicability**

The Pegasus XL launch vehicle would be processed and the NuSTAR spacecraft would be integrated to the launch vehicle at Vandenberg Air Force Base (VAFB), California. The Pegasus would be attached to its dedicated L–1011 aircraft at VAFB, and then ferried to RTS for launch. Limited testing operations on the spacecraft would be conducted at RTS. On the day of launch, the L–1011/Pegasus would depart from RTS and then the Pegasus would be released from the L–1011 aircraft at an altitude of approximately 35,000 to 45,000 feet over the Pacific Ocean, at a point southwest of the Kwajalein Atoll.

RTS is located on the USAKA, a subordinate command of the U.S. Army Space and Missile Defense Command, located in the RMI, approximately 3,700 kilometers (2,000 nautical miles) southwest of Hawaii. USAKA consists of all or portions of 11 of the 100 islands that enclose a 2,850 square kilometer (1,100 square mile) lagoon, the largest lagoon in the world. Kwajalein is one of 11 islands in the Marshall Islands leased by the U.S. government.

The U.S. Department of Transportation (DOT) Federal Aviation Administration (FAA) has analyzed the potential impacts of Pegasus launches at RTS in previous documents (FAA, 1994, OSC, 1999, and FAA, 2004) and has determined that the activities associated with the Pegasus operations at RTS will not individually or cumulatively significantly impact the quality of the human or natural environment.

NASA has analyzed the potential impacts of missions with spacecraft that are considered routine payloads in an environmental assessment (NRP EA). Spacecraft defined as routine payloads utilize materials, quantities of materials, launch vehicles and operation characteristics that are consistent with normal and routine spacecraft preparation and flight activities. The environmental impacts of launching routine payloads fall within the range of routine, ongoing and previously documented impacts that have been determined not to be significant. Spacecraft covered by the NRP EA meet specific criteria ensuring that the spacecraft and its operation and decommissioning do not present any new or substantial environmental or safety concerns. The NuSTAR mission meets the criteria for a NASA routine payload (NASA, 2009) with the exception of criteria 3 concerning launch site conditions that are covered in DOT environmental documentation (FAA, 1994, OSC, 1999, and FAA, 2004). The mission does not present any unique or unusual circumstances that could result in new or substantial environmental impacts.

Based on the analyses set forth in the NRP EA and previous FAA documents, NASA has determined that the environmental impacts associated with the NuSTAR mission will not individually or cumulatively have a significant impact on the quality of the human environment. Therefore, an Environmental Impact Statement is not required. In making this determination, NASA not only considered that the NuSTAR mission satisfies the criteria set forth in the NRP EA for spacecraft impacts, but it considered the potential site specific impacts of the NuSTAR mission set forth and detailed in the DOT documentation identified above.

The environmental documentation that supports and serves as a basis for this FONSI may be reviewed at the following locations:

Alele Public Library, P.O. Box 629, Majuro, Republic of the Marshall Islands 96960.

Grace Sherwood and Roi-Namur Libraries, P.O. Box 23, Kwajalein, Marshall Islands APO, A.P. 96555.

The environmental documentation may also be examined at the following locations by contacting the pertinent Freedom of Information Act Office:

(a) NASA, John F. Kennedy Space Center, FL 32899 (321–867–2745);

(b) NASA, Ames Research Center, Moffett Field, CA 94035 (650–604–3273);

(c) NASA, Dryden Flight Research Center, Edwards, CA 93523 (661–276–2704);

(d) NASA, Glenn Research Center at Lewis Field, Cleveland, OH 44135 (1–866–404–3642);

(e) NASA, Goddard Space Flight Center, Greenbelt, MD 20771 (301–286–4721);

(f) NASA, John C. Stennis Space Center, MS 39529 (228–688–2118);

(g) NASA, Lyndon B. Johnson Space Center, Houston, TX 77058 (281–483–8612);

(h) NASA, Langley Research Center, Hampton, VA 23681 (757–864–2497);

(i) NASA, Michoud Assembly Facility, New Orleans, LA 70189 (504–257–2629); and

(j) NASA, White Sands Test Facility, Las Cruces, NM 88004 (505–524–5024);

(k) Jet Propulsion Laboratory, Visitors Lobby, Building 249, 4800 Oak Grove Drive, Pasadena, CA 91109.

Limited hard copies of the specific environmental documentation named below that supports this FONSI are available on a first-request basis by contacting Mark Sistilli at the address, telephone number, and e-mail address indicated wherein.

**References**

A complete list of all references cited in this rule is available on the Internet at *http://oim.hq.nasa.gov/oia/emd/ep.html* or by e-mailing a request to *nepa@hq.nasa.gov.*

**Edward J. Weiler,**

*Associate Administrator for Science Mission Directorate.*

[FR Doc. E9–15203 Filed 6–26–09; 8:45 am]

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National Aeronautics and Space Administration

**Headquarters**
Washington, DC 20546-0001

Reply to Attn of:

## Waiver of Paragraph 2 of the Ethics Pledge

I have determined that it is in the public interest to grant a limited waiver of paragraph 2 of the Ethics Pledge set forth in Executive Order 13490, "Ethics Commitments by Executive Branch Personnel" (January 21, 2009) to Charles Bolden as Administrator of the National Aeronautics and Space Administration (NASA). Mr. Bolden had previously served as a consultant to SAIC and on the board of directors of GenCorp. Absent a waiver, Mr. Bolden would be prohibited by paragraph 2 of the Ethics Pledge from participating in any particular matter involving specific parties in which either SAIC or GenCorp is or represents a party. Mr. Bolden's knowledge of and expertise in current NASA programs are essential to making informed and timely decision-making about the future of NASA and its programs. His ability to engage in such decision-making as the head of NASA is in the public interest and fundamental to NASA's ability to remain in the forefront of space exploration. This waiver is granted with the understanding that Mr. Bolden will comply with the limitations set forth below, the remaining provisions of the Executive Order and with all pre-existing government ethics rules.

I authorize Mr. Bolden to participate only at the policy or program level in particular matters involving SAIC and/or GenCorp. This waiver is deemed applicable only in those limited circumstances when such a policy or program matter involves SAIC and/or GenCorp as a party and rises to the level of Administrator review. The authorization does not remove the bar on engaging in one-on-one meetings or communications with either entity as set forth in Executive Order 13490. This waiver does not authorize Mr. Bolden to participate in contracting matters, including contract determinations, involving SAIC or GenCorp as a party or to participate in those particular matters involving specific parties in which he participated as a consultant for SAIC or as a director for GenCorp.

Dated: July 23 2009

NASA

Designated Agency Ethics Official

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OFFICE OF AUDITS

# THE LANDSAT PROGRAM IS NOT MEETING THE GOALS AND INTENT OF THE LAND REMOTE SENSING POLICY ACT OF 1992

OFFICE OF INSPECTOR GENERAL

National Aeronautics and
Space Administration

Final report released by:

signed
Debra D. Pettitt
Acting Assistant Inspector General for Auditing

## Acronyms

| | |
|---|---|
| DoD | Department of Defense |
| DOI | Department of the Interior |
| FY | Fiscal Year |
| GOES | Geostationary Operational Environmental Satellite |
| LDCM | Landsat Data Continuity Mission |
| LRD | Launch Readiness Date |
| LRSP | Landsat Remote Sensing Policy |
| MOU | Memorandum of Understanding |
| NLIP | National Land Imaging Program |
| NOAA | National Oceanic and Atmospheric Administration |
| NPOESS | National Polar-Orbiting Operational Environmental Satellite System |
| NSTC | National Science and Technology Council |
| NPR | NASA Procedural Requirements |
| OLI | Operational Land Imager |
| OSTP | Office of Science and Technology Policy |
| RSDO | Rapid Spacecraft Development Office |
| SLC | Scan Line Corrector |
| SMD | Science Mission Directorate |
| SRB | Standing Review Board |
| TIRS | Thermal Infrared Sensor |
| TM | Thematic Mapper |
| USGS | U.S. Geological Survey |

## OVERVIEW

# THE LANDSAT PROGRAM IS NOT MEETING THE GOALS AND INTENT OF THE LAND REMOTE SENSING POLICY ACT OF 1992

### The Issue

The Landsat Program comprises a series of Earth-observing satellite missions of, thus far, six satellites. The Program is jointly managed by NASA's Science Mission Directorate (SMD) and the Department of the Interior's U.S. Geological Survey (USGS) on the basis of a memorandum of understanding. The Program has used remote sensing instruments since 1972 to gather wide-swath images of Earth's surface. Landsat images have provided over 3 decades of continuous data on changes in land cover, land use, water resources, and climate, worldwide, that researchers rely on to establish trends and prediction models. The Landsat Data Continuity Mission (LDCM) is the next satellite mission NASA is developing for USGS's Land Remote Sensing Program.[1] The primary purpose of LDCM is to extend the land surface record by collecting data that can be compared to data collected by the previous Landsat satellites, including data collected via infrared imaging capability.

The overall objective of our audit was to determine whether NASA's project management of LDCM has adequately addressed risks associated with the acquisition strategy and a potential data gap between Landsats 5 and 7 and LDCM. In addition, we addressed the LDCM Project and the Landsat Program management's efforts to meet the goals and intent of the Land Remote Sensing Policy (LRSP) Act of 1992 and also addressed the impact late changes to LDCM requirements have had on mission costs and launch schedule. (Details of the audit's scope and methodology are in Appendix A.)

### Results

We found that LDCM Project management had ensured that the acquisition plan and subsidiary documents prepared for LDCM followed applicable interagency agreements, policies, regulations, and best practices. In addition, we found that LCDM Project management effectively identified, reported, and mitigated LDCM acquisition risks and had implemented an effective Earned Value Management System to improve management of cost and schedule risks. However, NASA's efforts to comply with the goals outlined in the LRSP Act of 1992 needed improvement. Specifically, NASA and the Nation's efforts to develop, launch, and operate a land remote sensing system to maintain long-term data continuity is in jeopardy because no Federal agency has been

[1] USGS's Land Remote Sensing Program includes the satellites developed under the Landsat Program and alternative data sources.

given overall responsibility for the Landsat Program and LDCM baseline requirements changed after the contract award for the spacecraft, resulting in increased Project costs and possible launch schedule delays.

Because no single Federal agency has overall responsibility for the Landsat Program, decisions about acquisition strategies were delayed, causing significant schedule delays, and thus challenging the goals and intent of the Act, which were to serve the user community's interests and maintain data continuity with the Landsat system. Over the course of more than 6 years, several alternatives for satisfying the LDCM mission objectives were considered, pursued, and rejected, resulting in LDCM and the Landsat Program not fully meeting the goals or intent of the LRSP Act of 1992. Specifically, Landsats 5 and 7 have surpassed their life spans, are operating in a degraded state, and therefore not producing a full set of data, yet LDCM is not scheduled to launch until December 2012. Establishing operational program responsibility and accountability for the Landsat Program within a single Federal agency could help ensure Landsat data continuity.

NASA removed, and now must reinstate, Landsat's legacy thermal imaging capability. Congress directed NASA to reinstate the thermal imaging capability to satisfy the user community's needs, congressional concerns, and the goals and intent of the LRSP Act of 1992. The reinstatement of the capability late in LDCM Project development has resulted in increased Project costs estimated between $11 million and $20 million and the risk of a full data gap if LDCM's launch is further delayed. Historically, NASA has made changes to Project requirements, resulting in cost and schedule impacts.

## Management Action

In our July 7, 2009, draft we made five recommendations to the Associate Administrator for SMD. He concurred with the five recommendations.

Recommendation 1was that the Associate Administrator coordinate with USGS to assist in developing a plan for continuous provision of Landsat-type data, should Landsat 7 and Landsat 5 become inoperable before LDCM is operational. In response, the Associate Administrator noted that a USGS analysis of fuel usage suggests that Landsat 7 has sufficient fuel to operate through 2012 or longer, that assessments of the viability of alternative data sources continue, and that NASA will coordinate with USGS to document a plan to mitigate the potential data gap by August 31, 2010.

Our Recommendation 2 suggested that the Associate Administrator coordinate with USGS to assist in establishing the National Land Imaging Program, to include developing detailed plans for future Landsat acquisitions and agency funding responsibility for the program. In response, the Associate Administrator noted that NASA meets monthly with USGS to discuss implementation of the National Land Imaging Program and that NASA intends to work with OSTP and USGS to plan for a follow-on mission.

We suggested in Recommendation 3 that the Associate Administrator request an independent analysis of the impact on the spacecraft's development cost and schedule due to the late change of LDCM requirements. In response, the Associate Administrator stated that an independent analysis of LDCM's development cost and schedule will be conducted in preparation for Key Decision Point-C, scheduled for October 2009.

Recommendation 4 was that the Associate Administrator issue guidance affirming the need for Space Flight Programs and Projects to quantify technical and programmatic risks associated with undefined system-level requirements, which can impact cost and schedule, prior to contract award for any major mission element. The Associate Administrator concurred and noted, in response, that the requirement to quantify technical and programmatic risks is codified in NASA Procedural Requirements (NPR) 7120.5D, "NASA Space Flight Program and Project Management Requirements," March 6, 2007, and stated that SMD's Management Handbook, released in February 2008, affirms the need for all programs and projects to follow that NPR through all mission phases. In addition, the Associate Administrator stated that the thermal infrared sensor (TIRS) requirements issue was mitigated by structuring the LDCM spacecraft request for proposal so as not to preclude its late introduction.

Recommendation 5 was that the Associate Administrator re-emphasize the provisions of NPR 7123.1A, "NASA Systems Engineering Processes and Requirements," March 26, 2007, which require that NASA programs and projects adequately consider stakeholder expectations and user community interests prior to contract award for development of any major mission element, revisiting these expectations and interests whenever fundamental changes are made to the mission implementation approach. In concurring with Recommendation 5, the Associate Administrator noted that SMD is committed to working with the stakeholder community, as detailed in the SMD Management Handbook, published in 2008, and consistent with NPR 7123.1A.

We consider management's proposed actions to be responsive. On the basis of actions already taken and procedures in place, the recommendations are resolved. Recommendations with corrective actions forthcoming will be closed upon completion and verification of management's corrective action. (See Appendix B for the full text of management's comments.)

## CONTENTS

# INTRODUCTION

## Background

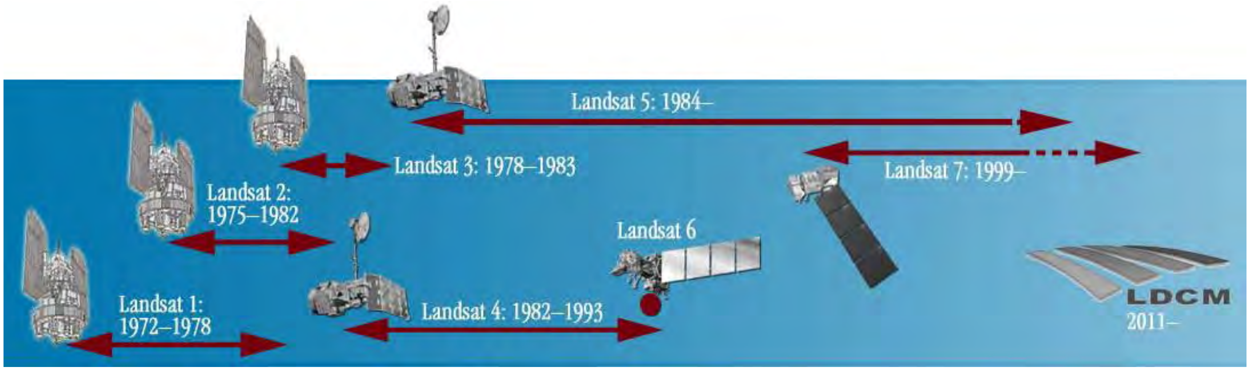
The Landsat Program, at Goddard Space Flight Center (Goddard), constitutes missions to launch Earth orbiting satellites that record land surface changes on a global scale and is the only program, worldwide, committed to preserving a consistent, long-term record of Earth's land surface at moderate resolution. The Landsat satellites constitute the only satellite system designed and operated to observe the global land surface continuously at a moderate resolution;[2] and the data provided by the Landsat spacecraft constitute the longest record of Earth's continental surfaces as seen from space.

Landsat's land images serve hundreds of users annually who observe and study the Earth, manage and utilize its natural resources, and monitor the changes brought on by natural processes and human activities. The instruments on the Landsat satellites have recorded millions of images used to monitor timber loss, estimate soil moisture and snow water equivalence, monitor population changes, and estimate community growth. The images provide information that meets the needs of a broad and diverse user community that includes business, science, education, government, and national security. For example, Federal agencies and programs that use Landsat data include the Department of Defense (DoD) National Geospatial-Intelligence Agency; the Department of the Interior's U.S. Geological Survey (USGS), U.S. Fish and Wildlife Service, and Bureau of Land Management; USDA's Forest Service, and the U.S. Climate Change Science Program as well as NASA's Biodiversity and Applied Science Applications and Land-Cover and Land-Use Change Program.

**History of Landsat.** The first Landsat satellite was launched in 1972 by NASA. NASA launched Landsats 2 and 3 in 1975 and 1978, respectively. NASA managed these three satellites as experimental missions. A second generation of Landsat satellites was developed and launched as Landsats 4 and 5 in 1982 and 1984, respectively. From 1979 until 1984, the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) managed all Landsat satellite operations (Landsats 2 through 5). Public Law 98-365, the "Land Remote Sensing Commercialization Act of 1984," directed Commerce/NOAA to delegate management of Landsats 4 and 5 and their data distribution to the private sector. As a result, the Earth Observation Satellite Company, a consortium of private companies, was chosen to operate those satellites as well as build and launch Landsats 6 and 7. Landsat 6, the only satellite not built and launched under NASA management, failed at launch.

[2] Remotely sensed images are numeric representations of the sampled land surface made up of individual picture elements, or pixels. Each pixel represents a square area on an image that is a measure of the sensor's resolution. The finer the spatial resolution, the smaller the objects that are detectable. Moderate resolution sensors are useful in seasonal and time series applications at regional or global scales, whereas fine resolution studies are more useful in local environmental applications.

**Figure 1. Illustrative Timeline of Landsat Satellites 1 through 7.**




Source: NASA Landsat Program Web site.

Landsat 7 was mandated in 1992 by Public Law 102-555, "The Land Remote Sensing Policy Act" (LRSP Act of 1992). The Act identified three goals for the Landsat Program:

(1) encourage the development, launch, and operation of a land remote sensing system that adequately serves the civilian, national security, commercial, and foreign policy interests of the United States;

(2) encourage the development, launch, and operation of a land remote sensing system that maintains data continuity with the Landsat system; and

(3) incorporate system enhancements, including any such enhancements developed under the technology demonstration program under section 303, which may potentially yield a system that is less expensive to build and operate, and more responsive to data users, than is the Landsat system projected to be in operation through the year 2000

In 1999, the initial acquisition planning began for Landsat 7's successor, the Landsat Data Continuity Mission (LDCM).

**Program Responsibilities and Accountabilities for LDCM**. LDCM is being jointly developed by NASA's Science Mission Directorate (SMD) and USGS for USGS's Land Remote Sensing Program. NASA and USGS established a memorandum of understanding (MOU) for collaborative programs in January 2000. The MOU sets forth the general terms and conditions under which NASA and USGS will coordinate and cooperate in implementing research and technology development activities. The MOU states that there shall be a separate Implementing Agreement for each project to define the specific interagency relationships and responsibilities with regard to the activity. For the LDCM Project, NASA is responsible for developing and launching the satellite, and USGS is responsible for mission operations, data collection and processing, and distributing land surface data to users.

However, neither NASA nor USGS has program-level responsibility for the Landsat Program. The agencies receive LDCM acquisition strategy directions through the Office of Science and Technology Policy[3] (OSTP) and congressional mandates.

The Project's pre-formulation phase of the acquisition life cycle began in 1999. By 2009, the LDCM Project had progressed to the formulation phase. LDCM's original acquisition schedule was driven by an aggressive launch readiness date (LRD) of July 2011 because time constraints were imposed to have the Project develop and launch a successor before Landsats 5 and 7 failed. However, after independent reviews identified high levels of risk as a result of the aggressiveness of LDCM's acquisition schedule, NASA rescheduled the LRD to December 2012 to reduce development risks. In fiscal years (FYs) 2007 and 2008, NASA awarded contracts for the Operational Land Imager (OLI), spacecraft, and Mission Operations Element (in coordination with USGS), and conducted the Mission Confirmation Review.

The total NASA New Obligation Authority for development and operations of LDCM was $624 million. For FY 2008, Congress appropriated $160.2 million for NASA's portion of work on LDCM. In NASA's FY 2009 budget request, NASA projected future budget needs of $139.4 million and $127.1 million for LDCM for FYs 2009 and 2010, respectively.

## Objectives

Our overall objective was to determine whether NASA's project management of LDCM had adequately addressed the risks associated with the acquisition strategy and the potential data gap between Landsats 5 and 7 and LDCM. Specifically, we determined whether

- the acquisition plan and subsidiary documents follow applicable interagency agreements, policies, regulations, and best practices;
- management has effectively identified, reported, and mitigated LDCM acquisition risks, to include implementation of an effective Earned Value Management System to improve management of cost and schedule risks; and
- LDCM will meet Congress's goals, as set forth in the Land Remote Sensing Policy Act of 1992, and the NASA Authorization Act of 2008.

See Appendix A for details of the review's scope and methodology, our review of internal controls, and a list of prior coverage.

[3] Congress established OSTP in 1976 with a broad mandate to advise the President and the Executive Office of the President on the effects of science and technology on domestic and international affairs and to lead interagency efforts to develop and implement sound science and technology policies and budgets.

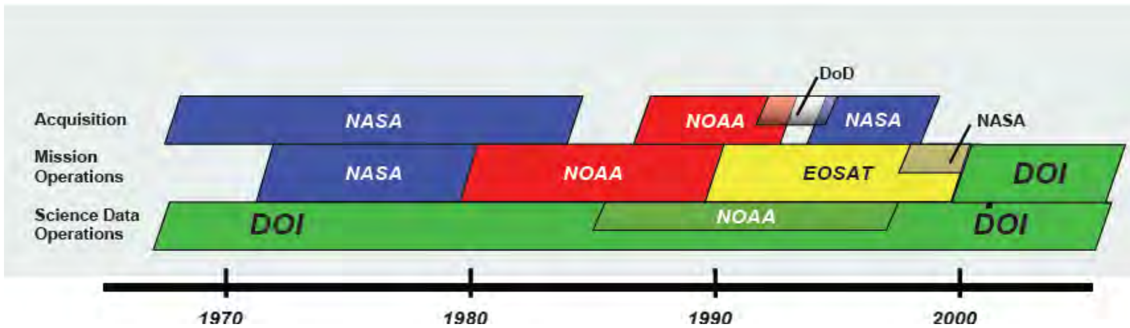
## FINDING A: LANDSAT'S ABILITY TO MEET CONGRESSIONAL GOALS IS HAMPERED BY A LACK OF ACCOUNTABILITY

The Land Remote Sensing Policy (LRSP) Act of 1992 mandates expedited procurement procedures to ensure Landsat data continuity. However, NASA spent more than 6 years in LDCM's pre-formulation phase (concept studies and acquisition planning). The delays in acquiring and launching the next Landsat satellite resulted primarily because no single Federal agency had operational program responsibility or accountability for the Landsat Program or for Landsat data continuity. As a result, the Landsat Program is not meeting the goals or intent of the LRSP Act of 1992. Specifically, Landsat 7—the only operational on-orbit source of complete global Landsat imagery—is operating in a degraded state and is likely to fail prior to LDCM reaching orbit, ending over 3 decades of Landsat data continuity.

### Landsat Management Responsibility and Acquisition Process Changed Periodically

Since the Program's inception, responsibility for acquisition, launch, and operations of Landsat satellites has been divided and moved among several Federal agencies and private industry (see Figure 2). The LRSP Act of 1992, section 401, directed NASA and DoD to develop and USGS and NOAA to operate Landsat 7. In addition to Landsat 7, the Act directed the agencies to assess various system development and management options for a satellite system to succeed Landsat 7. The 1992 Act also expressed a preference for "private-sector funding and management." In 1993, the National Science and Technology Council (NSTC) reassessed the joint NASA/DoD Landsat 7 development strategy in an attempt to minimize the potential for a data gap if Landsats 4 and 5 ceased to operate and to reduce costs and development risks. In May 1994, NSTC mandated the transfer of all Landsat 7 development responsibilities to NASA via Presidential Decision Directive NSTC-3, "Landsat Remote Sensing Strategy." The Directive also mandated that USGS and NOAA were responsible for satellite operations and data management. Landsat 7 launched in April 1999. In that same year, the initial acquisition planning began for Landsat 7's successor, LDCM.

**Figure 2: Generalized Timeline Schematic of Landsat Responsibility**




Source: USGS Report to the Committee on Earth Observation Satellites' Working Group on Collaboration & Validation (February 26, 2008).

On October 16, 2000, an amendment to the May 1994 Presidential Decision Directive transferred responsibility for Landsat operations and data management from NOAA solely to USGS. Thus, jointly, NASA, with development responsibilities, and USGS, with operations and data management responsibilities, began exploring various data acquisition strategies for Landsat 7's successor. However, neither NASA nor USGS was assigned Landsat Program-level responsibility. The agencies received LDCM acquisition strategy directions through OSTP and congressional mandates. The original LDCM acquisition plans called for NASA to purchase, from a commercially owned and operated satellite system, data that met LDCM specifications.

## LDCM Formulation Phase Delayed by Acquisition Strategy Indecision

LDCM Project management spent more than 6 years (FYs 2000-2006) and $54.2 million in the pre-formulation phase (concept studies and acquisition planning) of development. Given the 5-year projected life span of Landsat 7 and equivalent development time for LDCM, in order to prevent a potential gap in data continuity, the acquisition process should have commenced immediately after the launch of Landsat 7 in 1999. However, delays resulted as several alternatives for satisfying the LDCM mission objectives were considered, pursued, and rejected.

In FY 2000, NASA, in cooperation with USGS, began formulating LDCM as a commercial data buy from a vendor who would build, launch, and operate the satellites and charge users for the data. Within that context, the Government acquisition strategy of partnering with private industry was characterized by having both partners provide consideration for and receive benefit from the system once data was acquired. During formulation of the data buy procurement, NASA awarded two study contracts to develop preliminary designs for a system that would provide continuity of Landsat data. Following the delivery of the two preliminary designs, NASA requested proposals for implementation of the system and completion of the data buy procurement. Ultimately, however, NASA received only one proposal. After the proposal evaluation process was completed, the selection official, NASA's Associate Administrator for Earth Science, determined that acceptance of the proposal was not in the best interests of the Government, due to a lack of competition, and decided not to complete the data buy procurement.

Following the non-completion of the data buy procurement, in 2003, OSTP chartered an Interagency Working Group, chaired by the National Security Council and NASA, to study an implementation strategy for the Landsat Program. After a 9-month study, the Interagency Working Group recommended that land surface data be obtained by developing instruments for use aboard the National Polar-Orbiting Operational Environmental Satellite System (NPOESS). However, further technical evaluation determined that Landsat's instrumentation was not compatible with the NPOESS satellite configuration, and in December 2005, consideration of incorporating Landsat capabilities on NPOESS was discontinued. OSTP then directed NASA to pursue an independent satellite mission approach for Landsat. In early 2006, NASA began re-formulation of LDCM and notified industry that mission development would be openly competed. Following an extensive re-formulation of the mission during 2006 and early 2007, NASA initiated open competitions for the separate elements (spacecraft, instrumentation, launch vehicle, ground system) of LDCM.

In 2007, after more than 6 years of exploring and evaluating various strategies to meet Landsat data continuity requirements, OSTP directed NASA and USGS to use the same acquisition strategy for LDCM that was successfully used to develop and launch Landsat 7, wherein NASA builds and launches the satellite and USGS operates it, and mandated that the Final Implementation Agreement be commensurate with that strategy. Thus, the NASA/USGS Final Implementation Agreement for LDCM was not established until April 2007, more than 8 years after the launch of Landsat 7. In July 2007, in compliance with the OSTP mandate, NASA commenced the acquisition process with the procurement of LDCM's primary instrument, the Operational Land Imager (OLI).

**Initial Acquisition Schedule Driven by Aggressive Launch Readiness Date.** LDCM's original acquisition schedule was driven by an aggressive LRD of July 2011 with the goal of developing and launching a successor before Landsats 5 and 7 failed. During the Key Decision Point reviews to transition into Phase B of the Project Life Cycle,[4] LDCM's Standing Review Board (SRB)[5] determined that the LRD requirement of July 2011 drove the Project to baseline an extremely aggressive, high-risk schedule with no schedule reserve at the mission level. At the outcome of the Key Decision Point review, NASA estimated a more likely development schedule to launch, and delayed the LRD to December 2012. In September 2008, the results of the SRB's Independent Cost Review indicated that delaying the LRD from July 2011 to December 2012 increases the

[4] During Phase B, the project team completes its preliminary design and technology development, to include baselining the system-level requirements and developing the subsystem and lower-level technical requirements.

[5] The SRB's role is advisory to the program/project and the convening authorities and does not have authority over any program/project content. Its review provides expert assessment of the technical and programmatic approach, risk posture, and progress against the program/project baseline. When appropriate, it may offer recommendations to improve performance and/or reduce risk.

Project's life cycle cost estimate by $90.5 million (from $614.7 million to $705.2 million), but this LRD correlates with a 70 percent confidence level for achieving the launch date as the Project enters Phase B of the life cycle.

However, the Landsat Science Team,[6] in January 2008 had concluded that LDCM must be operational by March 2012 to observe the Northern Hemisphere growing season. The LRD of December 2012 conflicts with this user requirement and is far beyond the expected life span of Landsat 7. The latest technical assessment of Landsat 7's projected life expectancy approximates a 50 percent to 70 percent chance of the satellite experiencing a full system failure by December 2012. In the "NASA Report to Congress Regarding Landsat Data Continuity Mission (LDCM) Data Continuity," April 2008, NASA management states, "[b]oth Landsat 7 and Landsat 5 are presently experiencing technical problems and are expected to run out of fuel in late 2010.[7] Combine this with the most expedient development for LDCM and the outcome is that a Landsat data gap is inevitable."

## No Mandated Responsibility or Accountability for Landsat Data Continuity

The LRSP Act of 1992 mandates continuity in Landsat data collection—maintaining consistency with earlier Landsat systems in terms of spectral and spatial coverage. The Act states that continuous collection and utilization of land remote sensing data from space are of major benefit in studying and understanding human impacts on the global environment, in managing Earth's natural resources, in carrying out national security functions, and in planning and conducting many other activities of scientific, economic, and social importance. The Act further states that given the importance of the Landsat program to the United States, urgent actions, including expedited procurement procedures, are required to ensure data continuity.

The Act specifically directs NASA and USGS to assess various system development and management options for a satellite system to succeed Landsat 7. In addition to maintaining data continuity, the LRSP Act of 1992 mandates that the Landsat system should serve the civilian, national security, commercial, and foreign policy interests of the United States and incorporate system enhancements that may potentially yield a system that is less expensive to build and operates more responsively to user requests. One of the key objectives of LDCM is to make all Landsat-type data available at an affordable cost to ensure that the different sectors of the user community can utilize the data for high-quality research applications. However, in the 35-year history of the

[6] The Landsat Science Team comprises scientists and engineers selected to investigate and advise USGS and NASA on issues critical to the success of LDCM. The team combines USGS-based leadership, USGS and NASA agency scientists, and a group of external scientists and application specialists. The external members consist of principle investigators representing the larger Landsat science and applications community. The most common application appears to be estimating annual agricultural production and national and international forest area.

[7] In a subsequent report to Congress, "Report on Landsat Thermal Infrared Data Continuity," June 2009, NASA management states that because of fuel limitations, Landsat 7 may cease operating in 2013.

Landsat Program, no Federal agency has been directed or has chosen to adopt the operational program responsibility for Landsat data continuity and, thus, serve the Nation's land imaging needs.

The delays in acquiring and launching LDCM were primarily the result of no single Federal agency taking responsibility for Landsat data continuity. The indecision about LDCM's acquisition strategy was ultimately caused by a lack of ownership of, and dedication to, the continuation of Landsat missions. Although NSTC provided guidance for the continuance of Landsat 7 operations in its 1994 Presidential Decision Directive, NSTC divides responsibilities between NASA and USGS and does not clearly assign the program and associated funding to either agency. While the LRSP Act of 1992 states in its introduction that the purpose of the Act is "[t]o enable the United States to maintain its leadership in land remote sensing by providing data continuity for the Landsat program, to establish a new national land remote sensing policy, and for other purposes," no single Agency has been mandated responsibility or accountability for ensuring that the United States maintains that leadership role or that the Nation's future land imaging needs are met.

## Landsat Spacecraft Degradation and Ensuing Data Gap Ends Three Decades of Data Continuity

The Landsat Program is not meeting the goals or intent of the LRSP Act of 1992, as Landsat 7, the only present on-orbit source of complete global Landsat imagery, is operating in a degraded state. Specifically, on May 31, 2003, Landsat 7's scan line corrector (SLC), a subsystem of Landsat 7's primary instrument, the enhanced thematic mapper plus (ETM+), underwent a permanent failure, which caused a 22 percent loss of data on all future images from this system. May 2003 marked the end of more than 30 years of complete Landsat global coverage. Now, to create a full image, older data has to be overlapped onto newer imagery. Many users find this data unacceptable and have pursued other data sources, to include India's ResourceSat and China-Brazil Earth Resources Satellite; however, these sources are not capable of meeting all user needs. Landsat 5, which is more than 20 years beyond its design life and limited by subsystem degradation, has not been capable of providing complete global coverage since 1985 and cannot fill the data gap caused by the SLC failure. Further, Landsat 7 is likely to fail prior to LDCM reaching orbit.

NASA and USGS recognized the likelihood that both Landsat 5 and Landsat 7 will become inoperable before LDCM reaches orbit, resulting in a 100 percent data gap. Consequently, they formed the Landsat Data Gap Study Team to evaluate potential sources of data to fill the ensuing full data gap. The results of their evaluation indicate there is no replacement for all of the data that Landsat satellites provide. Other sources do not provide the inventory of global land surface over time at a resolution allowing human versus natural causes of change to be differentiated or global land observations on a seasonal basis. The Landsat Program is the only national or international program committed to preserving a consistent, long-term record of Earth's land surface at this resolution. Specifically, no other satellite or combination of satellites can provide the same baseline specifications (spectral bands, radiometry, spatial resolution, geographic registration, band-band registration, and geographic coverage) that Landsat provides. Our interviews with NASA users of Landsat data confirmed that, while several systems could meet special regional acquisition needs during some or all of the potential data gap period, no other satellite system is capable of providing annual global coverage. Thus, the use of other systems will only minimize the impact of the data gap, not close it.

Although the Landsat Data Gap Study Team has determined that at present "there is no substitute for Landsat," the team continues to conduct assessments of the viability of alternative data sources should Landsat 7 or Landsat 5 fail before LDCM is operational.

## Establishing a Long-Term Program to Meet Land Imaging Needs

The FY 2009 Omnibus Appropriations Act directed NASA "to develop, in cooperation with OSTP and USGS, a plan for a follow-on mission to LDCM consistent with the recommendations of the [NSTC] report, *A Plan for a U.S. National Land Imaging Program*."[8] This report calls for a continued U.S. commitment to moderate-resolution land imagery, recommends that the United States maintain a core operational capability for land imagery while supplementing its data with similar data from partners, and designates the Department of the Interior (DOI) as the host of the program. NSTC concluded that establishing the National Land Imaging Program (NLIP) would ensure a consistent planning and budgeting process for future land imaging missions and would "transition the Landsat program from a series of independently planned missions to a sustained operational program." The report also stated that NLIP would provide a mechanism to assess the land imagery needs of Federal agencies, state and local land management officials, scientists, and geographic researchers, and to translate those needs into the technical capabilities of future satellites.

In the judgment of NSTC and the stakeholder agencies it represents, Landsat operational program responsibility most appropriately fits within the mandate and objectives of USGS/DOI; and NASA, which has historically maintained a research, development, and applied science role in land remote sensing, should maintain that role. For example, a similar cross-agency cooperative agreement exists between NASA and the Department of Commerce for the execution of the Geostationary Operational Environmental Satellite (GOES) Program.[9] GOES operational program responsibility and funding authority falls under the Department of Commerce's NOAA. On June 15, 2007, NOAA and NASA signed a memorandum of understanding such that NOAA's GOES-R Program Office is fully responsible for all aspects of program management: acquisition strategy, funding, program-level systems engineering and integration, and scientific,

[8] Future of Land Imaging Interagency Working Group, Executive Office of the President, NSTC, *A Plan for a U.S. National Land Imaging Program* (Washington, D.C.: August 2007).

[9] The GOES Program develops and provides satellites that operate at a fixed position above the Earth's surface to collect and transmit environmental data used to forecast the weather. GOES-R is the next satellite in the series and scheduled for launch in FY 2015.

technical, and administrative support, while NASA's primary responsibility is to manage the development of the Flight Project, which includes spacecraft, launch services, instruments, and satellite integration. NOAA fully reimburses NASA for all resources used to support the GOES program. In its report, "Geostationary Operational Environmental Satellites: Acquisition Is Under Way, but Improvements Needed in Management and Oversight," April 2, 2009, the Government Accountability Office (GAO) noted that NASA and NOAA have made progress on the Program. DOI and NASA could benefit from the lessons learned in developing and executing the GOES Program and apply those lessons to NLIP implementation.

## Recommendations, Management's Response, and Evaluation of Management's Response

**Recommendation 1.** The Associate Administrator for SMD should develop a plan for continuous provision of Landsat-type data, should Landsat 7 and Landsat 5 become inoperable before LDCM is operational.

**Management's Response.** The Associate Administrator for SMD **c**oncurred with the recommendation, noting that, on the basis of USGS's further analysis of fuel usage for both Landsats 5 and 7, NASA officials believe that Landsat 7 has sufficient fuel to operate through 2012 and perhaps longer. He also noted that the Landsat Data Gap Study Team continues to conduct assessments of the viability of alternative data sources should Landsat 5 or 7 fail before LDCM data is available, and that NASA will coordinate with USGS to document a formal plan for the partial mitigation of the potential data gap by August 31, 2010.

**Evaluation of Management's Response.** We consider management's proposed action to be responsive. The recommendation is resolved and will be closed upon completion and verification of management's corrective action.

**Recommendation 2.** The Associate Administrator for SMD should assist in establishing the National Land Imaging Program, to include developing detailed plans for future Landsat acquisitions and agency funding responsibility for the program.

**Management's Response.** The Associate Administrator for SMD concurred with this recommendation. He added that NASA meets monthly with USGS to discuss implementation of the National Land Imaging Program, although full implementation by USGS is on hold pending legislation authorizing the program and appropriation of funds. Also, NASA intends to work with OSTP and USGS to plan for a follow-on mission to LDCM in time to inform the President's FY 2012 Budget Request, which is due to the Office of Management and Budget by September 1, 2010.

**Evaluation of Management's Response.** Management's proposed action is responsive. Based on actions taken and procedures in place, we have closed the recommendation.

# Finding B: Reinstatement of Thermal Imaging Increased Costs and May Further Delay Launch

On March 11, 2009, Congress directed NASA to reinstate Landsat's legacy thermal infrared imaging capability. In 2002, NASA management removed the thermal infrared imaging capability from the LDCM requirements baseline, disregarding the Landsat data continuity goals of the LRSP Act of 1992 and not adequately considering the user community's growing reliance on thermal imaging. LDCM Project management estimates that reinstating the capability this late in the Project's life cycle will result in spacecraft modification costs of $11 million to $20 million, and could cause further delays to an already significantly delayed mission.

## Importance of Thermal Imaging Increased for the Landsat Data User Community

The Land Remote Sensing Policy Act of 1992 directs Landsat Program management to "maintain data continuity." The Act defines "data continuity" as "the continued acquisition and availability of unenhanced data which are, from the point of view of the user, sufficiently consistent (in terms of acquisition geometry, coverage characteristics, and spectral characteristics) with previous Landsat data to allow comparisons for global and regional change detection and characterization." Spectral characteristics that are sufficiently consistent with previous Landsat data would include thermal spectral band imaging.

Since 1972, Landsat satellites have carried sensors that collect wide field-of-view images of the Earth's surface. Landsats 1 through 3 each carried both a Remote Beam Vidicon camera and a multispectral scanner subsystem instrument. Landsat 3, launched in 1978, marked the beginning of thermal image acquisitions on Landsat missions, and thermal imaging has been a function of Landsat satellites since then. One of the technical advancements made in 1982, for Landsat 4 and follow-on Landsat satellites, was the addition of the Thematic Mapper (TM) sensor. Analysts found that TM data significantly improved capabilities for recognizing and mapping land cover types and for detecting land cover change relative to multispectral scanner subsystem data. The TM sensor collected data for seven spectral bands, compared to the four multispectral scanner subsystem bands of Landsats 1 through 3. In addition, the TM sensor provided an improved spatial resolution relative to the multispectral scanner subsystem instruments, to include image data for a thermal spectral band sensitive to emitted radiation. The user community used images from the TM sensor thermal band to map and monitor the variation of surface temperatures across landscapes.

The user community's growing preference for TM data resulted in the next two Landsat satellites—Landsat 6 and Landsat 7—being built to carry single sensors that were close derivatives of the TM design. The Landsat 6 sensor, the Enhanced Thematic Mapper (ETM), was enhanced by the addition of a panchromatic band sensitive to all or most light in the visible spectrum and improved spatial resolution. Landsat 7 carries the Enhanced Thematic Mapper – Plus (ETM+) sensor; the "plus" refers to an improvement in the ground resolution of the thermal spectral band.

During FYs 2000 through 2007, while the implementation strategy for Landsat data continuity was being formulated, the Landsat 5 TM and Landsat 7 ETM+ sensors continued to provide users thermal spectral images, along with the data from the other spectral bands, and user community interest in thermal data increased. The increased use of thermal imagery was driven by multiple factors; specifically, the lowering of costs for Landsat images, removal of copyright restrictions on Landsat data, successful research in developing dependable processes for computing "evapotranspiration"[10] from satellite images, and the need for evapotranspiration data by state water resources entities such as the Idaho Department of Water Resources.

Western state and local governments found the high-resolution thermal imagery provided by Landsat 7 to be particularly useful in the early detection of water stress in crops and in tracking sediment and chemical transport in lakes and coastal waters. As coverage and estimates of water consumption became more reliable, local governments in many arid regions came to rely heavily on the thermal images and began to use thermal image data to improve their management of over-subscribed water resources.

The importance of thermal imaging to the user community was established and had been addressed in earlier Landsat satellites. NASA Procedural Requirements (NPR) 7123.1A, "NASA Systems Engineering Processes and Requirements," March 26, 2007, requires that NASA programs and projects analyze stakeholders (which includes relevant user communities) expectations using a process to establish a set of measures by which overall system or product effectiveness will be judged and customer satisfaction will be determined. Once established, the project is required to obtain commitments from stakeholders that the resultant set measures is acceptable. The process is then used to transform the baselined stakeholder expectations into unique, quantitative, and measurable technical requirements.

## NASA Removed Thermal Imaging Capability from LDCM Requirements

In 2002, NASA management removed the thermal imaging capability from the LDCM requirements baseline on the basis of contractors' recommendations even though Project management recommended retaining the capability. However, in removing the thermal

[10] USGS defines *evapotranspiration* as the water lost to the atmosphere from the ground surface, evaporation from the capillary fringe of the groundwater table, and the transpiration of groundwater by plants whose roots tap the capillary fringe of the groundwater table.

imaging capability, NASA management disregarded the Landsat data continuity goals of the LRSP Act of 1992 and the increasing reliance on the data by the user community. The thermal infrared spectral band is a legacy capability present on the last four successfully launched Landsat missions (Landsats 3, 4, 5, and 7), providing data dating back to 1978. Sufficient consistency with the data archive provided by previous Landsats allows effective monitoring of land and water usage and consumption trends, tracking of sediment and chemical transport, and research in "global and regional change detection."

**Contractors Recommend Exclusion of Thermal Capability.** In FY 2000, a year after the launch of Landsat 7, NASA, in cooperation with USGS/DOI, began formulation of LDCM as a commercial data buy. Early in the formulation process, NASA, in an attempt to commercialize Landsat development, awarded two study contracts to develop preliminary designs for a system that would provide data continuity. The contractors, as potential commercial partners with NASA, considered and analyzed various designs and took different approaches to a thermal instrument.

The first contractor proposed a cryo-cooler system, citing excellent performance but significant impact to the spacecraft's mass, power, propulsion, and possibly reflective instrument performance. The second contractor proposed a microbolometer-based system, citing anticipated adequate performance but with newer technology that was not flight proven in Earth remote sensing in a system whose 5-year reliability was unproven, and recommended that the capability only be included as a technology demonstration. Both contractors recommended that NASA not include the thermal capability unless classified as experimental (technology demonstration) with the admonition of "best performance within cost constraints."

The contractors were concerned with levying firm requirements on a microbolometer-based instrument because of its technological immaturity. However, reverting to mature technologies (active cryo-cooling) would have required significant re-baselining of the spacecraft architecture. Both study contractors indicated that the thermal imaging capability was not "commercially viable" and that the return on investment for thermal image data, based on their assessment of the limited number of users, was far too low for consideration. Because neither contractor had determined a customer base supporting commercial applications, both recommended NASA not include the thermal capability with current LDCM requirements.

**LDCM Project Management Recommends Inclusion of Thermal Capability.** In August 2002, LDCM Project management reported the results of these studies to the Associate Administrator for Earth Science[11] and recommended inclusion of the thermal capability on LDCM "as a technology demonstration with relaxed lifetime requirements." Project management stated that the "microbolometer-based instrument is the only viable LDCM approach" and "should be flight proven for Earth remote sensing missions." Project management also determined that the microbolometer approach had some flight

[11] The Science Mission Directorate was established in 2004 from the merger of the former Office of Space Science and Office of Earth Science.

heritage within NASA's Thermal Emission System aboard the Mars Odyssey mission spacecraft and reasoned that it was technically feasible with the current technology. LDCM Project management reported that the mass, power, schedule, and cost of the cryo-cooled instrument would result in significant impacts to mission and architectures. These findings were validated in a study by Goddard's Instrument Synthesis and Analysis Laboratory.

Despite LDCM Project management's analyses and recommendations, the Associate Administrator for Earth Science removed the thermal imaging capability from the LDCM requirements baseline on the basis of the assessments provided by the potential commercial partners. As Project formulation continued, further implementation approaches were explored for LDCM, including incorporating Landsat capabilities on NPOESS. The thermal imaging capability remained unsupported and unfunded. Since the development of NASA's FY 2002 budget, neither budget requests nor its appropriated budgets included funding for a thermal capability for LDCM. It was not again addressed until the FY 2007 budget, but "due to the expected high cost and low priority of the thermal capability relative to the other Landsat instrument spectral requirements,"[12] it was not included. Development of the FY 2008 budget also did not include funding for the thermal capability "due to the magnitude of the likely schedule impact that was indicated by the 2007 thermal development studies."[13]

## System-Level Requirements Change to Reinstate Thermal Capability Late in Acquisition Life Cycle

In 2007, congressional concerns "that the LDCM mission does not include a thermal infrared sensor to provide important data for surface and ground water information"[14] prompted NASA to initiate technical and programmatic studies on developing a thermal imaging capability. NASA's analyses indicated that the schedule for development of a thermal instrument would drive the overall LDCM mission schedule, delay the launch date significantly, and increase the potential Landsat data gap. Development of a thermal capability was estimated to take 48 months, plus an additional 9 months for satellite integration and testing.

In July 2007, NASA awarded the contract for LDCM's primary instrument, the Operational Land Imager (OLI), to Ball Aerospace and Technologies Corporation. During the preliminary phase of the OLI design, the LDCM Project office began procurement of the LDCM launch vehicle through the NASA Kennedy Space Center's Launch Services Program.

[12] "NASA Report to Congress Regarding LDCM Continuity," April 2008.

[13] "NASA Report to Congress Regarding LDCM Continuity," April 2008.

[14] FY 2008 Departments of Commerce and Justice, Science, and Related Agencies Appropriations Bill; Calendar No. 259, 110th Congress Report to Senate (June 29, 2007).

In May 2008, during the LDCM Project's life cycle reviews to transition into Phase B, the LDCM SRB expressed concerns with the possibility that, because the Project did not have system-level Spacecraft and Mission Operations requirements fully defined or signed by NASA and USGS, system-level requirements could change, resulting in technical, cost, and schedule impacts to mission execution. In addition, the SRB expressed concerns that the Project had a lingering requirement for the spacecraft to accommodate TIRS and continued to conduct feasibility studies to include the instrument on LDCM. The SRB stated, "continued requests for technical, cost, and schedule plans and estimates for adding the TIRS instrument distracts the Project leadership and engineering personnel from focusing on implementing the current baseline mission, which adds risk."

LDCM Project management had recognized the requirement for spectral data continuity and included it in the LDCM Technical, Schedule, and Cost Control Plan (May 5, 2008), mission requirements for LDCM. Specifically, both the Plan and the LRSP Act of 1992 state that the data acquired by LDCM shall be sufficiently consistent with that provided by Landsat 7 to allow comparisons for global and regional change detection and characterization. The NASA Authorization Act of 2008 (dated May 15, 2008) directed NASA to incorporate the thermal imaging capability on LDCM and provide the plan to Congress not later than 60 days after the date of enactment of the Act. Specifically, Section 205, "Landsat Thermal Infrared Data Continuity," states:

> In view of the importance of Landsat thermal infrared data for both scientific research and water management applications, the Administrator shall prepare a plan for ensuring the continuity of Landsat thermal infrared data or its equivalent, including allocation of costs and responsibility for the collection and distribution of the data, and a budget plan. As part of the plan, the Administrator shall provide an option for developing a thermal infrared sensor at minimum cost to be flown on the Landsat Data Continuity Mission with minimum delay to the schedule of the Landsat Data Continuity Mission.

Though TIRS development was under way, as of June 1, 2009, NASA had not provided a formal plan to Congress in response to the Act. However, the FY 2009 Omnibus Appropriations (PL 111-8) provided NASA $10 million to initiate development of TIRS and directed NASA to identify the earliest and least expensive development approach and flight opportunity for TIRS. In addition, NASA's American Recovery and Reinvestment Act program final plans (dated May 15, 2009) include funding for a Critical Design Review[15] of TIRS. As of June 10, 2009, a specific dollar amount had not been identified because the Agency is awaiting Congress' approval of its Operating Plan.

[15] The Critical Design Review demonstrates that the maturity of the TIRS design is appropriate to support proceeding with full-scale fabrication, assembly, integration, and test.

## Spacecraft Costs Increased as a Result of Late Changes to Requirements

In testimony before the Subcommittee on Space and Aeronautics on April 3, 2008, GAO highlighted cost and schedule risks resulting from requirement changes in NASA's Ares I Crew Launch Vehicle and the Orion Crew Exploration Vehicle Projects.[16] Likewise, the LDCM Project has incurred cost increases and may experience schedule delays associated with spacecraft modifications needed to accommodate a change in baseline, system-level requirements after NASA awarded the spacecraft contract. NASA awarded the firm-fixed price contract for the spacecraft in April 2008 through the Agency's Rapid Spacecraft Development Office (RSDO). At the time of award, LDCM Project management designed or "scarred" the spacecraft to account for the possible late addition of a microbolometer-based—not a cryo-cooled—thermal instrument. Yet, in August 2008, 4 months after award, NASA management made the decision to use the cryo-cooled TIRS instrument, which required a substantial redesign of the spacecraft in development. Consequently, spacecraft costs increased as a result of NASA-directed design changes.

Project management estimated that the addition of cryo-cooled thermal imaging capability to LDCM would cause spacecraft modification costs, which do not include any costs associated with the development of the TIRS instrument, of $11 million to $20 million and possible delays to an already delayed mission. However, historically, NASA has made changes to Project requirements, resulting in cost and schedule impacts. The following table illustrates NASA's RSDO spacecraft cost growth and launch readiness date (LRD) delays for similar projects with the respective reason or cause for each. Each projects' initial projection of cost and schedule was significantly less than the actual.

[16] Government Accountability Office. "NASA: Ares I and Orion Project Risks and Key Indicators to Measure Progress" (GAO-08-186T, April 3, 2008). Ares I and Orion Projects are being developed by NASA's Exploration Systems Mission Directorate under the Constellation Program.

| Table. Rapid Spacecraft Development Office Spacecraft Development History | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Spacecraft Development Cost ($ Millions)** | | | **Launch Readiness Date Delay (Months from Project Inception)** | | | |
| **Spacecraft** | **Estimate** | **Actual** | **Difference** | **Planned ATP** | **Actual ATP** | **Delay** | **Reason/Cause of Cost and Delay** |
| ICESat (Ice, Cloud, and Land Elevation Satellite) | $39.40 | $68.20 | **$28.80** | 41.0 | 60.0 | **19** | Technical changes/ adding mission operations scope, and GFE instrument delays |
| GLAST (Gamma-Ray Large Area Space Telescope) | $55.60 | $102.60 | **$47.00** | 48.5 | 70.0 | **21.5** | Immature spacecraft requirements definition when delivery order awarded |
| Swift (Gamma-Ray Burst Detecting Satellite) | $36.30 | $46.40 | **$10.10** | 46.7 | 58.3 | **11.6** | GFE instrument delays |
| NPOESS Preparatory Project | $75.35 | $153.87 | **$78.52** | 50.0 | 96.0 | **46** | Changes in capabilities and lateness of instruments |
| LDCM | $116.30 | TBD | **TBD** | 38.0 | TBD | **TBD** | **Change/adding instrument requirements after delivery order awarded** |

ATP - Authority to Proceed; GFE - Government furnished equipment.

Throughout the formulation phase of the acquisition, LDCM Project management briefed NASA management on the implementation risks of changing baselined system-level requirements and integrating a cryo-cooled thermal instrument after contract award. Specifically, Project management reported the following to Goddard and Agency Program Management Councils:

- Given that the cryo-cooled TIRS instrument design is too immature to enable detailed definition of the spacecraft interface in time to support the spacecraft development schedule, there is a possibility that there may be substantial spacecraft or TIRS redesign if the LDCM is directed to fly TIRS. The scarring of the spacecraft as defined in the contract is based on micro-bolometer technology, which did not involve cryo-cooler or larger than expected radiators.

- Latest TIRS design exceeds project-required volume and intrudes into the OLI field of view. Given that a TIRS instrument may be located within thermal line-of-sight of the OLI, there is a possibility of a significant redesign to the OLI thermal control system.

The Project's preliminary integrated master schedule indicates that the late manifestation of this requirement has resulted in TIRS having the latest delivery time of all mission elements and could therefore cause the entire LDCM Project schedule and launch to be delayed. Accordingly, on February 12, 2009, an independent review team was convened by the Earth Systematic Missions Program Manager. Their Assessment Summary, March 6, 2009, states that the TIRS development schedule is "very aggressive." However, the review team also reported that "[t]he plan presented showed that risk, cost and schedule are already being actively managed." The independent review team made several recommendations, to include the implementation of Earned Value Management for TIRS development and a plan to address funding for the instrument, to "increase the probability of a successful development effort meeting schedule and cost constraints."

## Recommendations, Management's Response, and Evaluation of Management's Response

**Recommendation 3.** The Associate Administrator for SMD should request an independent analysis of the impact on the spacecraft's development cost and schedule due to the late change of LDCM requirements.

**Management's Response.** The Associate Administrator for SMD concurred, stating that an independent analysis of LDCM's development cost and schedule will be conducted in preparation for Key Decision Point-C, scheduled for October 2009.

**Evaluation of Management's Response.** We consider management's proposed action to be responsive. The recommendation is resolved and will be closed upon completion and verification of management's corrective action.

**Recommendation 4.** The Associate Administrator for SMD should issue guidance affirming the need for Space Flight Programs and Projects to finalize system-level requirements prior to contract award.

**Management's Response.** The Associate Administrator for SMD concurred with our recommendation. He noted that the requirement to quantify technical and programmatic risks is codified in NPR 7120.5D, "NASA Space Flight Program and Project Management Requirements," March 6, 2007, and stated that SMD's Management Handbook, released in February 2008, affirms the need for all programs and projects to follow that NPR through all mission phases and further noted that risk management approach, risk identification, and risk mitigations will be critically evaluated at all major program/project reviews and key decision points. In addition, he stated that the thermal infrared sensor (TIRS) requirements issue was identified and purposely mitigated by structuring the LDCM spacecraft request for proposal so as not to preclude its late introduction.

**Evaluation of Management's Response.** We consider management's actions, specifically, issuance of the Management Handbook affirming the provisions of NPR 7120.5D, to be responsive, and the recommendation is closed.

**Recommendation 5.** The Associate Administrator for SMD should re-emphasize the provisions of NPR 7123.1A, "NASA Systems Engineering Processes and Requirements," which require that NASA programs and projects adequately consider stakeholder expectations and user community interests prior to contract award for development of any major mission element.

**Management's Response.** The Associate Administrator for SMD concurred with the recommendation, noting that SMD is committed to working with the stakeholder community to develop missions that are responsive to scientific and other needs, as detailed in the SMD Management Handbook, published in 2008, and consistent with NPR 7123.1A. He further noted that the decision to make fundamental changes to a mission (e.g., descopes, launch slips, or cancellations) resides with SMD management, not the program or project, taking into consideration all stakeholder expectations, including congressional direction, and community interest. For LDCM, the Landsat Science Team was specifically tasked to prioritize a thermal imaging capability vis-à-vis a launch readiness date and the higher priority was placed on an earlier launch readiness date.

**Evaluation of Management's Response.** The 2008 issuance of SMD's Management Handbook includes numerous mechanisms for working with stakeholders. In 2002, despite LDCM Project management's analyses and recommendations and stakeholder interest, the then-Associate Administrator for Earth Science removed the thermal imaging capability from the LDCM requirements baseline on the basis of assessments provided by potential commercial partners. Issuance of the SMD Management Handbook is consistent with NPR 7123.1A and adequately emphasizes SMD's commitment to working with the stakeholder community. We consider management's actions to be responsive, and the recommendation is closed.

# APPENDIX A

## Scope and Methodology

We performed this audit from August 2008 through August 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We gathered data and information from NASA Project personnel, NASA users of Landsat data, and external users to determine whether the Project was meeting, and would continue to meet, the intent, goals, and other provisions of the LRSP Act of 1992. We reviewed the NASA acquisition strategy used to acquire prior Landsats and compared it to the acquisition strategy for LDCM to determine whether there were any risks associated with the established acquisition and management processes. The acquisition strategy detailed in the acquisition plan was consistent with the memorandum of understanding between NASA and U.S. Geological Survey (USGS) for LDCM. The acquisition strategy also addressed the possibility that a thermal infrared sensor (TIRS) instrument might be incorporated onto the LDCM mission during the development phase, even though NASA initially decided to forego including the legacy thermal capability, contrary to the data continuity goals of the LRSP Act of 1992.

We obtained, reviewed, and summarized the applicable provisions of the Land Remote Sensing Policy (LRSP) Act of 1992, NASA Authorization Acts of 2008 and 2009, LDCM Project plan, and pertinent policy documents. We evaluated and compared the mission, objectives, and goals of the LDCM Project, as stated in the Project plan with the goals set forth in the LRSP Act of 1992 and the NASA Authorization Act of 2008. We interviewed Project personnel to determine whether the Project was meeting, and would continue to meet, the intent, goals, and other provisions of the Acts. We reviewed documentation of Landsat 7 Life Projections, the impact of the scan line corrector failure, and Landsat Data Gap Study Team analyses. We obtained Landsat data use information from external users' Web sites to determine how they are using Landsat data, the uniqueness of Landsat, and the importance of thermal imaging to their operations. We interviewed NASA users of Landsat data to determine if they could use sources other than Landsat for their needs and what sources they would use if Landsat 5 and Landsat 7 failed before LDCM's launch readiness date. We evaluated current projected milestones for LDCM and most likely time of failure for Landsat 5 and Landsat 7 to determine potential gap in image coverage. We interviewed Landsat Data Gap Study Team personnel and obtained supporting documentation to determine whether the team is adequately evaluating the feasibility of acquiring data from alternate data sources in the likely event of a gap in Landsat satellite coverage.

We obtained and reviewed the LDCM Project acquisition plan and related acquisition documentation. We compared the roles and responsibilities of management documented in the acquisition plan to those of the Interagency Agreement and NASA policies. We reviewed the NASA-USGS Interagency Agreement for LDCM to determine what changes have occurred in NASA's roles and responsibilities. We attempted to identify NASA and other agency projects that used the selected acquisition strategy and contract type. We reviewed the acquisition cost and development schedule for all elements of the LDCM Project. We reviewed the Earned Value Management System and data as it pertains to the OLI contract. We reviewed the results and recommendations of the LDCM Standing Review Board for the System Requirements Review, Mission Definition Review, and Preliminary Non-Advocate Review.

We obtained and reviewed the National Science and Technology Council (NSTC), an Executive Office of the President, "A Plan for a U.S. National Land Imaging Program," August 2007 report; "NASA Report to Congress Regarding Landsat Data Continuity Mission (LDCM) data Continuity," April 2008; and Presidential Decision Directive/NSTC-3 "Landsat Remote Sensing Strategy," May 1994; and other documentation to determine NASA's role regarding the various Landsat satellites. We interviewed NASA users of Landsat data to determine if NASA would be adversely impacted if Landsat became an operational program with DOI as the lead agency. We interviewed the USGS/DOI representative to determine the status of National Land Imaging Program (NLIP).

**Earned Value Management.** We found that management had implemented an effective Earned Value Management System to improve management of cost and schedule risks. LDCM Project management's Earned Value Management System, managed through the Defense Contract Management Agency, formally complied with the standards of the American National Standards Institute/Electronic Industries Alliance - 748 (ANSI/EIA-748), "Standard for Earned Value Management Systems," June 1998,[17] as required by NPR 7120.5D, "NASA Space Flight Program and Project Management Requirements," March 6, 2007. Project management also implemented Earned Value Management in accordance with the, "LDCM Project Plan," May 2008,[18] as required by NPR 7120.5D.

**Use of Computer-Processed Data.** We used computer-processed data for historical Rapid Spacecraft Development Office Spacecraft cost growth and LRD delays, which we verified to records maintained by the LDCM Deputy Resource Manager. We also used computer-processed data from Review Item Discrepancies (RIDs) tracked by Center management. We tracked each of the 28 RIDs and issues through the risk identification, reporting, and mitigation process. We believe the data to be reliable based upon our confirmation of spacecraft costs and tracked RIDs and issues.

[17] ANSI/EIA-748-B was published in June 2007.

[18] The Project also implemented the Earned Value Management System in accordance with the "Technical, Schedule and Cost Control Plan," May 5, 2008, a document referenced in the "LDCM Project Plan."

## Review of Internal Controls

We identified and tested LDCM acquisition processes for compliance with NASA's policies and procedures. We reviewed Goddard Space Flight Center (Goddard) procedures for controlling LDCM risks and for conducting critical milestone reviews of contractor performance. We found that LCDM Project management effectively identified, reported, and mitigated LDCM acquisition risks. Our review of the Project's internal controls found that Project management established a risk assessment process that complied with NASA Procedural Requirements (NPR) 8000.4, "Risk Management Procedural Requirements," April 25, 2002. As of February 5, 2008, Project management managed 19 unique review item discrepancies and 9 issues (a total of 28 unique risks), which they reported to Goddard management. We tracked the 28 risks through the risk identification, reporting, and mitigation process. The Project's Risk Management Board unanimously closed 8 of the 28 items, leaving 20 open or ongoing items to be addressed in Phase B of the Project's life cycle reviews. We did not identify any NASA internal control weaknesses

## Prior Coverage

During the last 5 years, the Government Accountability Office (GAO) and the NASA Office of Inspector General (OIG) have issued four reports of particular relevance to the subject of this report. Unrestricted reports can be accessed over the Internet at http://www.gao.gov (GAO) and http://oig.nasa.gov/audits/reports/FY09 (NASA).

Government Accountability Office

"Military Space Operations: Common Problems and Their Effects on Satellite and Related Acquisitions" (GAO-03-825R, June 2, 2003)

"NASA: Ares I and Orion Project Risks and Key Indicators to Measure Progress" (GAO-08-186T, April 3, 2008)

"Geostationary Operational Environmental Satellites: Acquisition Is Under Way, but Improvements Needed in Management and Oversight" (GAO-09-323, April 2, 2009)

National Aeronautics and Space Administration

Our office issued "More Stringent Entrance Criteria Needed for Project Life-Cycle Reviews" (Report No. IG-09-004, October 31, 2008). We determined that the Orion Project Office (Project Office) conducted a Phase A life-cycle review with a vehicle configuration (606 vehicle) that was not at the proper maturity level to proceed to Phase B. Specifically, a required engineering design analysis conducted prior to the life-cycle review disclosed that the vehicle configuration required a reduction in weight, power, and instrumentation. However, instead of delaying the Phase A life-cycle review until the correct vehicle configuration (607 vehicle) could be reviewed, the Project Office proceeded with a nonconforming vehicle. As a result, a significant portion of the vehicle configuration that eventually did proceed to Phase B did not receive the benefit of a Phase A life-cycle review, nor was it completely evaluated for compliance with requirements.

Our office also issued "Final Memorandum of NASA's Management of the Flight Project for the Geostationary Operational Environment Satellite Series-R Program" (Report No. IG-08-006, December 19, 2007). We determined that the responsible NASA Program Management Councils for the GOES-R Program was effectively reviewing project issues and progress and that NASA's GOES-R Flight Project Office had procedures and processes in place to adequately identify, mitigate, and report technical risks in accordance with NASA policy. However, we found that NASA's ability to effectively procure, manage, and execute the GOES-R Flight Project was impeded by the level of oversight provided by NOAA and Commerce. Specifically, increased management oversight by NOAA and Commerce delayed the release of requests for proposals for the GOES-R spacecraft. The delays were caused by Commerce implementing processes that were in conflict with the current memorandum of understanding (MOU) between Commerce and NASA, dated June 15, 2007. The MOU states that guidance for GOES-R Program processes will be derived from NASA Procedural Requirements (NPR) 7120.5D, "NASA Space Flight Program and Project Management Requirements," March 6, 2007. The process followed for the spacecraft request for proposal conflicted with NPR guidance and the resultant delays increased the risks to GOES-R Program development and the GOES-R launch schedule.

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# Presidential Documents

**Memorandum of January 16, 2009**

## Designation of Officers of the National Aeronautics And Space Administration To Act as Administrator

**Memorandum for the Administrator of the National Aeronautics and Space Administration**

By the authority vested in me as President by the Constitution and the laws of the United States of America, including the Federal Vacancies Reform Act of 1998, 5 U.S.C. 3345 *et seq.*, it is hereby ordered that:

**Section 1.** *Order of Succession.* Subject to the provisions of section 2 of this memorandum, the following officials of the National Aeronautics and Space Administration (NASA), in the order listed, shall act as and perform the functions and duties of the office of the Administrator of NASA (Administrator), during any period in which both the Administrator and Deputy Administrator of NASA (Deputy Administrator) have died, resigned, or otherwise become unable to perform the functions and duties of the office of Administrator, until such time as the Administrator or Deputy Administrator is able to perform the functions and duties of that office:

(a) Associate Administrator;

(b) Chief of Staff to the NASA Administrator;

(c) Director for Johnson Space Flight Center;

(d) Director for Kennedy Space Flight Center; and

(e) Director for Marshall Space Flight Center.

**Sec. 2.** *Exceptions.* (a) No individual who is serving in an office listed in section 1 in an acting capacity, by virtue of so serving, shall act as Administrator pursuant to this memorandum.

(b) No individual listed in section 1 shall act as Administrator unless that individual is otherwise eligible to so serve under the Federal Vacancies Reform Act of 1998.

(c) Notwithstanding the provisions of this memorandum, the President retains discretion, to the extent permitted by law, to depart from this memorandum in designating an acting Administrator.

**Sec. 3.** This memorandum is intended to improve the internal management of the executive branch and is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, it agencies, instrumentalities, or entities, its officers, employees, or agents, or any other person.

**Sec. 4.** You are authorized and directed to publish this memorandum in the *Federal Register*.

THE WHITE HOUSE,
*Washington, January 16, 2009*

[FR Doc. E9–1539
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Billing code 7510–13–M

of the United States

United States Government Accountability Office
Washington, DC 20548

**DOCUMENT FOR PUBLIC RELEASE**
The decision issued on the date below was subject to a GAO Protective Order. This redacted version has been approved for public release.

# Decision

**Matter of:** Honeywell Technology Solutions, Inc.

**File:** B-400771; B-400771.2

**Date:** January 27, 2009

David A. Churchill, Esq., Kevin C. Dwyer, Esq., Marc A. Van Allen, Esq., Jammey L. Kligis, Esq., Damien C. Specht, Esq., and Caroline A. Keller, Esq., Jenner & Block LLP, for the protester.
Lars E. Anderson, Esq., Paul A. Debolt, Esq., William L. Walsh, Jr., Esq., J. Scott Hommer, III, Esq., Peter A. Riesen, Esq., Patrick R. Quigley, Esq., and Justin J. Wortman, Esq. Venable LLP, for ITT Corporation, an intervenor.
Alexander T. Bakos, Esq., Laura M. Giza, Esq., John H. Eckhardt, Esq., and Pamela J. Werner, Esq., National Aeronautics and Space Administration, for the agency.
Louis A. Chiarella, Esq., and Christine S. Melody, Esq., Office of the General Counsel, GAO, participated in the preparation of the decision.

**DIGEST**

1. Post-closing time protest that awardee has an impermissible organizational conflict of interest (OCI) is untimely where (1) solicitation was issued on an unrestricted basis, (2) protester was aware of the underlying facts giving rise to the potential OCI (and knew awardee was participating in the procurement), and (3) in response to protester's inquiry, agency specifically informed protester that it did not believe awardee had an impermissible OCI.

2. Protest that awardee gained an unfair competitive advantage through its retention of a former agency official as a consultant will not be reviewed where the protester did not timely report the underlying alleged procurement integrity provision violation to the contracting agency within 14 days after the protester first discovered the possible violation, as required by GAO's Bid Protest Regulations.

3. Contracting agency engaged in meaningful discussions where the agency advised protester of specific weaknesses regarding its technical proposal; agency was not required to also afford the protester an opportunity to cure proposal defects first introduced either in response to discussions or in a post-discussion proposal revision.

4. Protest challenging the evaluation of offerors' technical proposals is denied where the record establishes that the agency's evaluation was reasonable and consistent with the evaluation criteria.

5. Protest challenging the agency's cost realism evaluation of awardee's proposed staffing levels is denied where the record demonstrates that the agency's conclusions were reasonable.

6. Protest challenging the evaluation of offerors' past performance is sustained where the record establishes that the agency's evaluation was not reasonable or consistent with the stated evaluation criteria.

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**DECISION**

Honeywell Technology Solutions, Inc., of Columbia, Maryland, protests the award of a contract to ITT Corporation -- Advanced Engineering & Sciences (ITT), of Herndon, Virginia, under request for proposals (RFP) No. NNG08218142R, issued by the National Aeronautics and Space Administration (NASA), Goddard Space Flight Center (GSFC), for space communications network services (SCNS). Honeywell argues that the agency's evaluation of offerors' proposals and subsequent source selection decision were improper. Honeywell also contends that the agency's discussions with the protester regarding its proposal were inadequate and misleading, that ITT had an impermissible organizational conflict of interest, and that by retaining a former NASA official as a consultant in violation of statutory procurement integrity provisions, ITT gained an unfair competitive advantage.

We sustain the protest regarding the agency's evaluation of ITT's past performance, and deny the remainder of the protester's allegations.

BACKGROUND

NASA is the federal agency responsible for the nation's public space program; it is also responsible for long-term civilian and military aerospace research. In furtherance thereof, the goal of the SCNS program is to support NASA's space and ground networks, which provide most of the communications for a wide range of NASA's science-based, earth-orbiting spacecraft, including the International Space Station, the Space Shuttle, the Hubble Space Telescope, and the Earth Observing System satellites, as well as space communications support for other government agencies and commercial customers. Contracting Officer's Statement, Nov. 24, 2008, at 5.

The SCNS program requirements are essentially twofold in nature: those relating to NASA's Space Network (SN), and those relating to the agency's Ground Network (GN). The SN is principally comprised of a fleet of on-orbit tracking and data relay satellites (TDRS) and an associated ground system consisting of space-to-ground link terminals that together provide space communication services to NASA and its customers. The SN services, involving an extremely large capital investment, government-owned/contractor-operated facilities, and continuous (24 hours a day/ 7 days a week) operational support of the TDRS and associated ground systems, were, together with overall program management, considered the "core requirements" of the SCNS program. The separate NASA GN consists of an orbital tracking network, a satellite laser ranging network, the very long baseline interferometry network, and associated facilities. The GN operational, maintenance, and sustainment services, involving a diverse mix of commercial and government assets, evolving geographic and technical customer requirements, and legacy systems, were to be performed on an "as needed" (task order) basis. Id. at 5-6; Statement of Work (SOW) at 00806.

The RFP, issued on January 16, 2008, contemplated the award of a contract with a cost-plus-award-fee element (for the core requirements) and a fixed-price, indefinite-delivery/indefinite-quantity (ID/IQ) element (for the task order requirements), for a period of 5 years together with two 1-year options. In general terms the solicitation required the successful offeror to provide the personnel, materials, and facilities necessary to perform all SCNS requirements as set forth in the SOW. RFP § C at 00611. The RFP established three evaluation factors in descending order of importance: mission suitability; cost; and past performance. The mission suitability factor was in turn comprised of four subfactors, their relative importance reflected in a point system: technical approach and understanding the requirement (technical approach) (400 points); management approach and compensation, and staffing (management approach) (450 points); safety and health (50 points); and small business utilization (100 points). The solicitation also established that the noncost factors, when combined, were significantly more important than cost. Award was to be made to the responsible offeror whose proposal was determined to represent the "best value" to the government, all factors considered. Id., § M at 00785-97.

Three offerors, including incumbent Honeywell and ITT, submitted proposals by the February 15 closing date. Offerors' submissions consisted of technical proposals, cost proposals, and responses to four representative task orders (RTO) (essentially sample task orders).[1] An agency selection evaluation board (SEB) evaluated offerors' proposals as to the noncost factors and subfactors using an adjectival rating system that was set forth in the RFP: excellent; very good; good; fair; poor; and with regard to the past performance factor, neutral.[2] The SEB also evaluated offerors' cost and price submissions. AR, Tab 40, Initial SEB Report.

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[1] Offerors were to submit a separate task implementation plan (TIP) and cost proposal for RTOs #1-3, and a study paper for RTO #4. Id., § L at 00744-45. The RFP established that RTO responses would be part of the evaluation of proposals under the technical approach subfactor. Id., § M at 00788-89.

[2] The SEB evaluated offerors' proposals as to the mission suitability factor and subfactors using a point and percentile scoring system. In accordance with NASA
(continued...)

The contracting officer decided that discussions with offerors were necessary, and established a competitive range consisting of the Honeywell and ITT proposals. The agency conducted discussions, followed by the offerors' submission of final proposal revisions (FPR) by August 25. NASA's final evaluation ratings of the Honeywell and ITT proposals were as follows:

| **Factor** | **Honeywell** | **ITT** |
| --- | --- | --- |
| Mission Suitability | | |
| Technical Approach | Excellent | Excellent |
| Management Approach | Good | Good |
| Safety and Health | Good | Good |
| Small Business Utilization | Excellent | Excellent |
| Overall | Very Good | Very Good |
| Past Performance | Very Good | Excellent |
| Total Evaluated Cost | $[DELETED] | $[DELETED] |

Id., Tab 80, Final SEB Report, at 23640, 23752.

The SEB subsequently briefed the source selection authority (SSA) regarding the various strengths and weaknesses in the offerors' proposals. Id., Tab 81, SEB Presentation to SSA. On October 6, after having received the final evaluation report and SEB presentation, the SSA determined that ITT's proposal was technically superior to that of Honeywell under both the mission suitability and past performance factors. Specifically, the SSA found that ITT had technical advantages over Honeywell in the areas of increasing efficiency of personnel, obsolescence avoidance, a detailed demonstration of systems engineering understanding, and a plan to provide reviews and assessments of SCNS tasks. The SSA also found that while both offerors possessed highly relevant past performance, ITT had a quality advantage relating to systems engineering and developmental tasks. The SSA then determined that ITT's higher technically-rated, higher-cost proposal represented the best value to the government. Id., Tab 82, Source Selection Decision. This protest followed.

DISCUSSION

Honeywell's protest raises numerous challenges to NASA's evaluation of offerors' proposals. First, the protester alleges that ITT had an impermissible organizational

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(...continued)
Federal Acquisition Regulation (FAR) Supplement § 1815.305(a)(3)(A) and the solicitation evaluation criteria, percentile scores were then converted into adjectival ratings based on pre-established percentile ranges. RFP § M at 00797; Contracting Officer's Statement, Nov. 24, 2008, at 15-16.

conflict of interest that the agency failed to recognize and take into account in its evaluation of proposals. Second, the protester contends that by the retention of a former NASA official as a consultant to the SCNS procurement allegedly in violation of the statutory procurement integrity provisions, ITT gained an unfair competitive advantage. Third, Honeywell argues that the agency's discussions with the firm regarding its technical proposal were inadequate and misleading. Fourth, Honeywell contends that the agency's evaluation of offerors' technical proposals was improper. Fifth, the protester alleges that the agency's evaluation of offerors' past performance was unreasonable. Lastly, Honeywell maintains that the agency's cost realism evaluation of ITT's proposal was unreasonable. As detailed below, we find that NASA's evaluation of ITT's past performance was improper. Although we do not specifically address all of Honeywell's remaining issues and arguments, we have fully considered all of them and find they provide no basis on which to sustain the protest.

Organizational Conflict of Interest

Honeywell protests that ITT had an impermissible organizational conflict of interest (OCI) based on unequal access to information.[3] The protester maintains that two senior ITT employees, R.C. and R.B.,[4] gained access to material, nonpublic information pertaining to both Honeywell and NASA during the course of performance of ITT's mission service program (MSP) system engineering support contract with GSFC (ITT's MSP contract included oversight of the predecessor contract with Honeywell). Honeywell alleges that, notwithstanding the existence of proprietary information exchange agreements (PIEA) between itself and ITT employees restricting the use and disclosure of Honeywell proprietary information, these individuals participated on behalf of ITT in the SCNS procurement. Because the unequal access to information OCIs were not avoided or mitigated, the protester argues, NASA could not properly award the SCNS contract to ITT. Protest, Oct. 20, 2008, at 36-47.

The agency issued the RFP on January 16, with a February 15 closing date for receipt of proposals. From November 2007 until February 15, 2008, Honeywell and ITT

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[3] An "unequal access to information" OCI occurs where a firm has access to nonpublic information as part of its performance of a government contract and where that information may provide the firm an unfair competitive advantage in a later competition for a government contract. See FAR § 2.101; Aetna Gov't Health Plans, Inc.; Foundation Health Fed. Servs., Inc., B-254397.15 et al., July 27, 1995, 95-2 CPD ¶ 129 at 12. Contracting officials are required to identify and evaluate OCIs as early in the acquisition process as possible. FAR § 9.504(a); Alion Sci. & Tech. Corp., B-297022.3, Jan. 9, 2006, 2006 CPD ¶ 2 at 5.

[4] Throughout this decision, we identify individuals by their initials rather than their full names.

engaged in a back-and-forth exchange regarding the PIEAs, the specific ITT employees, and whether any Honeywell proprietary information had been used by ITT in connection with the SCNS procurement. ITT Dismissal Request, Nov. 12, 2008, at 4-8. Additionally, on February 13, NASA responded to a prospective offeror's question regarding what had been done to ensure that ITT's access to Honeywell's methods of performing the predecessor contract did not create an unmitigated OCI. The agency explained in detail its determination that an OCI did not exist such that ITT should be precluded from competing on the SCNS procurement.[5] Id., attach. 7, Final RFP Questions and Responses. Honeywell then participated in the SCNS procurement, and filed its protest of the OCI issue after ITT was selected for award.

Under our Bid Protest Regulations, protests based upon alleged improprieties in a solicitation which are apparent prior to the time set for receipt of initial proposals must be filed prior to that time; similarly, alleged improprieties which do not exist in the initial solicitation but which are subsequently incorporated into the solicitation must be protested not later than the next closing time for receipt of proposals following the incorporation. 4 C.F.R. § 21.2(a)(1) (2008).

As a general rule, a protester is not required to protest that another firm has an impermissible OCI until after that firm has been selected for award. REEP, Inc., B-290688, Sept. 20, 2002, 2002 CPD ¶ 158 at 1-2. A different rule applies, however, where a solicitation is issued on an unrestricted basis, the protester is aware of the facts giving rise to the potential OCI, and the protester has been advised by the agency that it considers the potential offeror eligible for award. Abt Assocs., Inc., B-294130, Aug. 11, 2004, 2004 CPD ¶ 174 at 2; International Sci. & Tech. Inst., Inc., B-259648, Jan. 12, 1995, 95-1 CPD ¶ 16 at 3-4. In such cases, the protester cannot wait until an award has been made to file its protest of an impermissible OCI, but instead must protest before the closing time for receipt of proposals. Abt Assocs., Inc., supra.

Here, Honeywell's concerns that specific ITT employees were not abiding by the PIEAs and were improperly using its proprietary information on behalf of ITT in the SCNS procurement arose prior to the RFP closing date. Further, it is clear that Honeywell also knew that ITT was participating in the procurement and that the agency did not consider ITT to have an OCI that precluded it from receiving the award. Under these circumstances, Honeywell's protest is untimely because it was not filed prior to the closing date for receipt of proposals. Abt Assocs., Inc., supra.

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[5] For example, the agency informed offerors that only government employees, and not ITT personnel, had been given access to any Honeywell proprietary information. NASA also stated that ITT personnel were not involved in the development of the SCNS RFP and SOW, nor given access to sensitive information relating to the SCNS procurement. Id., attach. 7, Final RFP Questions and Responses.

Honeywell does not deny that it was aware of ITT's involvement in the SCNS procurement or NASA's determination regarding ITT eligibility for contract award prior to the initial closing date. Rather, the protester argues that it was not until February 15, after the submission of its initial proposal, that it became aware of all the relevant facts regarding ITT's OCI. As a result, Honeywell argues, its protest filed within 10 days of the post-award debriefing is timely. See 4 C.F.R. § 21.2(a)(2); Honeywell Dismissal Request Response, Nov. 17, 2008, at 7-12. We disagree.

The record shows that Honeywell was on notice, prior to the initial closing date, of the facts necessary to argue that ITT had an impermissible OCI. Moreover, even assuming that it was the additional February 15 correspondence from ITT that provided Honeywell with its basis for protest as the protester claims, Honeywell was then required to file its protest on this ground prior to the next closing time for receipt of proposals--being already aware both of ITT's participation and NASA's view that ITT could participate--which it did not do. See 4 C.F.R. § 21.2(a)(1).

Alleged Procurement Integrity Provision Violation and Unfair Competitive Advantage

Honeywell protests that ITT gained an unfair competitive advantage through the retention of a former NASA official as a consultant on the SCNS procurement, in violation of the statutory procurement integrity provisions. The protester alleges that ITT retained R.S., a former NASA deputy associate administrator whose supervisory position involved overseeing the developmental and operational elements of the SCNS SOW. Honeywell argues that because R.S.'s work for ITT violated applicable procurement integrity standards,[6] the awardee gained an unfair competitive advantage in the preparation of its proposal. Honeywell contends that the procurement integrity and conflict of interest issues involving R.S. so tainted the SCNS procurement that ITT should be disqualified from the competition. Protest, Oct. 20, 2008, at 47-51.

Both our Bid Protest Regulations and the statutory procurement integrity provisions require--as a condition precedent to our considering the matter--that a protester have reported the alleged violation to the contracting agency within 14 days after first becoming aware of the information or facts giving rise to the alleged violation. 41 U.S.C. § 423(g); 4 C.F.R. § 21.5(d). The 14-day reporting requirement affords the agency responsible for the procurement an opportunity to investigate alleged improper action during the conduct of an acquisition and, in appropriate

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[6] The procurement integrity provisions prohibit any present or former official of the United States, or a person who is acting or has acted for or on behalf of, or who is advising or has advised the United States with respect to a federal agency procurement, from knowingly disclosing contractor bid or proposal information or source selection information before the award of a federal agency procurement contract to which the information relates. 41 U.S.C. § 423(a).

circumstances, to take remedial action before completing the tainted procurement. See 41 U.S.C. § 423(e)(3); SRS Techs., B-277366, July 30, 1997, 97-2 CPD ¶ 42 at 2. Here, the agency and the intervenor argue that Honeywell's protest is untimely because Honeywell failed to raise R.S.'s perceived procurement integrity violation within 14 days of discovering the information on which the allegation is based. We agree.

It is clear from the record that Honeywell knew as of December 17, 2007, both that R.S. was assisting ITT in the SCNS procurement and of R.S.'s previous role at NASA. Specifically, at a NASA holiday party on December 17, 2007, R.S. informed Honeywell vice president W.F. that he was assisting ITT with its proposal for the SCNS procurement. The two individuals had known each other for many years, and W.F. was very familiar with R.S.'s prior role at NASA. ITT Dismissal Request, Nov. 12, 2008, attach. 8, Declaration of R.S., Nov. 12, 2008. Because the firm failed to report the perceived procurement integrity violation regarding R.S. to the contracting agency within 14 days of this date, we conclude that Honeywell's protest is untimely.

Honeywell does not dispute that the December 17, 2007 conversation took place between its vice president and R.S. Rather, Honeywell argues that, even though it did not report the procurement integrity allegations concerning R.S. to the contracting agency within 14 days, its protest nevertheless is timely to the extent Honeywell argues that ITT gained an unfair competitive advantage by retaining R.S. The protester contends that GAO's standard of review focuses on whether an unfair competitive advantage has been created, and not whether a procurement integrity violation has been established. Honeywell Response to Dismissal Request, Nov. 17, 2008, at 2-3, citing PRC, Inc., B-274698.2, B-274698.3, Jan. 23, 1997, 97-1 CPD ¶ 115.

Our decision in PRC does not support the protester's position here. In PRC, we stated that the issue of whether an individual violated procurement integrity standards is not by itself determinative of whether the individual's employer obtained an unfair competitive advantage. Rather, it is also necessary to determine whether any action of the former government employee may have actually resulted in prejudice for, or on behalf of, the awardee during the award selection process. In doing so, we typically consider whether the former government employee had access to competitively useful inside information, as well as whether the former government employee's activities with the firm were likely to have resulted in a disclosure of such information. These are the same questions to be considered in reviewing an allegation that an individual violated procurement integrity provisions. Guardian Techs. Int'l, B-270213 et al., Feb. 20, 1996, 96-1 CPD ¶ 104 at 6. Our decision in PRC thus recognizes the critical nexus between these two allegations -- that a procurement integrity violation occurred, and that the violation resulted in prejudice during the procurement at issue. This nexus is evident in this case, where Honeywell's assertion that ITT gained an unfair competitive advantage is premised on the alleged underlying procurement integrity violations.

In sum, because Honeywell knew R.S. was assisting ITT with the SCNS procurement as of December 17, 2007, and failed to report the perceived procurement integrity violation to NASA within 14 days thereof, we will not review the matter now, consistent with the requirements of the statutory procurement integrity provisions, 41 U.S.C. § 423(g), as reflected in our Bid Protest Regulations, 4 C.F.R. § 21.5(d).

Lack of Meaningful Discussions

Honeywell protests that the agency failed to conduct meaningful discussions by failing to raise the one technical weakness it found in Honeywell's FPR.

As set forth above, the RFP contained four RTOs that offerors were to address in their technical proposals, either by the submission of a TIP and cost proposal (RTOs #1-3) or a study paper (RTO #4). RTO #1 concerned a new space-to-ground link terminal (SGLT) at the White Sands Complex, New Mexico. The RFP informed offerors that as part of an effort to ensure adequate SN grounds systems resources were available, a project to develop a new SGLT was being initiated. The stated task requirement was for the contractor to complete the first phase of the new SGLT project, including planning, definition of the architecture, operations concepts, requirements, external interfaces, and preliminary design. RFP, RTO #1, at 01245. The solicitation also informed offerors that a TIP submission was to include, at a minimum, the technical approach for the specific requirements of the task, identification of potential technical challenges, identification and mitigation of risks, and a detailed description of any assumptions made in the response. SOW at 00845.

Honeywell submitted its TIP for RTO #1 as part of its initial proposal. AR, Tab 13, Honeywell Initial Proposal (Mission Suitability), at 2021-47. The SEB rated Honeywell's initial proposal, including RTO responses, excellent under the technical approach subfactor, and identified a total of seven strengths and two weaknesses supporting its determination. Id., Tab 40, Initial SEB Report, at 09941-47. Both of the technical approach weaknesses identified in Honeywell's initial proposal concerned its RTO #1 TIP. The SEB first found that Honeywell's RTO #1 response did not identify certain specific noteworthy risks associated with the completion of the RTO #1 requirement. Second, the agency evaluators found that Honeywell's RTO #1 TIP contained various questionable assumptions. Id. at 09946-47. It is the second of the identified weaknesses that is the subject of Honeywell's protest here.

NASA then conducted discussions with Honeywell and informed the offeror of both identified technical approach weaknesses. With regard to the second weakness, the agency stated, "Honeywell's RTO #1 response contains the following questionable assumptions, which require clarification and/or substantiation, or should be corrected and their impact on the RTO be addressed," and then identified the specific assumptions the agency evaluators had questioned. Id., Tab 43, NASA Discussions with Honeywell, at 10143.

Honeywell addressed the agency's discussion topics as part of its FPR. The offeror's FPR included a "highlighted" version that specifically indicated those portions of its revised proposal that had been changed (either added or deleted). The SEB considered Honeywell's discussion responses as part of the evaluation of the offeror's revised proposal, and determined that Honeywell had remedied both originally-identified weaknesses. Specifically, with respect to the second weakness--that Honeywell's RTO #1 TIP contained various questionable assumptions--the SEB found the offeror's revised proposal had adequately addressed each assumption. Id., Tab 80, Final SEB Report, at 23649-50.

The SEB determined, however, that Honeywell's FPR contained a new weakness, namely that the offeror's response demonstrated an inadequate understanding of the requirements analysis, trade study execution and analysis, and requirements identification aspects of the systems engineering process. Id. at 23647-48. Each of the findings on which the SEB based its determination of the new weakness in Honeywell's FPR resulted from the new (i.e., highlighted) sections in the offeror's revised proposal. Id., Tab 46, Honeywell's FPR, at 10663-80. For example, Honeywell's assertion that the candidate architecture could be interfaced with the legacy antenna interconnect mechanisms was a new section in the offeror's revised proposal, as was Honeywell's assertion that a to-be-completed upgrade to the White Sands Complex local area network would have sufficient margin to support the requirements for the new SGLT. Id. at 10674-75, 10680.

Although discussions must address deficiencies and significant weaknesses identified in proposals, the precise content of discussions is largely a matter of the contracting officer's judgment. See FAR § 15.306(d)(3); American States Utils. Servs., Inc., B-291307.3, June 30, 2004, 2004 CPD ¶ 150 at 6. When an agency engages in discussions with an offeror, the discussions must be "meaningful," that is, sufficiently detailed so as to lead an offeror into the areas of its proposal requiring amplification or revision. Hanford Envtl. Health Found., B-292858.2, B-292858.5, Apr. 7, 2004, 2004 CPD ¶ 164 at 8. Where proposal defects are first introduced either in a response to discussions or in a post-discussion proposal revision, an agency has no duty to reopen discussions or conduct additional rounds of discussions. L-3 Commc'ns Corp., BT Fuze Prods. Div., B-299227, B-299227.2, Mar. 14, 2007, 2007 CPD ¶ 83 at 19; Cube-All Star Servs. Joint Venture, B-291903, Apr. 30, 2003, 2003 CPD ¶ 145 at 10-11.

We conclude that NASA's discussions with Honeywell were meaningful. As set forth above, the discussions expressly informed Honeywell of the specific weaknesses that the SEB had identified in the offeror's initial proposal. Further, the record clearly reflects that the specific significant weakness which Honeywell claims that NASA failed to mention in discussions was first introduced in Honeywell's post-discussions FPR and was not part of its initial proposal. As a result, NASA had no obligation to conduct additional rounds of discussions in order to permit the offeror to address this matter. See L-3 Commc'ns Corp., BT Fuze Prods. Div., supra.

Honeywell argues that the agency's discussions were misleading in that NASA affirmatively asked the protester to provide further detail substantiating its conceptual design and then held the submission of additional substantiation against it in the evaluation of its FPR. Protest, Nov. 4, 2008, at 29-30; Protest, Dec. 4, 2008, at 4, 9-12. We disagree. As set forth above, the agency's discussion with Honeywell stated, "RTO #1 response contains the following [six] questionable assumptions, which require clarification and/or substantiation, or should be corrected and their impact on the RTO be addressed." AR, Tab 43, NASA Discussions with Honeywell, at 10143 (emphasis added). The agency did not demand additional substantiation as the protester claims, but left the method of remedying the identified questionable assumptions to the offeror. Moreover, the record indicates it was not that Honeywell provided additional substantiation per se, but the kind of substantiation provided (i.e., premature architecture design decisions without recognition of the role to be played by trade studies and analysis), on which the SEB based its finding of a new weakness.

Honeywell also argues that NASA's discussions were inadequate because the agency failed to disclose its primary concern that Honeywell's RTO #1 TIP described its notional design in "too much" detail. Protest, Dec. 4, 2008, at 4-9. We disagree. It is clear from the record that the SEB's primary concern was that Honeywell's revised RTO #1 TIP described design approaches without adequate planning for trade studies, analysis, requirements traceability and/or requirements identification. It is also clear that, to the extent Honeywell was prematurely proposing a notional design at an early development stage without adequate planning, this was not part of the offeror's initial proposal. The protester fails to explain how the agency's discussions were inadequate by failing to disclose a weakness that did not then exist in Honeywell's proposal.

Honeywell also alleges that its revised proposal made no substantive changes to the level of detail regarding its concept design for the new SGLT. Honeywell points to various functional block diagrams of its subsystem architectures that were in both its initial proposal and FPR. The protester argues that because no changes were made to the level of detail provided in the offeror's FPR, the agency's "new weakness" must have existed originally (and thus the discussions were not meaningful). Protest, Dec. 4, 2008, at 4-9. Again, we disagree. The record clearly reflects that it was not the functional diagrams in Honeywell's proposal that were the basis for NASA's determination of a new weakness. Rather, it was various narrative sections that Honeywell added to its FPR which the agency found indicated inadequate systems engineering understanding.

Evaluation of Technical Proposals

Honeywell also protests the agency's evaluation of offerors' proposals under the mission suitability factor. Although we do not address all of Honeywell's challenges to the agency's evaluation of technical proposals, we have considered them all and find they do not provide a basis on which to sustain the protest.

Honeywell first maintains that the agency's evaluation of its RTO #1 TIP was flawed. In this regard, the SEB rated Honeywell's initial proposal as "excellent" under the technical approach subfactor, and considered as a strength that Honeywell's RTO #1 TIP demonstrated a sound understanding of the systems engineering processes required to build the RTO #1 SGLT. AR, Tab 40, Initial SEB Report, at 09944. The SEB also rated Honeywell's FPR as "excellent" under the technical approach subfactor. As detailed above, however, the agency evaluators found as a weakness that Honeywell's revised RTO #1 TIP demonstrated an inadequate understanding of systems engineering processes. The SEB also documented the specific technical findings (e.g., single antenna, LDRS and HDRS input and output ports, disconnect backup inputs, and WSC LAN capacity) on which it based its conclusion. Id., Tab 80, Final SEB Report, at 23647-48.

In reviewing an agency's evaluation, we will not reevaluate technical proposals; instead, we will examine the agency's evaluation to ensure that it was reasonable and consistent with the solicitation's stated evaluation criteria and procurement statutes and regulations. Urban-Meridian Joint Venture, B-287168, B-287168.2, May 7, 2001, 2001 CPD ¶ 91 at 2. An offeror's mere disagreement with the agency's evaluation is not sufficient to render the evaluation unreasonable. Ben-Mar Enters., Inc., B-295781, Apr. 7, 2005, 2005 CPD ¶ 68 at 7. Our review of the record shows the agency's evaluation here to be unobjectionable.

In its initial protest Honeywell argued that NASA was factually mistaken about the specific technical criticisms on which it based its determination of inadequate systems engineering understanding.[7] Protest, Oct. 20, 2008, at 25-28. The agency report to our Office addressed the SEB's technical findings regarding Honeywell's RTO #1 TIP, AR, Nov. 24, 2008, at 18-22, and Honeywell's comments did not refute NASA's technical findings. Instead, the protester now argues the agency is simply "making a mountain out of a molehill" and contends that the details identified by the agency do not need be resolved in the TIP but during the risk management phase of the project life-cycle. Protest, Dec. 4, 2008, at 16. The protester essentially acknowledges the factual accuracy of NASA's particular criticisms of Honeywell's RTO #1 TIP but now tries to minimize their importance.

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[7] Honeywell also protests that it was improper for NASA to evaluate the offeror's RTO #1 TIP for the application of systems engineering processes because this was not stated as an evaluation criterion. Protest, Dec. 4, 2008, at 15-16. We find this basis of protest to be untimely. Honeywell knew from the October 15 debriefing that the agency had evaluated RTO #1 TIP for the application of systems engineering processes, and failed to raise this protest ground within 10 days. See 4 C.F.R. § 21.2(a)(2).

Based on the record here, we conclude that NASA had a reasonable basis on which to conclude that Honeywell's revised proposal demonstrated an inadequate understanding of systems engineering processes. It is clear that the SEB's conclusion that Honeywell lacked an adequate understanding of systems engineering process was reasonably based not only on technical flaws in Honeywell's TIP, but also on the offeror's decision to propose design solutions without adequate appreciation of the trade studies, analysis, requirements analysis, and requirements identification functions.

Honeywell also argues the agency's evaluation of its RTO #1 TIP was unreasonable because it was inconsistent with the SEB's initial findings. Protest, Dec. 4, 2008, at 12-14. The fact that a final evaluation differs from an initial evaluation does not establish that it is unreasonable, particularly where, as here, the final evaluation is based on a revised proposal. In making its argument here, Honeywell ignores the fact that its FPR, including its RTO #1 TIP, was not the same as its initial one. Quite simply, the record shows that the agency had a valid basis for reaching a different conclusion regarding Honeywell's understanding of systems engineering processes based on the evaluation of a different, final proposal.

Honeywell also argues that NASA's evaluation of offerors' technical proposals involved disparate treatment. Specifically, Honeywell points to the fact that ITT's proposal was found to have strengths in the areas of obsolescence avoidance, process improvements, staffing and recruitment, and teaming with small disadvantaged businesses. The protester argues that its proposal was equal to ITT's in these specific areas but did not receive similar strengths. We have reviewed the protester's assertions of disparate treatment and find they do not provide a basis on which to sustain the protest.

For example, the RFP established that the technical approach subfactor would include evaluation of the "merit of any new or innovative methods, techniques or technologies, and/or process improvements which are proposed" by the offerors. RFP § M at 00787. The SEB found that ITT's proposal merited a strength as to process improvements. AR, Tab 80, Final SEB Report, at 23657 (internal citations omitted). With regard to Honeywell, the agency determined that its proposed process improvements met the RFP requirements but did not merit a strength. AR, Tab 80, Final SEB Report, at 23643-47.

It is a fundamental principle of federal procurement law that a contracting agency must treat all offerors equally and evaluate their proposals evenhandedly against the solicitation's requirements and evaluation criteria. Rockwell Elec. Commerce Corp., B-286201 et al., Dec. 14, 2000, 2001 CPD ¶ 65 at 5; CRAssociates, Inc., B-282075.2, B-282075.3, Mar. 15, 2000, 2000 CPD ¶ 63 at 5.

Our review of the record confirms that the agency evaluated offerors' proposals equally with regard to proposed process improvements, and that the difference in evaluation ratings here was not the result of unequal treatment by the agency but instead stemmed from the agency's recognition of differences in the offerors' proposals. NASA reasonably determined that ITT's proposal included several specific process improvements which were found to have merit (i.e., effective means of increasing the likelihood of successful contract performance). By contrast, the agency reasonably found Honeywell's proposed process improvements were generic ones, lacking in specificity or detail. In light of the differences between the offerors' proposals, we find no merit to the protester's assertion of disparate treatment here.[8]

Honeywell also argues that NASA's evaluation of proposals in the area of staffing and recruitment was disparate. The protester maintains that one of the strengths that ITT received was based on its perceived ability to recruit Honeywell's incumbent personnel.[9] Honeywell argues that by currently employing [DELETED] percent of the staff required for the SCNS contract, it had already solved the recruitment problem and should have received an equivalent strength. Protest, Dec. 4, 2008, at 45-48.

We need not resolve this issue because we find that Honeywell has not demonstrated it was prejudiced by any alleged disparate treatment.[10] Competitive prejudice is an essential element of a viable protest; where the protester fails to demonstrate that, but for the agency's actions, it would have had a substantial chance of receiving the award, there is no basis for finding prejudice, and our Office will not sustain the protest. Joint Mgmt. & Tech. Servs., B-294229, B-294229.2, Sept. 22, 2004, 2004 CPD ¶ 208 at 7; see Statistica, Inc. v. Christopher, 102 F.3d 1577 (Fed. Cir. 1996). Here, Honeywell and ITT both received ratings of "good" under the management approach subfactor. Although ITT's recruiting plan was considered a strength by the SEB, the SSA did not find this aspect of ITT's proposal to be a discriminator between the offerors as to management approach subfactor, or rely on it in his best value tradeoff determination. AR, Tab 82, Source Selection Decision, at 23855. Given that there is no evidence in the record that this aspect of ITT's proposal affected the agency's

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[8] We find the agency's evaluation of offerors' proposals as to obsolescence avoidance plans also did not involve unequal or disparate treatment.

[9] The SEB stated that, "ITT proposes the use of a corporately-funded pool for key incumbent recruitment bonuses. This is an effective incentive tool that increases ITT's ability to capture mission-critical incumbent personnel and thereby enhances ITT's potential for successful contract performance." AR, Tab 80, Final SEB Report, at 23664.

[10] Honeywell's assertions that the evaluation of offerors' SDB teaming agreements was disparate, and that the evaluation of ITT's proposal with regard to "partnership meetings" was flawed, Protest, Dec. 4, 2008, at 61-63, similarly fail for lack of any apparent prejudice.

source selection determination, we see no basis to conclude that Honeywell was prejudiced in any way by the alleged disparate treatment.

Honeywell also protests that NASA's evaluation of technical proposals was improper by failing to recognize its various advantages as the incumbent (e.g., staff, physical facilities, in-place systems and processes), as well as the risks associated with transition to ITT. Protest, Oct. 20, 2008, at 10-17; Protest, Dec. 4, 2008, at 42-52. We have reviewed each of the protester's assertions in this regard and conclude that the agency's evaluation was reasonable and consistent with the stated evaluation criteria. For example, NASA recognized as strengths various features associated with Honeywell's incumbent status; the agency also determined that ITT's phase-in plan was detailed and proactive, recognized risks, and proposed risk mitigation strategies. AR, Tab 80, Final SEB Report, at 23644, 23658. To the extent Honeywell argues that NASA did not give enough consideration to the advantages of incumbency or the risks of transition, this amounts to mere disagreement with the agency's evaluation of proposals, which does not make the evaluation unreasonable.

Cost Realism Evaluation of ITT's Proposal

Honeywell protests that NASA failed to perform a reasonable cost realism evaluation of ITT's proposal. Specifically, the protester argues that the agency failed to reasonably evaluate the cost realism of ITT's staffing levels for the SCNS core requirements, which were dramatically lower than the amounts proposed by incumbent Honeywell. The protester argues that a proper cost realism evaluation would have resulted in upward adjustments to ITT's proposed costs, thereby increasing the evaluated cost difference between the two offerors' proposals.[11]

The RFP established that the agency would evaluate offerors' cost proposals for the core requirements (and RTO submissions) for cost realism.[12] RFP § M at 00800.

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[11] Honeywell originally protested NASA's cost realism evaluation of ITT's proposal was also unreasonable insofar as the awardee had understated the costs associated with putting into place the necessary infrastructure that incumbent Honeywell already possessed. Protest, Oct. 20, 2008, at 35-36. NASA specifically addressed this protest issue in its report to our Office, AR, Nov. 24, 2008, at 40-41, and Honeywell's comments offered no rebuttal of the agency's position. Comments, Dec. 4, 2008, at 17-32. Where, as here, an agency provides a detailed response to a protester's assertions and the protester does not respond to the agency's position, we deem the issue abandoned. Remington Arms Co., Inc., B-297374, B-297374.2, Jan. 12, 2006, 2006 CPD ¶ 32 at 4 n.4; L-3 Commc'ns Westwood Corp., B-295126, Jan. 19, 2005, 2005 CPD ¶ 30 at 4.

[12] The RFP also required the SEB to consider and, if necessary, adjust an offeror's overall mission suitability score based on any cost realism deficiency. For example, a cost realism deficiency (measured by the difference between the proposed and (continued...)

Separately, under the mission suitability evaluation factor, the solicitation also established that NASA's technical evaluation of proposals would include consideration of whether the resources proposed were consistent with the offeror's proposed efforts: if an offeror's proposal demonstrated a lack of "resource realism," it would be evaluated as demonstrating a lack of understanding of, or commitment to, the SCNS requirements. Id. at 00786.

ITT's initial proposal proposed a total staffing of [DELETED] full time equivalents (FTE) for the SCNS core requirements--[DELETED] FTEs for program management and [DELETED] FTEs for the SN requirements.[13] AR, Tab 27, ITT Initial Proposal (Mission Suitability), at 06046. The SEB considered ITT's staffing for program management staffing and certain SN requirements to be insufficient.[14] Id., Tab 40, Initial SEB Report, at 09960, 10034. NASA's subsequent discussions with ITT included concerns regarding the adequacy of the offeror's core requirements staffing levels. Id., Tab 44, NASA Discussions with ITT, at 10189-90. In its FPR, ITT increased its staffing for its core requirements. Specifically, ITT now proposed a staffing level of [DELETED] FTEs--[DELETED] FTEs for program management and [DELETED] FTEs for the SN requirements--and a total of [DELETED] labor hours.[15] AR, Tab 60, ITT FPR (Mission Suitability), at 17619-20, 17635. Like its original proposal, ITT's FPR included bases of estimate (BOE) from all the offeror's team

(...continued)
evaluated cost, excluding fee) of 0-9.99 percent would result in 0 point adjustment to the offeror's mission suitability score, while a cost realism deficiency of 10-14.99 percent would result in a 50 point adjustment to the offeror's overall mission suitability score. Id. at 00798.

[13] We note that ITT's initial proposal represented, in other places, a staffing level of [DELETED] FTEs for the SN requirements and [DELETED] FTEs for all core requirements. See AR, Tab 29, ITT Initial Proposal (Mission Suitability), at 06176. The agency's evaluation of ITT's initial proposal was based on the lower ([DELETED] FTE) figure. AR, Tab 40, Initial SEB Report.

[14] For example, the SEB believed that the size and complexity of the SCNS contract would require [DELETED] FTEs for program management. Id., Tab 40, Initial SEB Report, at 09960.

[15] ITT's revised proposal also indicated an additional [DELETED] FTEs in indirect labor for SCNS program management. AR, Tab 60, ITT's FPR (Mission Suitability), at 17619. Honeywell's staffing level, by comparison, was [DELETED] FTEs for Year 1, [DELETED] FTEs for Year 2, [DELETED] FTEs for Year 3, similar levels for Years 4-7, and a total of [DELETED] labor hours for the core requirements. AR, Tab 47, Honeywell FPR (Cost), at 11128, 11132. The difference in total labor hours proposed by Honeywell and ITT is approximately [DELETED] percent ([DELETED] / [DELETED] = [DELETED]).

members to explain why the proposed staffing levels for the core requirement tasks were realistic. See id. Tab 62, ITT FPR, at 19830-72, Tab 63 ITT FRP (Cost), at 20764-93. Additionally, the staffing levels utilized by ITT in its cost proposal were consistent with those set forth in the offeror's technical proposal.

In its evaluation of ITT's FPR under the mission suitability factors and subfactors, the SEB found the offeror had remedied the previously-identified staffing weakness, had proposed sufficient staffing to perform all SCNS core requirements, and that the offeror's proposal demonstrated a complete understanding of the SCNS work requirements (i.e., that the proposal did not lack "resource realism"). Id., Tab 80, Final SEB Report, at 23656-65. Separately, under the cost evaluation factor, the agency evaluators found ITT's proposal for the core requirements--in terms of staffing levels as well as the various direct, indirect, and escalation rates proposed--to be realistic and made no adjustment to ITT's proposed costs.[16] Id. at 23710-51.

Honeywell argues that NASA's cost realism evaluation of ITT's proposal was improper with regard to the awardee's staffing levels for the SCNS core requirements (the protester does not challenge the realism of ITT's proposed labor rates, indirect rates, or escalation rates). Based largely on a comparison to the staffing levels that it proposed--in terms of labor hours, FTEs, or both--Honeywell argues that ITT's proposed staffing was insufficient and without adequate rationale. As detailed below, we find the agency's cost realism evaluation of ITT's proposal to be reasonable.

When an agency evaluates proposals for the award of a cost-reimbursement contract (or the cost-reimbursement portion of a contract), an offeror's proposed estimated cost of contract performance is not considered controlling since, regardless of the costs proposed by the offeror, the government is bound to pay the contractor its actual and allowable costs. Magellan Health Servs., B-298912, Jan. 5, 2007, 2007 CPD ¶ 81 at 13; Metro Machine Corp., B-295744, B-295744.2, Apr. 21, 2005, 2005 CPD ¶ 112 at 9; see FAR § 16.301. Consequently, a cost realism analysis must be performed by the agency to determine the extent to which an offeror's proposed costs represent what the contract costs are likely to be under the offeror's unique technical approach, assuming reasonable economy and efficiency. FAR §§ 15.305(a)(1), 15.404-1(d)(1), (2); The Futures Group Int'l, B-281274.2, Mar. 3, 1999, 2000 CPD ¶ 147 at 3.

A cost realism analysis is the process of independently reviewing and evaluating specific elements of each offeror's cost estimate to determine whether the estimated proposed cost elements are realistic for the work to be performed, reflect a clear

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[16] Because of its cost realism determination regarding ITT's proposal, the SEB also did not make any related adjustment to the offeror's overall mission suitability score. Id. at 23655, 23750.

understanding of the requirements, and are consistent with the unique methods of performance and materials described in the offeror's proposal. FAR § 15.404-1(d)(1); Advanced Commc'n Sys., Inc., B-283650 et al., Dec. 16, 1999, 2000 CPD ¶ 3 at 5. An offeror's proposed costs should be adjusted when appropriate based on the results of the cost realism analysis. FAR § 15.404-1(d)(2)(ii). Our review of an agency's cost realism evaluation is limited to determining whether the cost analysis is reasonably based and not arbitrary, and adequately documented. See Magellan Heath Servs., supra.

As a preliminary matter, it is important to note that the RFP required the agency to perform two, separate evaluations regarding offerors' proposed staffing levels. First, under the mission suitability factor, the agency was required to determine if the proposed staffing plan was adequate and demonstrated an understanding of the SCNS requirements. Second, under the cost evaluation factor, the solicitation required the agency to evaluate the cost realism of each offeror's proposal.

We conclude that NASA's evaluation of ITT's proposed staffing--from both a technical and a cost standpoint--was reasonable. First, the record reflects that NASA was fully aware of ITT's revised staffing levels for the SCNS core requirements--[DELETED] FTEs and [DELETED] labor hours. The record also reflects the agency reasonably evaluated ITT's proposed staffing levels against the SCNS work requirements and determined the staffing sufficient to perform the work. Importantly, all staffing weaknesses originally identified by the SEB--both as to program management and specific SN requirements--were addressed by ITT in its revised proposal. For example, ITT's program management staffing increased from [DELETED] FTEs to [DELETED] FTEs; by comparison, the agency evaluators had believed that [DELETED] FTEs would be required here. Similarly, the agency reasonably found ITT's revised staffing levels for the SN requirements to be adequate. Having determined that ITT's staffing levels were adequate from a technical standpoint, the agency then determined the staffing levels and associated costs were also realistic as part of its cost realism evaluation.

The protester's principal argument--that ITT's staffing levels were "dramatically" lower than its own--reflects a misunderstanding of what is required as part of a cost realism evaluation.[17] There is no general requirement that an agency's cost realism evaluation "normalize" the staffing levels that the offerors propose to each other or to government estimates, see, e.g., Integrated Mgmt. Res. Group, Inc., B-400550, Dec. 12, 2008, 2008 CPD ¶ 227 at 7 n.6; Metro Mach. Corp., B-297879.2, May 3, 2006, 2006 CPD ¶ 80 at 10; Information Ventures, Inc., B-297276.2 et al., Mar. 1, 2006, 2006 CPD ¶ 45 at 9, and the fact that one offeror proposes higher staffing levels than

[17] To the extent Honeywell argues that the differences in staffing (i.e., [DELETED] percent in total labor hours) were so disparate as to put the agency on notice that ITT's staffing levels were unrealistic, we disagree.

another offeror does not by itself indicate that the costs as proposed are not realistic. Rather, the cost realism evaluation is to ensure that each offeror's proposed costs, including staffing levels, are realistic for the work to be performed, consistent with the methods of performance described in the offeror's technical proposal. See Integrated Mgmt. Res. Group, Inc., supra.

Honeywell essentially argues that its own understanding of the required staffing is superior to that of the agency. Accordingly, Honeywell reasons that ITT's proposal to perform the contract requirements using a total staffing level lower than that proposed by Honeywell should have been evaluated as unacceptable. Given ITT's explanation of how it would perform the program management and SN requirements, we cannot conclude that the agency was unreasonable in its assessment that ITT submitted an acceptable staffing plan and could perform the core requirements with [DELETED] FTEs. Honeywell's protest challenging the agency's evaluation constitutes, at best, mere disagreement with the agency's judgment.

Evaluation of Past Performance

Honeywell protests the agency's evaluation of the offerors' past performance. Among its numerous challenges, Honeywell argues that the relevance and quality of the contracts performed by ITT itself do not justify the evaluation rating NASA assigned. The protester also alleges that the SEB improperly failed to fully credit the past performance of Honeywell's major subcontractor, [DELETED], in the area of systems engineering. Protest, Dec. 4, 2008, at 32-42. As detailed below, we find the agency's evaluation of ITT's past performance to be unreasonable.

The RFP instructed offerors to provide information for all relevant contracts and subcontracts for themselves and any major subcontractors, of at least $50 million for the prime contractor and at least $10 million for major subcontractors, that were currently being performed or had been completed with the past 3 years.[18] RFP § L at 00776. The RFP also directed offerors and major subcontractors to provide questionnaires to references in order to establish their record of past performance. Id. at 00778-79. As to the evaluation of past performance, the solicitation established the agency would consider two components: relevance and performance (quality). RFP § M at 00802. In assessing relevance, section M of the solicitation required NASA to "consider the degree of similarity in size, content, and complexity" between an offeror's past performance information and the solicitation requirements. Id. The agency's past performance evaluation adjectival ratings, as set forth in the solicitation, were also based on both the relevance and performance of an offeror's

[18] The solicitation instructions did, however, permit offerors to submit additional information at their discretion if they considered such information necessary to establish a record of relevant past performance. RFP § L at 00775.

past performance information. For example, in order to be rated "excellent," an offeror's past performance would have to be deemed to be "highly relevant" and of "exemplary performance."[19] Id. at 00802-03.

The SEB considered seven contracts as relevant to its evaluation of Honeywell's past performance--four contracts performed by Honeywell itself, and three contracts performed by its proposed subcontractor [DELETED]. The SEB found Honeywell's references to be "highly relevant" in size, content, and complexity to the SCNS requirements, and the offeror's overall performance quality to be very effective; while Honeywell demonstrated excellent performance in performing mission operations and maintenance activities, it demonstrated less than excellent performance in the areas of systems engineering and development efforts. The SEB also found that although [DELETED] had demonstrated excellent performance in the area of systems engineering, it was prime contractor Honeywell that was proposed to lead and perform the majority of the systems engineering effort. Based on its relevance and performance determinations, the SEB rated Honeywell's past performance as "very good." AR, Tab 80, Final SEB Report, at 23752-54.

The SEB considered a total of eleven contracts as relevant to its evaluation of ITT's past performance. These were two for prime contractor ITT--its MSP systems engineering support contract with GSFC and its joint spectrum center (JSC) contract--and nine contracts of various major subcontractors.[20] ITT's MSP contract had a dollar value of $40 million, with [DELETED] employees.[21] AR, Tab 62, ITT FPR, at 20070-74. By contrast, ITT's proposed cost for the SCNS contract was approximately $[DELETED], with a total of [DELETED] FTEs--[DELETED] FTEs for the core requirements and an additional [DELETED] FTEs for the GN (ID/IQ) requirements. Id. at 18733. The SEB found ITT's MSP contract to be "very relevant" with excellent performance. In its report the SEB noted the scope of the MSP contract, but did not mention its size or why it was deemed relevant despite the fact

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[19] An offeror's past performance could also be determined to be "very relevant," "relevant," "somewhat relevant," or "not relevant." Id. The RFP did not address the situation where the relevance on an offeror's past performance fell into one adjectival rating, but the quality of performance fell into another adjectival rating.

[20] Offeror ITT (ITT – Advanced Engineering & Sciences) proposed sister division, ITT Systems Division (ITT-SD) as one of its major subcontractors. AR, Tab 62, ITT FPR at 18427. Throughout the course of its evaluation the agency considered ITT to be the prime contractor and ITT-SD to be one of the offeror's major subcontractors.

[21] ITT's proposal stated the MSP contract value was approximately $38.7 million as of January 4, 2008. AR, Tab 62, ITT FPR, at 20070. NASA considered the MSP contract to be $40 million in value for purposes of its evaluation. Id., Tab 80, Final SEB Report, at 23755.

that it represented only some [DELETED] percent of the SCNS contract effort.[22] The SEB considered the other past performance reference for ITT (as the prime), its JSC contract, to be "somewhat relevant"[23] with good performance, while the major subcontractor contracts ranged from "highly relevant" to "relevant." Overall, the SEB found ITT's past performance to be "highly relevant" in size, content, and complexity relative to the SCNS requirements. The agency evaluators also found ITT's performance quality on its most relevant contracts to be mostly excellent.[24] Based on its relevance and performance determinations, the SEB rated ITT's past performance as "excellent." AR, Tab 80, Final SEB Report, at 23755-58.

The SEB was aware that the SCNS SOW involved several different types of tasks, such as program management, operation and maintenance, developmental, and systems engineering tasks. The SEB was also aware, based on the offeror's proposal, what types of tasks ITT (as the prime) and the major subcontractors each were to perform. For example, ITT (prime) was to perform most if not all of the [DELETED], little if any of the [DELETED], and a majority of the [DELETED].[25] AR, Tab 80, Final SEB Report, at 23711; Tab 81, SEB Presentation to SSA, at 23840; see also Tab 61, ITT FPR (Cost) at 17873-78, 17886-88. The agency was also aware of the size of the efforts to be performed by ITT (prime) and its major subcontractors. For example, ITT (prime) was expected to incur approximately [DELETED] percent of the core requirements costs ([DELETED]), [DELETED] percent of the ID/IQ costs, and [DELETED] percent of its total proposed SCNS costs. Id., Tab 80, Final SEB Report, at 23711; AR, Dec. 15, 2008, at 28.

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[22] $40,000,000 / $[DELETED] = [DELETED]. Likewise, the MSP contract had a staffing level of 5.4 percent of the SCNS contract effort ([DELETED] / [DELETED] = .0541).

[23] ITT's JSC contract primarily involved electromagnetic spectrum engineering services, while there is no requirement for electromagnetic spectrum engineering services as part of the SCNS contract. Contracting Officer's Statement, Dec. 15, 2008, at 10. A determination that an offeror's experience is "somewhat relevant" to the RFP requirements corresponds to an adjectival rating of "fair." RFP § M at 00803.

[24] The agency considered ITT's MSP contract, but not its JSC contract, to be among the "most relevant" contracts when determining the offeror's overall performance quality. Contracting Officer's Statement, Dec. 15, 2008, at 10; AR, Dec. 15, 2008, at 27.

[25] The agency acknowledges that, by contrast, subcontractor ITT-SD was to have a relatively small role on the ITT team with respect to [DELETED]--some with regard to the [DELETED] and none with regard to the [DELETED]. Contracting Officer's Statement, Nov. 24, 2008, at 46; AR, Nov. 24, 2008, at 40.

Honeywell argues the agency's evaluation of ITT's past performance was unreasonable. The protester contends that NASA could not and/or should not have relied on ITT's MSP contract in its past performance evaluation, given both the instruction provisions of the RFP and the prior contract's lack of similarity in size. Honeywell also alleges the only other prior contract for ITT (prime), being found only "somewhat relevant" with good performance, does not support the agency's rating of the awardee's past performance as excellent.

Where a solicitation requires the evaluation of offerors' past performance, we will examine an agency's evaluation to ensure that it was reasonable and consistent with the solicitation's evaluation criteria. The MIL Corp., B-297508, B-297508.2, Jan. 26, 2006, 2006 CPD ¶ 34 at 10; Hanley Indus., Inc., B-295318, Feb. 2, 2005, 2005 CPD ¶ 20 at 4. The critical question is whether the evaluation was conducted fairly, reasonably, and in accordance with the solicitation's evaluation scheme. Clean Harbors Envtl. Servs., Inc., B-296176.2, Dec. 9, 2005, 2005 CPD ¶ 222 at 3. The agency's past performance evaluation of ITT here does not meet this standard.

As a preliminary matter, we do not think that the agency here was precluded from considering ITT's MSP contract for past performance evaluation purposes simply because its value was below the $50 million figure referenced in section L of the RFP. As noted above, while the RFP instructed offerors to submit past performance information on relevant contracts of at least $50 million, it also expressly permitted them to submit additional information if they considered it necessary to establish a record of relevant past performance. RFP § L at 00775-76.

Once having decided to consider ITT's MSP contract, however, the agency clearly was required to evaluate the relevance of that contract consistent with the evaluation criteria in the RFP, i.e., the degree of similarity in size, content and complexity between an offeror's past performance information and the RFP requirements. There is nothing in the contemporaneous record to suggest that NASA engaged in any such analysis concerning the relative size of ITT's MSP contract and the size of the RFP requirements. Rather, the SEB report indicates the evaluators' determination that ITT's MSP contract was "very relevant" was based entirely on the type of services involved in that contract.[26] The extremely low dollar value (and staffing level) of the MSP contract relative to those of the SCNS requirements clearly raise a question as to the degree to which the MSP contract reasonably may be regarded as similar in size to the RFP requirements, such that it properly could be considered in evaluating ITT's past performance. See Continental RPVs, B-292768.2, B-292678.3, Dec. 11, 2003, 2004 CPD ¶ 56 at 8 (finding prior contracts no larger than

[26] While the contracting officer asserts, in a statement submitted after the filing of Honeywell's protest, that the SEB did consider the size of the MSP contract, Contracting Officer's Statement, Dec. 15, 2008, at 9, we find this statement also fails to explain how a contract so dramatically smaller was considered "very relevant."

4 percent of the solicitation requirements were not similar or relevant); Si-Nor, Inc., B-292748.2 et al., Jan. 7, 2004, 2004 CPD ¶ 10 at 16-17 (finding in part a prior contract which represented less than 7 percent of the solicitation requirements was not similar in size, scope, and complexity). Quite simply, the record here lacks explanation as to why the SEB found the MSP contract to be "very relevant" notwithstanding its extremely small size relative to the RFP requirements. We fail to see, and the record fails to reflect, how NASA determined that a contract similar as to size but not as to content (i.e., ITT's JSC contract) was only "somewhat relevant," while, by contrast, a contract similar as to content but not as to size (i.e., ITT's MSP contract) was "very relevant."

We recognize that the agency's evaluation of ITT's past performance also included nine other contracts for its major subcontractors, many of which the SEB found to be "highly relevant" and having excellent performance. The record reflects, however, that ITT (prime) had only two contract references: the JSC contract which NASA found of such limited relevance that it admittedly did not consider it in the evaluation of the offeror's performance; and the MSP contract which, as detailed above, was significantly smaller in size than the RFP requirements. In this regard, ITT (prime) was to perform all the program management requirements, a large majority of the systems engineering requirements, and [DELETED] percent of the total SCNS contract. As a result, based on the current record, the agency's conclusion that ITT had "highly relevant" past performance lacks a reasonable basis, given that it is based in material part on consideration of the MSP contract.

Honeywell also argues that NASA's evaluation of Honeywell's own past performance was unreasonable because the evaluators failed to give proper credit to the past performance of its major subcontractor, [DELETED], in the area of systems engineering. The SEB found that [DELETED] had demonstrated both "highly relevant" and excellent performance in the area of systems engineering. The protester maintains the agency evaluators failed to give proper weight to that performance, however, on the mistaken ground that Honeywell (not [DELETED]) was proposed to lead and perform the majority of the systems engineering effort. Honeywell contends its proposal gave [DELETED] a leadership role with regard to systems engineering, as evidenced by the assignment of the SCNS [DELETED] position to [DELETED] and the fact that [DELETED] of [DELETED] engineers for SN sustaining engineering task are [DELETED] personnel. Protest, Oct. 20, 2008, at 33-35; Protest, Dec. 4, 2008, at 41-42.

Contrary to the protester's assertions, Honeywell's proposal indicated that it would lead and perform the majority of the systems engineering and development efforts. For example, Honeywell's organizational chart indicated its employees would serve in most engineering leadership roles (e.g., network operations division manager, network project division manager, systems engineering and hardware engineering department manager, functional leaders for the software engineering and hardware engineering departments). AR, Tab 49, Honeywell FPR, at 12671. Honeywell's proposal also indicated its [DELETED] position would be staffed part-time by [DELETED] and part-time by another proposed subcontractor, [DELETED]. Id. at 14601-02. Further, Honeywell's cost proposal indicated that it (not [DELETED]) would provide the majority of systems engineers for the core requirements, the ID/IQ tasks, and the RTO TIPs. In its evaluation of the protester's past performance, the SEB took into account the roles Honeywell and [DELETED] each would play in the performance of the SCNS contract when determining the relevance of their prior contracts. Id., Tab 80, Final SEB Report, at 23754.

We need not decide the exact percentage of systems engineering work to be performed each by [DELETED] and Honeywell to conclude the agency reasonably determined that Honeywell would lead and perform the majority of the SCNS systems engineering and development efforts as part of the evaluation of the offeror's past performance. Honeywell's proposal clearly indicated its employees would fill the majority of engineering leadership positions. The protester does not dispute that the [DELETED] position was to be split between [DELETED] and another subcontractor. Protest, Dec. 4, 2008, at 41-42. Moreover, even if [DELETED] of [DELETED] systems engineering positions for the SN sustaining engineering task are [DELETED] employees, that means that [DELETED] of [DELETED] (or 57 percent) of the positions here are not [DELETED] employees. In sum, the agency here properly considered the roles to be played by Honeywell and [DELETED] in the performance of the SCNS in making the past performance evaluation.

CONCLUSION AND RECOMMENDATION

The record shows that in evaluating ITT's past performance, the agency relied in material part on ITT's MSP contract, without explaining why, given its low dollar value, that contract reasonably may be regarded as similar in size to the effort under the contract to be awarded here, such that, under the terms of the RFP, it properly could be considered in the evaluation. As a result, we sustain the protest on this basis.

As noted above, competitive prejudice is an essential element of any viable protest, and we will sustain a protest only if there is a reasonable possibility that the protester was prejudiced by the agency's action. McDonald-Bradley, B-270126, Feb. 8, 1996, 96-1 CPD ¶ 54 at 3. The record here shows that this was a close competition, with similar technical and past proposal ratings for both offerors' proposals, as well as a relatively small difference in evaluated costs between the two. Accordingly, while we sustain the protest only with regard to the challenge to the evaluation of ITT's past performance, it is clear that this element of the evaluation could have affected the outcome of the competition, and therefore reasonably may be regarded as prejudicial to Honeywell.

We recommend that the agency reevaluate ITT's past performance consistent with our decision here and, based on that reevaluation, make a new source selection determination.[27] If, after reevaluation, Honeywell's proposal is determined to represent the best value to the government, the agency should terminate ITT's contract for the convenience of the government and make award to Honeywell. We also recommend that Honeywell be reimbursed the costs of filing and pursuing the protest, including reasonable attorneys' fees, limited to the costs relating to the ground on which we sustain the protest. 4 C.F.R. § 21.8(d)(1). Honeywell should submit its certified claim for costs, detailing the time expended and costs incurred, directly to the contracting agency within 60 days after receipt of this decision. 4 C.F.R. § 21.8(f)(1).

The protest is sustained in part and denied in part.

Gary L. Kepplinger
General Counsel

[27] Honeywell also protests that NASA's evaluation of ITT's past performance improperly failed to take into account ITT's space lift range services (SLRS) contract--that such information was simply "too close at hand" to be ignored by the agency evaluators. Protest, Oct. 20, 2008, at 35. We recommend that the agency's reevaluation of ITT's past performance also include consideration of ITT's SLRS contract, as it is now part of the record.

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**United States Government Accountability Office**
**Washington, DC 20548**



# Decision

**Matter of:** PlanetSpace, Inc.

**File:** B-401016; B-401016.2

**Date:** April 22, 2009

Joel Van Over, Esq., Robert S. Metzger, Esq., John E. Jensen, Esq., Evan D. Wesser, Esq., Jack Y. Chu, Esq., Orest J. Jowyk, Esq., and Daniel S. Herzfeld, Esq., Pillsbury, Winthrop, Shaw & Pittman, for the protester.
David A. Churchill, Esq., Kevin C. Dwyer, Esq., William R. Stoughton, Esq., Amy L. Tenney, Esq., Daniel E Chudd, Esq., and Caroline E. Keller, Esq., Jenner & Block, for Orbital Sciences Corporation, an intervenor.
Vincent A. Salgado, Esq., Kevin Love, Esq., and Steven Mirmina, Esq., National Aeronautics and Space Administration, for the agency.
David A. Ashen, Esq., and John M. Melody, Esq., Office of the General Counsel, GAO, participated in the preparation of the decision.

**DIGEST**

1. Protest is denied in procurement for commercial resupply services for International Space Station where source selection authority reasonably determined that outstanding and very good past performance of protester's proposed subcontractors did not warrant an overall significant strength where protester itself lacked significant relevant past performance and technical expertise, leaving subcontractors responsible for technical performance and approximately [REDACTED]% of overall contract effort.

2. Protest is denied in procurement for commercial resupply services for International Space Station where agency reasonably ascertained significant financial risk to the government from protester's proposal under fixed-price prime contract to subcontract technical performance and approximately [REDACTED]% of overall contract effort; significant development and integration work, the risk and cost of which was underestimated, was to be performed by subcontracting on a cost basis; protester's business case, although reflecting additional unrealistically optimistic assumptions, nevertheless assumed that cost of performing would exceed contract payments until last year of contract; protester had limited contract management resources; and protester, a recently organized entity, proposed to finance performance using only minimal internal financial resources, depending

instead on debt financing and obtaining additional investment for nearly all of performance costs.

**DECISION**

PlanetSpace, Inc. protests the National Aeronautics and Space Administration's (NASA) award of a contract to Orbital Sciences Corporation (OSC) under request for proposals (RFP) No. NNJ08ZBG001R, for commercial resupply services for the International Space Station (ISS). PlanetSpace challenges the evaluation of proposals and resulting source selection.

We deny the protest.

The solicitation, issued as a commercial acquisition under Federal Acquisition Regulation (FAR) part 12, contemplated the award of one or more indefinite-delivery/indefinite-quantity (IDIQ), fixed-price, 7-year contracts, to deliver cargo from NASA to the ISS (including both pressurized upmass--cargo transported to the ISS--and unpressurized upmass cargo), dispose of unneeded cargo from the ISS and/or return cargo from the ISS to NASA, and furnish various additional services. The contracts are intended to satisfy NASA's obligation under international agreements to provide critical cargo resupply services to the ISS (such as air, water, food, medicine, spare parts, and scientific experiments) from the scheduled end of the Space Shuttle Program in 2010 to the scheduled end of the ISS Program in 2015. The guaranteed minimum under each contract was the negotiated value of 20 metric tons of cargo upmass, with an additional potential guaranteed minimum value of 3 metric tons return cargo downmass--cargo returned from the ISS--(if that contract line item (CLIN) was accepted), while the total maximum value for each contract was $3.1 billion. RFP § 1.A.3. NASA's overall cargo requirement is for approximately 40 metric tons over a 5-year period. Hearing Transcript (Tr.) at 23-24.

Award was to be made using the tradeoff process set forth at FAR § 15.101-1 and based on the evaluation of proposals under two criteria--mission suitability and price--with mission suitability more important than price. Proposals were to be scored for mission suitability using a 1,000-point scale under three factors: (1) technical approach (550 points), with subfactors for system capabilities/ summary of performance, ISS integration/demonstration, ISS resupply mission performance plan, and risks; (2) management approach (400 points), with subfactors for company information, performance milestones, and safety/mission assurance; and (3) small business utilization (50 points).

Of significance here, past performance was not included as a separate evaluation factor, but instead was to be evaluated as part of each mission suitability subfactor. The past performance evaluation was to include consideration of information to be supplied by offerors concerning their own relevant contracts and the relevant contracts of proposed significant subcontractors (defined as having subcontracts likely to exceed $10 million) and teaming partners. RFP §§ VII.A.4, amend. 3, exh. 2.

The RFP provided for evaluation of pricing under three CLINs: CLIN 1--Standard Resupply Services, CLIN 2--Non-Standard Services, and CLIN 3--Special Task Assignments, with the CLIN 1 prices substantially more important than the CLIN 2 and CLIN 3 prices. Offerors were required to complete pricing templates, which entailed entering under CLIN 1 fully burdened prices per kilogram of pressurized upmass cargo, unpressurized upmass cargo, return downmass cargo, and disposal downmass cargo. RFP § VI.A.21.P2. The RFP further provided that offerors also were to furnish mission pricing that "reflect[s] the offeror unique mission configurations proposed," RFP amend. 6, RFP §§ VI.A.19, VI.A.21.P2, and that "[a]s part of the evaluation, a weighted average fixed price per kilogram" of cargo would be developed. RFP § VII.C.P2.

NASA received proposals from PlanetSpace, OSC and SpaceX. After conducting written and oral discussions, NASA requested final proposal revisions (FPR). The Source Evaluation Board (SEB) evaluated the FPRs as follows:

| | PlanetSpace | OSC | SpaceX |
|---|---|---|---|
| MISSION SUITABILITY | | | |
| Technical | 473<br>very good | 413<br>very good | 495<br>very good |
| Management | 312<br>very good | 348<br>very good | 340<br>very good |
| Small Business | 42<br>very good | 35<br>good | 42<br>very good |
| OVERALL<br>MISSION SUITABILITY | 827<br>very good | 796<br>very good | 877<br>very good |
| PRICE (Weighted Average) | | | |
| Pressurized Upmass[1] | $[REDACTED] | $[REDACTED][2] | $[REDACTED] |
| Unpressurized Upmass | $[REDACTED] | $[REDACTED] | $[REDACTED] |
| Return Downmass | $[REDACTED] | $[REDACTED] | $[REDACTED] |
| Disposal Downmass | $[REDACTED] | $[REDACTED] | $[REDACTED] |
| Special Tasks | $[REDACTED] | $[REDACTED] | $[REDACTED] |

[1] $thousands per kilogram (kg).

[2] Price for basic engine/price for enhanced future engine.

Final Selection Briefing at 114, 125-26; FPR Pricing Report at 19, 23.

PlanetSpace's and OSC's proposals received the same adjectival scoring under the technical and management factors, as well as under the mission suitability criterion overall, although PlanetSpace's received a higher total numeric score. The mission suitability scoring for PlanetSpace reflected the SEB's finding of three significant strengths, four strengths, and three weaknesses under the technical approach factor, and three significant strengths, four strengths, and five weaknesses under the management factor. The SEB assigned OSC's proposal one significant strength, five strengths, and four weaknesses under the technical factor, and three significant strengths, three strengths, and one weakness under the management factor.

As relevant here, three of the PlanetSpace's significant strengths (as well as several of its weaknesses) as assessed by the SEB were directly related to its proposed teaming approach. In this regard, PlanetSpace proposed to subcontract approximately [REDACTED]% of the overall contract to (1) Lockheed Martin (LM), which in turn was to subcontract part of its effort to Boeing, and (2) Alliant Techsystems, Inc. (ATK), leaving only approximately [REDACTED]% of the contract to be performed by PlanetSpace. PlanetSpace Executive Summary, Oct. 8, 2008, at 4; Preaward Survey at 4, 7; Preaward Survey Briefing at 5. PlanetSpace's proposal assigned itself primary responsibility for prime contract execution, contract administration, financial management, and business operations; assigned LM responsibility for program management, systems integration, the orbital transfer vehicle, integration and test, the avionic propulsion module, cargo return capsule, and mission operations; assigned Boeing responsibility for ISS integration, cargo carriers and cargo processing; and assigned ATK responsibility for launch vehicle development and launch site operations. SEB FPR Report at 7.2-53; PlanetSpace FPR Mission Suitability Proposal at M-19. Although the contract to be awarded was to be on a fixed-price basis, PlanetSpace proposed that it would (1) subcontract with LM and ATK on a cost-plus-fixed fee/cost-plus-incentive fee basis for development, first unit assembly, integration, qualification and build, and for first unit mission integration and operations, with LM and ATK in turn subcontracting approximately [REDACTED]% to [REDACTED]% of the development phase to third tier vendors on a fixed-price basis for heritage (existing) hardware, and (2) then transition to the procurement of first mission launch services and subsequent missions on a fixed-price basis. SEB FPR Report at 7.2-80; PlanetSpace FPR Mission Suitability Proposal at M-18 to M-21.

The SEB assigned PlanetSpace's proposal a significant strength under the system capabilities/summary of performance subfactor based on the generally outstanding (with some very good ratings) past performance of its subcontractors on numerous highly relevant contracts for launch and orbital vehicle development, ISS mission and cargo integration, and flight product development; the SEB expected that this past performance would greatly enhance the likelihood of successful performance of the commercial resupply services contract. Likewise, the SEB assigned

PlanetSpace's proposal a significant strength under the company information subfactor of the management factor based on the past performance of the PlanetSpace management team's key personnel and subcontractors, including a long history of accomplishments and successes by the subcontractors on highly relevant contracts, such as launch vehicle components and manned spacecraft development, sustaining, processing, and operations. In addition, the SEB assessed PlanetSpace's proposal a significant strength under the same subfactor based on its evaluated highly sound and realistic management approach, with very suitable team members and teaming arrangements, clear systems engineering and integration responsibilities, and a comprehensive work breakdown structure.

The source selection authority (SSA) indicated in the source selection decision (SSD) that he "agreed with all findings the SEB made regarding any of the offerors," but stated that he nevertheless "did not always agree with the significance the SEB placed on a particular finding or with the impacts the SEB identified in regards to a finding." SSD at 8. Specifically, regarding the significant strength the SEB assigned PlanetSpace's proposal under the system capabilities/summary of performance subfactor due to the team's past performance, the SSA stated that he

> disagreed with the SEB assessment that this finding was a significant strength. I determined the significance of this finding was offset by PlanetSpace's lack of experience in development, production and operation of large, complex space systems and, therefore, concluded this finding was not relevant for purposes of selection.

SSD at 11. Likewise, regarding PlanetSpace's significant strengths under the company information subfactor of the management factor based on the past performance of the PlanetSpace management team's subcontractors' key personnel and subcontractors, and PlanetSpace's highly sound and realistic management approach, the SSA concluded that these strengths

> were offset as being discriminators for selection because of the absence of a corresponding strength regarding the prime contractor's abilities to perform the contract. It can be a significant strength to have strong subcontractors; however, I did not believe these findings should be discriminators for selection when almost all of the technical expertise appeared to reside at the subcontractor level.

SSD at 12.

In addition, the SSA concluded that six of the weaknesses in PlanetSpace's proposal identified by the SEB should be considered significant discriminators in the source selection. In this regard, PlanetSpace proposed use of an alternate, larger launch vehicle (the Atlas V rocket) to provide initial cargo delivery capability in December 2011, prior to the readiness of its proposed new launch vehicle (Athena III), which was under development. The SEB found this to be a weakness under the technical approach factor because even with the proposed use of the alternate launch vehicle, PlanetSpace would not meet the cargo resupply requirements in 2010 or most of 2011. The SSA also determined that use of the alternate launch vehicle was a "significant discriminator" for selection purposes because PlanetSpace was the only offeror that proposed a configuration requiring verification and integration of its orbital vehicle with two launch vehicles, which potentially increased the technical and schedule risk to NASA. Further, while the SEB only identified as a weakness in PlanetSpace's technical approach the fact that heritage components would need to be requalified to meet the vibro-acoustic environment of the new launch vehicle, the SSA concluded that requalification posed a "significant technical challenge" due to the performance characteristics of the [REDACTED] in the new launch vehicle. The SEB noted as a further weakness under the technical approach PlanetSpace's proposal of a margin (distance) between the static payload envelope and the outside diameter of the payload fairing or shroud that was smaller than any fairing margin in current worldwide industry experience, which the SEB concluded represented a potential risk to the promised upmass delivery capability. The SSA believed that resolution of the fairing issue would be a "significant technical challenge" to PlanetSpace because changes in fairing design can drive changes to schedule and cargo environments and reduce upmass capacity. SSD at 12.

Under the management approach factor, the SEB assigned a weakness based on PlanetSpace's proposed use of cost-plus subcontracts up until first flight, with the subcontractors responsible for the majority of the work. The SSD indicated that, while PlanetSpace's response to NASA's discussion question in this regard--PlanetSpace indicating that it would manage this risk through incentives and cost controls--convinced the SEB to reduce the initial assessment of a significant weakness to a weakness, the SSA concluded as follows:

> [I] believed the subcontracting structure still represented a significant risk to the successful performance of the program. I believed it was extremely risky for PlanetSpace to have a fixed-price contract with NASA when most of the effort in the early stages of the contract would be performed under cost type subcontracts. Moreover, I questioned whether PlanetSpace could successfully manage much larger subcontractors responsible for the majority of the performance under the contract. Furthermore, although one was not required by the solicitation, I was concerned that the proposal did not contain a backup plan in the event one of the major subcontractors was unable to perform given the sizable amount of responsibilities PlanetSpace proposed to place at the subcontractor level.

SSD at 12. The SEB assessed another weakness based on the "high financial risk to the Government" attending PlanetSpace's proposed early completion of and, therefore, payment for ISS integration; the SEB determined that PlanetSpace's proposed ISS integration schedule, based on ISS integration approximately 9 months prior to the SEB's estimate, was unrealistic. SEB FPR Report at 7.2-84 to 85. While the SEB considered this to be only a weakness, and not a significant weakness, the SSA found that

> the financial risk PlanetSpace proposed to assume was a discriminator for selection. PlanetSpace would be making a considerable investment in the program with two different launch vehicles, yet did not project it would reflect positive cumulative cash from operations until nearly the end of the contract. During the deliberations on selection, I was informed that NASA would not be required to order the early mission involving the proposed use of the alternate launch vehicle. While not ordering the alternate launch vehicle would reduce PlanetSpace's overall cost, this action also would cause the NASA payments to PlanetSpace to occur later, further threatening this business case.

SSD at 13. Finally, the SEB assessed a weakness based on the fact that, in addressing the issue of Federal Aviation Administration (FAA) licenses and permits PlanetSpace's proposal indicated a number of assumptions that appeared to indicate a lack of understanding of FAA licensing requirements for commercial launch and reentry operations, but did not classify the weakness as "significant," concluding that any lack of understanding could be corrected during performance. The SSA, however, viewed the weakness as yet another "discriminator because it demonstrated a lack of understanding about the basic requirements of the commercial nature of [commercial resupply services]." SSD at 13.

Having determined that SpaceX's proposal was the highest-rated, and thus was in line for the first award, the SSA compared OSC's and PlanetSpace's proposals. The SSA noted that, while OSC proposed to provide a full range of services in 2012, PlanetSpace proposed to provide a full range of services only by the end of 2013. Furthermore, consistent with the above concerns regarding PlanetSpace's proposal, the SSA considered PlanetSpace's management approach to be an even more important "key discriminator" than the schedule for commencement of services. The SSA noted as a particular concern the fact that much of the work would be performed on large cost-reimbursement subcontracts, while PlanetSpace, the prime contractor, would perform under a fixed-price contract, and the fact that PlanetSpace did not project it would recoup its sizable investment in the commercial resupply services program until near the end of the contract; the SSA concluded with respect to financial risk that

> [t]hese risks made me believe it was highly unlikely PlanetSpace would have the ability needed to address technical challenges in its proposal such as the re-qualification of heritage components to new launch vehicle environments and the potential changes to fairing size to accommodate unpressurized cargo.

SSD at 16. The SSA also considered that PlanetSpace's subcontractors were responsible for most of the technical aspects of the proposal and that PlanetSpace itself had no relevant experience managing a contract with this level of complexity in a fixed-price environment, while OSC's proposal was assigned a significant strength because of its utilization of existing processes and tools to manage fixed-price spacecraft development, operations and repetitive production contracts, OSC's subcontracting team had a much smaller role in contract performance, and OSC had extensive in-house expertise in specific areas of the CRS requirements. The SSA concluded that, accordingly, he "had much higher confidence" in OSC's ability to provide resupply services on a fixed-price basis, id., and that OSC's proposal "was superior due to the serious Management risks inherent in the PlanetSpace proposal." SSD at 17. Indeed, while recognizing PlanetSpace's lower price, the SSA stated that he "could not conduct [a] 'typical' trade-off analysis since I believed there was a low likelihood PlanetSpace could successfully perform the contract." Id. The SSA concluded that SpaceX's and OSC's proposals represented the best value to the government.

Upon learning of the resulting awards to SpaceX and OSC, PlanetSpace filed this protest with our Office challenging both awards. Subsequently, PlanetSpace abandoned its challenge to SpaceX's award.

In reviewing protests of alleged improper evaluations and source selection decisions, it is not our role to reevaluate submissions; rather, we will examine the record to determine whether the agency's judgment was reasonable and in accord with the stated evaluation criteria and applicable procurement laws and regulations. Panacea Consulting, Inc., B 299307.4, B 299308.4, July 27, 2007, 2007 CPD ¶ 141 at 3. Here, based on our review of all of PlanetSpace's timely arguments, we find no basis for questioning the award to OSC. We discuss PlanetSpace's principal arguments below.

## TEAMING APPROACH

### Subcontractor Performance

PlanetSpace asserts that the evaluation of its teaming approach was unreasonable and/or otherwise improper. As an initial matter, the protester contends that the consideration given to past performance in the SSD was inconsistent with the RFP, which provided that offerors without a record of relevant past performance or for which information on past performance is not available "will not be evaluated favorably or unfavorably on past performance." RFP amend. 3, § VII. PlanetSpace asserts that, notwithstanding this provision, the agency evaluated its proposal unfavorably based on a finding that it lacked relevant past performance.

The record does not support PlanetSpace's assertion. As discussed above, in considering the SEB's assessment of significant strengths based on the past performance of PlanetSpace's subcontractors/team members, the SSA simply disagreed with the SEB's finding of a significant strength. Again, the SSA concluded that the finding was "offset by PlanetSpace's lack of experience in development, production and operation of large, complex space systems," and that the subcontractors' past performance should not be "discriminators for selection when almost all of the technical expertise appeared to reside at the subcontractor level." SSD at 11-12.[3] Thus, the SSA determined only that the protester's record of past performance should not be considered as a discriminator; he did not downgrade the proposal overall under the past performance factor.

Financial Risk

As discussed above, PlanetSpace's reliance on cost-based subcontracting for risky development work in conjunction with its expected negative cash flow under the contract was evaluated as posing a high risk to the government. PlanetSpace asserts that the agency's consideration of the financial risk to the government posed by the firm's teaming approach was unfounded and improper.

Again, PlanetSpace proposed to subcontract approximately [REDACTED]% of the overall contract to LM (which in turn would subcontract part of its effort to Boeing) and ATK, leaving only approximately [REDACTED]% of the contract--including such generally non-technical areas as overall responsibility for prime contract execution, contract administration, financial management, and business operations--to be performed by PlanetSpace. In addition, although its contract with NASA was required to be on a fixed-price basis, PlanetSpace proposed that it would subcontract with LM and ATK on a cost-plus-fixed fee/cost-plus-incentive fee basis for development, first unit assembly, integration, qualification and build, and for first unit mission integration and operations, with LM and ATK in turn subcontracting approximately [REDACTED]% to [REDACTED]% of the development phase to third tier vendors on a fixed-price basis for heritage hardware. PlanetSpace FPR Executive

[3] PlanetSpace asserts that the SSD mischaracterizes the extent of PlanetSpace's own past performance, failing to account for the fact that it entered into an unfunded Space Act agreement with NASA in 2007 for development of a commercial resupply system. PlanetSpace's initial, January 13, 2009, protest indicated its understanding (presumably on the basis of a January 9 debriefing) that the SEB had discounted the agreement in the evaluation (finding that performance had been limited). Protest at 18. Nevertheless, PlanetSpace challenged NASA's treatment of the agreement for the first time in its March 2 comments on the agency report, more than 10 days after learning the basis for the argument. Accordingly, the argument is untimely. 4 C.F.R § 21.2(a)(2) (2008). In any case, we think the agency could reasonably determine that PlanetSpace's limited performance under this single, unfunded agreement, using a different management team than that proposed in its FPR, did not demonstrate significant, relevant past performance. See SEB FPR Report at 7.2-51; Tr. at 226, 625, 644-47, 657, 681-95.

Summary at 4; PlanetSpace FPR Mission Suitability Proposal at M-18 to M-21; SEB FPR Report at 7.2-53, 80. Further, PlanetSpace estimated that the cost of performing the contract would exceed contract payments from NASA until [REDACTED], with PlanetSpace's cumulative debt under the contract peaking at $[REDACTED] million in [REDACTED]. In this regard, PlanetSpace, organized in 2006, proposed to utilize only $[REDACTED] million of shareholder equity in performing the contract. As explained in its management proposal, PlanetSpace proposed instead that, except for certain independent research and development expenditures on the part of its team members, from which it claimed to benefit, the remainder of the cost of performance would be financed through potential future debt and investment from third parties. PlanetSpace FPR Mission Suitability Proposal at M-2 to M-6.[4]

NASA determined that PlanetSpace's approach posed significant financial risk to the government based in part on the agency's determination that PlanetSpace's estimates were based on unrealistically optimistic assumptions. For example, PlanetSpace assumed that it could successfully demonstrate, and be paid for, ISS Integration [REDACTED] months prior to launch by satisfying 95% of the applicable requirements. However, the record indicates that ISS integration is a major readiness milestone involving completion of hardware and software, and that no orbital vehicle has ever demonstrated ISS integration so far in advance of launch. Moreover, the RFP made no provision for satisfying less than 100% of the ISS integration requirements, and NASA in fact anticipated 100% compliance. Rather than [REDACTED] months prior to launch, NASA estimated that the ISS integration milestone most likely could be satisfied no earlier than 4 months prior to launch, with the effect on PlanetSpace's assumed schedule being a delay in $[REDACTED] million of payments under the contract, and an increase in the maximum cumulative debt under the contract. PlanetSpace FPR Management Proposal at M-44; Tr. at 792, 847, 852-53, 999-1005; SEB FPR Report § 7.2-85.

In addition, PlanetSpace's estimates reflected payment for an optional Atlas V mission early in contract year 2011, with more than [REDACTED] the capacity and at more than [REDACTED] the cost of the proposed Athena III missions (the launch vehicle under development) in contract year 2012 and later. While the option for early delivery of cargo was considered desirable, the agency viewed the necessity for PlanetSpace to verify and integrate two launch vehicles as increasing technical and cost risk. Moreover, the chairman of the management evaluation committee testified at the hearing held by our Office in this matter that it was unclear whether the ISS in

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[4] The December 2008 preaward survey concluded that PlanetSpace had failed to demonstrate that it had or had the ability to obtain financial resources adequate to perform the contract. Preaward Survey, Dec. 12, 2008, at 3-4, 7-10. However, the contracting officer did not make a determination regarding PlanetSpace's responsibility, and the survey was not provided to the SSA. Contracting Officer's Statement of Facts at 79.

fact would be in a position to accommodate and take advantage of the much higher capacity offered by PlanetSpace's proposed Atlas V mission. In this regard, PlanetSpace's proposed Atlas V mission had a capacity of [REDACTED] kg versus [REDACTED] kg for PlanetSpace's proposed Athena III missions at less than [REDACTED] the price, and 3,300 kg for SpaceX's missions at approximately [REDACTED] the price, which might lead NASA to order a much less expensive mission with only the capacity actually required. Tr. at 323-29, 1134-41. Finally, although the effect of the agency's not ordering the optional, significantly higher-priced Atlas V mission, or of any delay in the mission, could not be ascertained with precision, the agency found that PlanetSpace's own calculations appeared to indicate that an Athena-only contract effort, replacing the Atlas V with lesser-capacity, lower-priced missions using the under-development Athena III, would further increase PlanetSpace's maximum cumulative debt. PlanetSpace Preaward Survey Response, Dec. 10, 2008, at 3-4.

Further, while PlanetSpace claimed in its proposal that, based on its assessment of development phase cost risk, it had included in its business plan an estimated potential cost growth of $[REDACTED] million, which it would fund through debt financing, NASA questioned whether PlanetSpace had fully costed the likely required development efforts. In this regard, NASA noted that PlanetSpace had assumed technology readiness levels of [REDACTED] (on a scale 1 to 9 with 9 representing an operational system), for more than half of listed subsystem components, which the agency viewed as unrealistically high. PlanetSpace FPR Management Proposal at M-20 to M-21; PlanetSpace FPR Technical Proposal at T-25 to T-26; Backup FPR Slides at 28,765; Tr. at 797-99.[5]

PlanetSpace's proposal acknowledged the potential high risk resulting from the use of cost-plus development subcontracts as follows:

> Given that PlanetSpace is a small company with a [firm-fixed-price] NASA contract and with [cost-plus-fixed fee/incentive fee] development subcontracts awarded to Lockheed Martin and ATK it follows that lack of effective subcontract controls could result in significant schedule delays and cost overruns.

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[5] While PlanetSpace claimed it had included in its business plan an estimated potential cost growth of $[REDACTED] million, it is unclear whether the amount was reflected in its calculation of maximum cumulative debt ($[REDACTED] million in 2013). In this regard, it is clear from PlanetSpace's proposal that the estimated maximum cumulative debt of $[REDACTED] million did not include what PlanetSpace terms a "20% management reserve," the claimed effect of which would be to increase the maximum cumulative debt from $[REDACTED] million to $[REDACTED] million. PlanetSpace FPR Management Proposal at M-3.

PlanetSpace FPR Technical Proposal at T-128/129. PlanetSpace nevertheless assumed that it would overcome these challenging circumstances and control its costs of performance through effective cost controls. However, the record shows that the SSA was not convinced, finding that PlanetSpace's proposed use of cost-plus subcontracts "in the early stages of the contract," until first flight, was "extremely risky." SSD at 12. Given the limited cost margin available under PlanetSpace's proposed approach to accommodate potential cost overruns passed on by its subcontractors; the fact that Lockheed and Boeing, although capable contractors, were known by NASA to be "not as cost conscious as they could be"; PlanetSpace's unrealistic or incorrect assumptions, including those regarding the proposed ISS integration schedule and FAA requirements, that underlay its proposed approach; such evaluated "stressors" on cost and schedule as changing fairing size to accommodate unpressurized cargo and accomplishing verification and integration of its orbital vehicle with two launch vehicles; and the challenge for a fairly small management team to manage subcontractors performing over [REDACTED]% of the contract effort, the SSA concluded that the risks associated with PlanetSpace's contracting approach made it "highly unlikely" that PlanetSpace would successfully perform the contract and provide timely delivery of required cargo to the ISS. SSD at 16; Tr. at 26-27, 55-75.

PlanetSpace disagrees with the SSA's conclusion in this regard, but we find that it has not shown that conclusion to be unreasonable or otherwise improper. For example, PlanetSpace asserts that the agency's focus on financial risk and the resources available to PlanetSpace was improper because those matters concern offeror responsibility. See Federal Acquisition Regulation (FAR) § 9.104-1. However, an agency may use traditional responsibility factors in evaluating proposals where, as here, a comparative evaluation of those areas is to be performed. See Zolon Tech, Inc., B-299904.2, Sept. 18, 2007, 2007 CPD ¶ 183 at 8. Further, in evaluating proposals, an agency properly may take into account specific, albeit not expressly identified, matters that are logically encompassed by, or related to, the stated evaluation criteria. Independence Constr., Inc., B-292052, May 19, 2003, 2003 CPD ¶ 105 at 4. Here, the solicitation provided for evaluation, under the performance milestones subfactor, of "the overall risk that the payment schedule provides to NASA." RFP § VII.B. In our view, this solicitation language logically encompassed NASA's consideration of whether there was a significant risk to timely performance of the contract, in view of the substantial risk of cost overruns on the part of PlanetSpace's subcontractors (the cost of which PlanetSpace was required to bear under its fixed-price contract), the resources PlanetSpace proposed to commit to the contract, and the likely schedule of payments by the agency under the contract.

PlanetSpace asserts that the evaluated financial risk of its proposed approach fails to account for what it estimates to be the true, effective proportion of its overall contract effort that is cost-based, that is, approximately [REDACTED]%.[6] As noted above, however, NASA's concerns extended beyond the proportion of the contract effort that was expected to be cost-based. In this regard, NASA evaluated the technology readiness levels assumed by PlanetSpace as unrealistically high, and found the assumed overall development costs to be inadequate in light of the significant effort that would be required to integrate multiple components for [REDACTED] different orbital vehicle configurations and a launch vehicle. Furthermore, it was NASA's experience that required integration efforts had been a basis for cost increases under prior NASA cost-plus contracts with LM and Boeing. Tr. at 353-54, 897-900. Indeed, the SSA questioned why LM and Boeing had not participated in the commercial resupply services effort on a fixed-price basis if in fact the likely cost of performance was reasonably understood and controllable. Tr. at 283-84.

PlanetSpace further questions the evaluated financial risk of its proposed approach by citing a brief excerpt from the SSA's day-long hearing testimony, during which he indicated that he had not been informed during his briefing by the evaluators that PlanetSpace had proposed to use "design to cost" and an earned value management system as part of its cost controls. Tr. at 362-63. This argument is without merit, because the SSA also testified that he had discussed with the SEB a page from its report that addressed both the risks associated with PlanetSpace's cost-plus subcontracting and specific cost control measures proposed by PlanetSpace, including, specifically, the proposed "design to cost" and earned value management system. SEB FPR Report at 7.2-80, Tr. at 355-56. Further, the record includes testimony from the chairman of the management committee, as well as the relevant briefing slide (different from the above excerpt from the SEB Report), which establishes that the SSA otherwise was briefed by the SEB about the inclusion of "design to cost" and an earned value management system as part of PlanetSpace's cost controls. Tr. at 1043-46, Backup Briefing Slides at Record 28,765. In any event, a contracting officer properly may base his or her independent judgment on reports and analyses prepared by others. <u>Comprehensive Health Servs., Inc.</u>, B--310553, Dec. 27, 2007, 2008 CPD ¶ 9 at 11; <u>see</u> <u>University Research Co., LLC</u>, B-294358 <u>et al.</u>, Oct. 28, 2004, 2004 CPD ¶ 217 at 8. Here, the SEB specifically considered and discussed in its report PlanetSpace's proposed cost control measures, including its reference to "design to cost" and an earned value management system, and found them to be insufficient to overcome the cost risk associated with PlanetSpace's

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[6] PlanetSpace's estimate of [REDACTED]% as the true, effective proportion of its overall contract effort that would be cost-based, was calculated on the basis that a reported [REDACTED]% of the contract effort would be expended for development work under cost-based subcontracting with LM and ATK, which in turn would subcontract [REDACTED]% to [REDACTED]% of that effort to third tier vendors under fixed-price subcontracts. <u>See</u> Tr. at 897-99, 916-17, 1127-28.

contracting approach. SEB FPR Report at 7.2-80; Tr. at 901-05. PlanetSpace has not shown the agency's determination in this regard to be unreasonable.

PlanetSpace asserts that, even accepting the evaluated risks associated with its contracting approach, the agency's overall view of its proposal simply failed to account for the technical advantages offered by the participation of LM, Boeing, and ATK. In other words, PlanetSpace is essentially asking that we find that the agency was required to subordinate its serious concerns about the ability of PlanetSpace--the prime contractor--to perform, to the benefits of the subcontractors' participation in the contract effort, as evaluated by the SEB. There is no basis for us to make such a finding. As noted, we will review proposal evaluations only to determine whether the agency's conclusions were reasonable and consistent with applicable procurement laws and regulations. Panacea Consulting, Inc., supra. We think the SSA clearly acted reasonably in concluding that PlanetSpace's own lack of technical and management capability and significant, relevant past performance, the fact that PlanetSpace would be the prime contractor to the agency, and the high financial risk associated with PlanetSpace's proposal, were more significant considerations than, and thus offset, the favorable technical past performance of LM, Boeing and ATK.

RUSSIAN ENGINES

PlanetSpace asserts that NASA did not adequately account in the source selection for the risk associated with OSC's proposed use of Russian engines in the first stage of its launch vehicle. In this regard, OSC proposed to use the Taurus II medium-class launch vehicle, a vehicle under development by OSC, which would use Aerojet's AJ26-62 liquid-propellant engines, a modernized version of existing Russian NK-33 rocket engines manufactured in the late 1960s and early 1970s. Although the SEB initially determined that OSC's proposal to use 35-year-old engines represented a substantial or significant risk to the feasibility of OSC's production and delivery capability, the evaluators, based on information furnished in response to the agency's discussion question, ultimately reduced the assessed risk, finding OSC's approach to pose technical and schedule risks warranting only an ordinary, and not a significant, weakness. PlanetSpace asserts that a significant risk was warranted.

The evaluation in this regard was reasonable. In determining that OSC had alleviated most, but not all of the agency's initial concerns, the evaluators considered a number of mitigating factors. As an initial matter, the agency noted that not only did Aerojet have in its possession [REDACTED] NK-33 engines at its Sacramento, California plant, a sufficient number for the [REDACTED] flights (at [REDACTED] engines per flight) proposed in its model task order, but in addition, more than [REDACTED] additional NK-33 engines were at the engine manufacturer's facilities in Russia. Further, OSC reported that Aerojet, which had experience performing service life extension for the Titan II engines, had undertaken significant work [REDACTED]. Further, OSC reported that the NK-33 engines (including those in both the United States and Russia) had been stored in humidity-controlled conditions with no documented stress corrosion cracking.[7] In addition, as evidence of the favorable condition of the engines, OSC reported that one of the NK-33 engines in Russia, originally manufactured in 1972, had been successfully test fired twice in September 2008. Finally, while final approval from Russia for use of the engines in OSC's Taurus II launch vehicle had not yet been obtained, the agency noted that OSC had completed all of the licensing steps and was only awaiting final approval; Russia had previously granted licenses for use of the engines on other vehicles; and testing could begin prior to approval for actual launch operations. In these circumstances, the agency determined that OSC's approach represented only an ordinary weakness. OSC FPR Mission Suitability Proposal at 10-12, 19, 32-36, 73-80; SEB FPR Report at 7.1-16 to 18; SSD at 9; Tr. at 397, 487-91, 717-26, 767, 1226-33. PlanetSpace has not shown that this determination was unreasonable.

COST

Noting that the SSD did not include a total evaluated price for any of the offerors, PlanetSpace asserts that NASA did not adequately consider price--in particular, PlanetSpace's price advantage–in the source selection.

Agencies must consider cost to the government in evaluating proposals, 10 U.S.C. § 2305(a)(3)(A)(ii) (2006), and while it is up to the agency to decide upon some appropriate and reasonable method for evaluating offerors' prices, an agency may not use an evaluation method that produces a misleading result. See Bristol–Myers Squibb Co., B--294944.2, Jan. 18, 2005, 2005 CPD ¶ 16 at 4; AirTrak Travel et al., B-292101 et al., June 30, 2003, 2003 CPD ¶ 117 at 22. The method chosen must include some reasonable basis for evaluating or comparing the relative costs of proposals, so as to establish whether one offeror's proposal would be more or less costly than another's. Id.; see R&G Food Serv., Inc., d/b/a Port-A-Pit Catering Servs., LLC, B-296435.4, B-296435.9, Sept. 15, 2005, 2005 CPD ¶ 194 at 4; cf. FAR § 15.405(b) (primary concern is the overall price the government will actually pay).

The record indicates that price was reasonably considered in the source selection. In this regard, offerors were required not only to furnish a fully burdened price per kilogram of pressurized upmass cargo, unpressurized upmass cargo, return downmass cargo and disposal downmass cargo, but also a total price for particular types of resupply missions using the offeror's unique mission configurations. RFP § VI.A.21.P2; Amend. 6, RFP §§ VI.A.19, VI.A.21.P2. Further, this pricing was reported in various detailed formats to the SSA. For example, a summary of one of many detailed pricing charts presented to the SSA indicated the relative weighted per kg price for cargo as follows:

[7] Also, NASA personnel inspected the warehouse in the United States where the engines are stored. Tr. at 767, 1228.

| | PlanetSpace | OSC | SpaceX |
|---|---|---|---|
| Pressurized Upmass [8] | $[REDACTED] | $[REDACTED][9] | $[REDACTED] |
| Unpressurized Upmass | $[REDACTED] | $[REDACTED] | $[REDACTED] |
| Return Downmass | $[REDACTED] | $[REDACTED] | $[REDACTED] |
| Disposal Downmass | $[REDACTED] | $[REDACTED] | $[REDACTED] |

Final Source Selection Presentation at 126. Another of the pricing charts presented to the SSA indicated the overall mission price for a combined pressurized upmass and disposal downmass mission using the offeror's unique configuration as follows:

| **Overall Pressurized Upmass/Disposal Downmass Mission Price in $ Millions** | | | | |
|---|---|---|---|---|
| | OSC Basic | OSC Enhanced | PlanetSpace | SpaceX |
| Capacity | 2000/2000 kg | 2700/2700 kg | [REDACTED] kg | 3310/3310 kg |
| CY 2010 | $[REDACTED] (800/500 kg) | -- | -- | $[REDACTED] |
| CY 2011 | $[REDACTED] (1575/1775/2000 kg) | -- | $[REDACTED] (Atlas V--[REDACTED] kg) | $[REDACTED] |
| CY 2012 | $[REDACTED] | -- | $[REDACTED] | $[REDACTED] |
| CY 2013 | $[REDACTED] | $[REDACTED] (2500/2700 kg) | $[REDACTED] | $[REDACTED] |
| CY 2014 | $[REDACTED] | $[REDACTED] | $[REDACTED] | $[REDACTED] |
| CY 2015 | $[REDACTED] | $[REDACTED] | $[REDACTED] | $[REDACTED] |
| CY 2016 | $[REDACTED] | $[REDACTED] | $[REDACTED] | $[REDACTED] |

Final Source Selection Presentation at 119.

[8] $thousand per kg.

[9] Price for basic engine/price for enhanced future engine.

As is apparent from this information presented to the SSA, OSC's pricing exceeded PlanetSpace's, usually by a significant margin. Thus, the information presented to the SSA indicated that OSC's overall weighted price per kg of pressurized upmass cargo ($[REDACTED] basic/$[REDACTED] enhanced) was approximately [REDACTED] that of PlanetSpace ($[REDACTED]), while OSC's overall price for a pressurized upmass cargo and disposal downmass cargo mission in CY 2016 ($[REDACTED] million for a 2000/2000 kg basic mission or $[REDACTED] million for an 2700/2700 kg enhanced engine mission) was significantly higher on either an overall mission or per kg basis than PlanetSpace's ($[REDACTED] million for a [REDACTED] kg mission). Although agency evaluators did not calculate a total evaluated price for each offeror, the SSD stated that OSC's overall pricing (as well as its overall pricing for the "substantially more important" CLIN 1 for standard resupply services, RFP § VII.C), was the highest, with PlanetSpace's pricing being the next highest and SpaceX's being the lowest. SSD at 16-17. Further, the record indicates that the SSA recognized that OSC's proposal was "significantly more costly" than PlanetSpace's, estimating that OSC's overall price was "around [REDACTED] per kilogram" and PlanetSpace's was "probably [REDACTED] to [REDACTED] per kilogram in rough order of magnitude." Tr. at 159. Indeed, the record indicates that PlanetSpace's above price advantage as perceived by the SSA was even greater than that claimed by PlanetSpace--which calculated that OSC's proposal was [REDACTED]% to [REDACTED]% more expensive than PlanetSpace's--during this litigation. PlanetSpace Comments, Mar. 2, 2009, at 66-67. In these circumstances, we find no basis to conclude that the source selection was based on a failure by the agency to consider, or the agency's misunderstanding of, PlanetSpace's price advantage over OSC.

The protest is denied.

Gary L. Kepplinger
General Counsel

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**United States Government Accountability Office**
**Washington, DC 20548**



# Decision

**Matter of:** Honeywell Technology Solutions, Inc.

**File:** B-400771.6

**Date:** November 23, 2009

David A. Churchill, Esq., Kevin C. Dwyer, Esq., and Anna M. Baldwin, Esq., Jenner & Block LLP, for the protester.
Lars E. Anderson, Esq., Paul A. Debolt, Esq., Justin J. Wortman, Esq., George W. Wyatt, IV, Esq., and Maria Alejandra del-Cerro, Esq., Venable LLP, for ITT Corporation, an intervenor.
Alexander T. Bakos, Esq., Laura M. Giza, Esq., John H. Eckhardt, Esq., and Pamela J. Werner, Esq., National Aeronautics and Space Administration, for the agency.
Louis A. Chiarella, Esq., and Christine S. Melody, Esq., Office of the General Counsel, GAO, participated in the preparation of the decision.

## DIGEST

Agency decision to limit corrective action to the area of past performance is unobjectionable where it is adequate to remedy the procurement impropriety at issue.

## DECISION

Honeywell Technology Solutions, Inc., of Columbia, Maryland, protests the actions of the National Aeronautics and Space Administration (NASA), Goddard Space Flight Center (GSFC), in its implementation of corrective action in response to Honeywell's protest of NASA's award of a contract to ITT Corporation -- Advanced Engineering & Sciences (ITT), of Herndon, Virginia, under request for proposals (RFP) No. NNG08218142R, for space communications network services (SCNS). Honeywell argues that NASA's corrective action is improper by limiting the scope of offerors' proposal revisions to past performance information.

We deny the protest.

BACKGROUND

The RFP, issued on January 16, 2008, sought proposals to provide the personnel, materials, and facilities necessary to perform all SCNS program requirements (see Honeywell Tech. Solutions, Inc., B-400771, B-400771.2, Jan. 27, 2009, 2009 CPD ¶ 49 for additional details). The RFP contemplated the award of a partial cost-plus-award-fee contract/partial indefinite-delivery/indefinite-quantity contract for a period of 5 years together with two 1-year options. The RFP established three evaluation factors in descending order of importance: mission suitability; cost; and past performance. The noncost factors, when combined, were significantly more important than cost. Award was to be made to the offeror whose proposal was determined to represent the "best value" to the government.

Three offerors, including incumbent Honeywell and ITT, submitted proposals by the February 15 closing date. A NASA selection evaluation board (SEB) evaluated offerors' proposals. The contracting officer decided that discussions with offerors were necessary, and established a competitive range consisting of the Honeywell and ITT proposals. The agency conducted discussions, followed by the offerors' submission of final proposal revisions (FPR) by August 25. NASA's final evaluation ratings of the Honeywell and ITT proposals were as follows:

| Factor | Honeywell | ITT |
|---|---|---|
| Mission Suitability | Very Good | Very Good |
| Past Performance | Very Good | Excellent |
| Total Evaluated Cost | $[DELETED] | $[DELETED] |

Agency Report (AR), Tab 80, Final SEB Report, at 23640, 23752.

On October 6, the NASA source selection authority (SSA) determined that ITT's proposal was technically superior to that of Honeywell under both the mission suitability and past performance factors. The SSA found, among other things, that while both offerors possessed highly relevant past performance, ITT had a quality advantage relating to systems engineering and developmental tasks. The SSA concluded that ITT's higher technically-rated, higher-cost proposal represented the best value to the government.

Honeywell filed its initial protest on October 20, challenging various aspects of the evaluation of offerors' proposals, the conduct of discussions, and the source selection. On January 27, 2009, we sustained the protest in part, finding that NASA's evaluation of ITT's past performance was not reasonable or in accordance with the solicitation: the record failed to reflect that the agency had adequately considered the substantially smaller size of one of ITT's most important references (i.e., its mission service program (MSP) contract) when determining the relevance of ITT's past performance.[1] In light of this deficiency in the agency's evaluation of ITT's past performance, it was not possible to determine what ITT's past performance rating

[1] We dismissed or denied all other bases of protest, including Honeywell's challenges to the agency's evaluation of offerors' technical and cost proposals.

properly should have been and, therefore, we concluded that the agency's action was prejudicial to Honeywell. We recommended that NASA reevaluate ITT's past performance, and then rely on that revised evaluation in making a new source selection determination.[2] Honeywell Tech. Solutions, Inc., supra, at 19-25.

On April 7, NASA completed its reevaluation of ITT's past performance and again found that ITT's proposal represented the best value to the government. Honeywell filed a second protest on April 24, challenging the agency's reevaluation of ITT's past performance. On June 25, following a hearing held by our Office, we conducted an "outcome prediction" alternative dispute resolution (ADR) conference and advised the parties that NASA's reevaluation of ITT's past performance was not reasonable or consistent with the stated evaluation criteria because ITT's MSP contract--being only 4% the size of the SCNS contract effort--was not relevant as defined by the RFP (i.e., similar in size, content and complexity) and, under the evaluation scheme, should have been afforded little if any weight in the agency's evaluation of ITT's past performance. Hearing Transcript (HR), June 25, 2009, at 423-31.

On July 2, NASA announced its intent to take corrective action in the form of conducting discussions with offerors regarding past performance, permitting offerors to submit FPRs limited to past performance information, reevaluating the past performance of both offerors, and making a new source selection decision.[3] NASA Email to GAO, July 2, 2009. Based on this proposed corrective action, we dismissed the second protest as academic. Honeywell Tech. Solutions, Inc., B-400771.3, B-400771.4, July 8, 2009.

Honeywell then filed an agency-level protest with the NASA contracting officer on July 13. Honeywell asserted that NASA's planned corrective action was insufficient because it ignored the fact that offerors' proposals had become outdated in all regards; Honeywell also argued that limiting proposal revisions to only past performance was unreasonable because past performance was "inextricably linked"

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[2] We also recommended that if, after reevaluation, Honeywell's proposal was determined to represent the best value to the government, the agency should terminate ITT's contract and make award to Honeywell.

[3] The agency subsequently clarified the scope of its corrective action. First, in contrast to a draft amendment provided offerors, NASA has decided not to amend the RFP as to the past performance evaluation scheme. NASA Letter to GAO, Sept. 16, 2009, at 1. The agency has also indicated that the need for exchanges with offerors and/or FPRs has not yet been determined, and will depend on the nature of the updated past performance information received from offerors (e.g., adverse past performance information to which the offeror has not previously had an opportunity to respond). AR, Sept. 23, 2009, at 14-16.

to other elements of the offerors' proposals. The contracting officer denied Honeywell's agency-level protest on August 11,[4] and this protest followed.

DISCUSSION

Contracting officers in negotiated procurements have broad discretion to take corrective action where the agency determines that such action is necessary to ensure a fair and impartial competition. Domain Name Alliance Registry, B-310803.2, Aug. 18, 2008, 2008 CPD ¶ 168 at 8; Computer Assocs. Int'l, B-292077.2, Sept. 4, 2003, 2003 CPD ¶ 157 at 5. An agency's discretion when taking corrective action also extends to a decision on the scope of proposal revisions, and there are circumstances where an agency may reasonably decide to limit the revisions offerors may make to their proposals. See, e.g., Computer Assocs. Int'l, supra; Rel-Tek Sys. & Design, Inc.--Modification of Remedy, B-280463.7, July 1, 1999, 99-2 CPD ¶ 1 at 3. In instances where the corrective action does not also include amending the solicitation, we will not question an agency's decision to restrict proposal revisions when taking corrective action so long as it is reasonable in nature and remedies the established or suspected procurement impropriety. See Consolidated Eng'g Servs., Inc., B-293864.2, Oct. 25, 2004, 2004 CPD ¶ 214 at 3-4; Computer Assocs. Int'l, supra.

As a preliminary matter, the parties agree that NASA's corrective action here does not include amending either the solicitation's substantive requirements or evaluation scheme. Additionally, Honeywell does not dispute that NASA's corrective action remedies the established or suspected procurement impropriety (i.e., the agency's evaluation of ITT's past performance). Rather, the crux of Honeywell's objections is that the agency's corrective action does not go far enough, insofar as offerors should be permitted to submit unlimited proposal revisions.

The agency's decision to limit the scope of its corrective action was reasonable. As noted above, our January 27 decision found that NASA's evaluation of ITT's past performance was improper, but that Honeywell's remaining challenges to the evaluation of offerors' proposals were without merit: in light thereof, our recommendation was limited to remedying the identified problem regarding the past performance evaluation. Further, after the June 25 outcome prediction ADR

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[4] The contracting officer did not dispute Honeywell's contention that offerors' cost and technical proposals were as out of date as their past performance proposals; rather, the contracting officer found "it is just as likely that the same changed circumstances [Honeywell] cites will have similar impact on both offerors, and will not substantively impact the competitive process." AR, Tab 100, NASA Final Decision on Honeywell Agency-Level Protest, Aug. 11, 2009, at 3. The contracting officer's decision did not state why the "same changed circumstances/similar impact" rationale existed only with regard to offerors' cost and technical proposals, and not also with regard to their past performance proposals.

conference, NASA took corrective action to remedy the problem identified regarding the past performance evaluation and, at the same time, decided to obtain updated information from both offerors in that area. In our view, NASA's decision to update the past performance information from each offeror was a reasonable way to remedy the identified procurement impropriety while not affecting other portions of offerors' proposals and the evaluation thereof. This approach has the added benefit of reducing further cost and delay in the procurement. See Computer Assocs. Int'l, Inc., supra; Serv-Air, Inc., B-258243.4, Mar. 3, 1995, 95-1 CPD ¶ 125 at 2-3. We therefore conclude that the agency acted within its discretion in limiting the revisions offerors may make to their proposals.

Honeywell argues that offerors' technical and cost proposals are as outdated as the past performance proposals which NASA believes require updating as part of its corrective action. Specifically, the protester alleges that the agency's evaluation of offerors' cost proposals no longer takes into account the specific years in which contract performance would actually occur. Honeywell also contends that offerors' technical proposals no longer reflect the actual technical approaches (e.g., key personnel, new technologies, improved processes) that would be employed during contract performance. Protest, Aug. 21, 2009, at 6-13. The agency states that the terms of the RFP did not contain specified start and end dates, and instead defined contract years based on the date of contract award; NASA also asserts that the direct and indirect labor rates proposed by both offerors can be used for determining and evaluating the cost of performance notwithstanding the delays in contract award. AR, Nov. 10, 2009, at 1.

We find Honeywell's argument to be without merit. As a preliminary matter, the different start date and calendar years in which SCNS performance will occur did not change the statement of work, the evaluation scheme, or the length of time for which the contractor would be obligated. See Consolidated Eng'g Servs., Inc., supra. More importantly, Honeywell has failed to establish that NASA's decision permitting offerors to update their past performance information is expected to have a material impact on their cost or technical proposals. See ST Aerospace Engines Pte. Ltd., B-275725.3, Oct. 17, 1997, 97-2 CPD ¶ 106 at 4. The issue is not whether Honeywell's technical and cost proposals have also been affected by the passage of time, but whether permitting the offeror to update its past performance information results in a material impact on other aspects of the offeror's proposal. While, as the protester suggests, NASA could have chosen to permit offerors to also revise their technical and cost proposals (to be followed by a complete reevaluation), the contracting agency's decision not to undertake such action here represents a reasonable exercise of its discretion. See SDS Int'l, Inc., B-291183.4, B-291183.5, Apr. 28, 2003, 2003 CPD ¶ 127 at 7.

We also find unpersuasive Honeywell's argument that past performance revisions are "inextricably linked" to offerors' proposed technical approaches. Honeywell contends that, as evidenced by a recent award fee determination under its incumbent contract, it is aware the agency intends to downgrade its past performance based on the loss of incumbent personnel.[5] Honeywell argues that it will be faulted (presumably under the past performance factor) for its loss of incumbent personnel without having an opportunity--in the form of an updated technical proposal--to explain its solution to this issue. Protest, Aug. 21, 2009, at 15-16; Comments, Oct. 5, 2009, at 3. First, Honeywell fails to establish that the loss of incumbent personnel on its incumbent contract will affect its past performance evaluation. Honeywell also broadly states that it would modify its technical proposal based on the loss of certain incumbent personnel but, despite having the award fee determination in hand, it provides no specific information to support its general assertion. More importantly, Honeywell has not shown why the opportunity to address the alleged past performance deficiency must come in the form of a revised technical proposal. In sum, the protester has not established that requiring offerors to update their past performance information will have a material impact on their technical proposals, let alone that the two aspects of the offerors' proposal are "inextricably linked."

Lastly, Honeywell argues that the SCNS RFP no longer accurately reflects the agency's work requirements. Specifically, the protester asserts that NASA intends to "dilute" the amount of systems engineering work to be performed on the SCNS contract by means of the agency's new space network ground system sustainment (SSGS) procurement. Comments, Oct. 5, 2009, at 15-16. NASA's SGSS procurement currently consists of a draft solicitation released on August 5 for industry comment. Contracting Officer's Statement, Oct. 13, 2009, at 3. As a result, we find Honeywell's assertion here to be entirely speculative in nature and an insufficient basis for challenging the reasonableness of the agency's corrective action.

The protest is denied.

Lynn H. Gibson
Acting General Counsel

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[5] Honeywell contends that the loss of employees is in large part due to the delays and uncertainties surrounding NASA's SCNS contract award decision. Protest, Aug. 21, 2009, at 15.

PUBLIC LAW 111–8—MAR. 11, 2009

# OMNIBUS APPROPRIATIONS ACT, 2009

## TITLE III

Science Appropriations Act, 2009.

## SCIENCE

### OFFICE OF SCIENCE AND TECHNOLOGY POLICY

For necessary expenses of the Office of Science and Technology Policy, in carrying out the purposes of the National Science and Technology Policy, Organization, and Priorities Act of 1976 (42 U.S.C. 6601–6671), hire of passenger motor vehicles, and services as authorized by 5 U.S.C. 3109, not to exceed $2,500 for official reception and representation expenses, and rental of conference rooms in the District of Columbia, $5,303,000.

### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

#### SCIENCE

For necessary expenses, not otherwise provided for, in the conduct and support of science research and development activities, including research, development, operations, support, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $4,503,019,000 to remain available until September 30, 2010.

#### AERONAUTICS

For necessary expenses, not otherwise provided for, in the conduct and support of aeronautics research and development activities, including research, development, operations, support, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $500,000,000 to remain available until September 30, 2010.

#### EXPLORATION

For necessary expenses, not otherwise provided for, in the conduct and support of exploration research and development activities, including research, development, operations, support, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; space flight, spacecraft control, and communications activities; program management, personnel and related costs, including uniforms or allowances therefor, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $3,505,469,000 to remain available until September 30, 2010.

SPACE OPERATIONS

For necessary expenses, not otherwise provided for, in the conduct and support of space operations research and development activities, including research, development, operations, support and services; space flight, spacecraft control and communications activities including operations, production, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance and operation of mission and administrative aircraft, $5,764,710,000, to remain available until September 30, 2010: *Provided,* That of the amounts provided under this heading, $2,981,724,000 shall be for Space Shuttle operations, production, research, development, and support, $2,060,162,000 shall be for International Space Station operations, production, research, development, and support, and $722,824,000 shall be for Space and Flight support.

EDUCATION

For necessary expenses, not otherwise provided for, in carrying out aerospace and aeronautical education research and development activities, including research, development, operations, support, and services; program management; personnel and related costs, uniforms or allowances therefor, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $169,200,000, to remain available until September 30, 2010.

CROSS AGENCY SUPPORT

For necessary expenses, not otherwise provided for, in the conduct and support of science, aeronautics, exploration, space operations and education research and development activities, including research, development, operations, support, and services; maintenance; construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law; environmental compliance and restoration; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by 5 U.S.C. 5901–5902; travel expenses; purchase and hire of passenger motor vehicles; not to exceed $70,000 for official reception and representation expenses; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $3,306,387,000, to remain available until September 30, 2010: *Provided,* That $2,024,000,000, together with not more than $9,000,000 to be derived from receipts pursuant to 42 U.S.C. 2459j, shall be available for center management and operations: *Provided further,* That notwithstanding 42 U.S.C. 2459j, proceeds from enhanced use leases that may be made available for obligation for fiscal year 2009 shall not exceed $9,000,000: *Provided further,* That each annual budget request shall include an annual estimate of gross receipts and collections and proposed use of all funds collected pursuant to 42 U.S.C. 2459j: *Provided further,* That not less than $45,000,000 shall be available for independent verification and validation activities, of which $5,000,000 shall be available to develop core verification and validation competencies with small businesses, and $40,000,000 shall be available for operations of the independent verification and validation facility: *Provided further,* That within the amounts appropriated $67,500,000 shall be used for the projects, and in the amounts, specified in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act).

42 USC 16611b note.

OFFICE OF INSPECTOR GENERAL

For necessary expenses of the Office of Inspector General in carrying out the Inspector General Act of 1978, $33,600,000, to remain available until September 30, 2010.

ADMINISTRATIVE PROVISIONS

Notwithstanding the limitation on the duration of availability of funds appropriated to the National Aeronautics and Space Administration for any account in this Act, except for "Office of Inspector General", when any activity has been initiated by the incurrence of obligations for construction of facilities or environmental compliance and restoration activities as authorized by law, such amount available for such activity shall remain available until expended. This provision does not apply to the amounts appropriated for institutional minor revitalization and minor construction of facilities, and institutional facility planning and design.

Notwithstanding the limitation on the availability of funds appropriated to the National Aeronautics and Space Administration for any account in this Act, except for "Office of Inspector General", the amounts appropriated for construction of facilities shall remain available until September 30, 2011.

Funds for announced prizes otherwise authorized shall remain available, without fiscal year limitation, until the prize is claimed or the offer is withdrawn.

Not to exceed 5 percent of any appropriation made available for the current fiscal year for the National Aeronautics and Space Administration in this Act may be transferred between such appropriations, but no such appropriation, except as otherwise specifically provided, shall be increased by more than 10 percent by any such transfers. Any transfer pursuant to this provision shall be treated as a reprogramming of funds under section 505 of this Act and shall not be available for obligation except in compliance with the procedures set forth in that section.

Notwithstanding any other provision of law, no funds shall be used to implement any Reduction in Force or other involuntary separations (except for cause) by the National Aeronautics and Space Administration prior to September 30, 2009.

The unexpired balances of the Science, Aeronautics, and Exploration account, for activities for which funds are provided under this Act, may be transferred to the new accounts established in this Act that provide such activity. Balances so transferred shall be merged with the funds in the newly established accounts, but shall be available under the same terms, conditions and period of time as previously appropriated.

For the closeout of all Space Shuttle contracts and associated programs, amounts that have expired but have not been cancelled in the Human Space Flight, Space Flight Capabilities, and Exploration Capabilities appropriations accounts shall remain available through fiscal year 2015 for the liquidation of valid obligations incurred during the period of fiscal year 2001 through fiscal year 2009.

Funding designations and minimum funding requirements contained in any other Act shall not be applicable to funds appropriated by this title for the National Aeronautics and Space Administration.

Deadline. Reports.

The Administrator of NASA shall, not later than February 2, 2009, submit to the appropriate committees of Congress a report that delineates by fiscal year, mission directorate and object class the full costs necessary for Space Shuttle retirement and transition activities for fiscal years 2006 through 2015 that includes, but is not limited to, the following:

(1) the costs for environmental compliance and remediation;

(2) the gross and net proceeds from exchange sales of excess Space Shuttle equipment;

(3) the costs to maintain required facilities at Kennedy Space Center during the gap in human space flight;

(4) the costs associated with preservation of historic properties;

(5) the costs of workforce transition; and

(6) other costs related to Space Shuttle retirement and transition.

## NATIONAL SCIENCE FOUNDATION

### RESEARCH AND RELATED ACTIVITIES

For necessary expenses in carrying out the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861–1875), and the Act to establish a National Medal of Science (42 U.S.C. 1880–1881); services as authorized by 5 U.S.C. 3109; maintenance and operation of aircraft and purchase of flight services for research support; acquisition of aircraft; and authorized travel; $5,183,100,000, to remain available until September 30, 2010, of which not to exceed $540,000,000 shall remain available until expended for polar research and operations support, and for reimbursement to other Federal agencies for operational and science support and logistical and other related activities for the United States Antarctic program: *Provided*, That from funds specified in the fiscal year 2009 budget request for icebreaking services, up to $54,000,000 shall be available for the procurement of polar icebreaking services: *Provided further*, That the National Science Foundation shall only reimburse the Coast Guard for such sums as are agreed to according to the existing memorandum of agreement: *Provided further*, That receipts for scientific support services and materials furnished by the National Research Centers and other National Science Foundation supported research facilities may be credited to this appropriation: *Provided further,* That not less than $133,000,000 shall be available for activities authorized by section 7002(b)(2)(A)(iv) of Public Law 110–69.

MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION

For necessary expenses for the acquisition, construction, commissioning, and upgrading of major research equipment, facilities, and other such capital assets pursuant to the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861–1875), including authorized travel, $152,010,000, to remain available until expended.

EDUCATION AND HUMAN RESOURCES

For necessary expenses in carrying out science and engineering education and human resources programs and activities pursuant to the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861–1875), including services as authorized by 5 U.S.C. 3109, authorized travel, and rental of conference rooms in the District of Columbia, $845,260,000, to remain available until September 30, 2010: *Provided further,* That not less than $55,000,000 shall be available until expended for activities authorized by section 7030 of Public Law 110–69.

AGENCY OPERATIONS AND AWARD MANAGEMENT

For agency operations and award management necessary in carrying out the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861–1875); services authorized by 5 U.S.C. 3109; hire of passenger motor vehicles; not to exceed $9,000 for official reception and representation expenses; uniforms or allowances therefor, as authorized by 5 U.S.C. 5901–5902; rental of conference rooms in the District of Columbia; and reimbursement of the Department of Homeland Security for security guard services; $294,000,000: *Provided*, That contracts may be entered into under this heading in fiscal year 2009 for maintenance and operation of facilities, and for other services, to be provided during the next fiscal year.

OFFICE OF THE NATIONAL SCIENCE BOARD

For necessary expenses (including payment of salaries, authorized travel, hire of passenger motor vehicles, the rental of conference rooms in the District of Columbia, and the employment of experts and consultants under section 3109 of title 5, United States Code) involved in carrying out section 4 of the National Science Foundation Act of 1950, as amended (42 U.S.C. 1863) and Public Law

86–209 (42 U.S.C. 1880 et seq.), $4,030,000: *Provided*, That not to exceed $2,500 shall be available for official reception and representation expenses.

OFFICE OF INSPECTOR GENERAL

For necessary expenses of the Office of Inspector General as authorized by the Inspector General Act of 1978, as amended, $12,000,000.

This title may be cited as the "Science Appropriations Act, 2009".

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# Public Law 111–44
111th Congress

## An Act

Aug. 7, 2009
[H.R. 2245]

To authorize the President, in conjunction with the 40th anniversary of the historic and first lunar landing by humans in 1969, to award gold medals on behalf of the United States Congress to Neil A. Armstrong, the first human to walk on the moon; Edwin E. "Buzz" Aldrin, Jr., the pilot of the lunar module and second person to walk on the moon; Michael Collins, the pilot of their Apollo 11 mission's command module; and, the first American to orbit the Earth, John Herschel Glenn, Jr.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

New Frontier Congressional Gold Medal Act. 31 USC 5111 note.

**SECTION 1. SHORT TITLE.**

This Act may be cited as the "New Frontier Congressional Gold Medal Act".

31 USC 5111 note.

**SEC. 2. FINDINGS.**

The Congress finds that—

(1) as spacecraft commander for Apollo 11, the first manned lunar landing mission, Neil A. Armstrong gained the distinction of being the first man to land a craft on the moon and first to step on its surface on July 21, 1969;

(2) by conquering the moon at great personal risk to safety, Neil Armstrong advanced America scientifically and technologically, paving the way for future missions to other regions in space;

(3) Edwin E. "Buzz" Aldrin, Jr., joined Armstrong in piloting the lunar module, Eagle, to the surface of the moon, and became the second person to walk upon its surface;

(4) Michael Collins piloted the command module, Columbia, in lunar orbit and helped his fellow Apollo 11 astronauts complete their mission on the moon;

(5) John Herschel Glenn, Jr., helped pave the way for the first lunar landing when on February 20, 1962, he became the first American to orbit the Earth; and

(6) John Glenn's actions, like Armstrong's, Aldrin's and Collins's, continue to greatly inspire the people of the United States.

31 USC 5111 note. President.

**SEC. 3. CONGRESSIONAL GOLD MEDAL.**

(a) PRESENTATION AUTHORIZED.—The President is authorized to present, on behalf of the Congress, to Neil A. Armstrong, Edwin E. "Buzz" Aldrin, Jr., Michael Collins, and John Herschel Glenn, Jr., each a gold medal of appropriate design, in recognition of their significant contributions to society.

(b) DESIGN AND STRIKING.—For purposes of the presentation referred to in subsection (a), the Secretary of the Treasury shall strike gold medals with suitable emblems, devices, and inscriptions, to be determined by the Secretary.

**SEC. 4. DUPLICATE MEDALS.**

31 USC 5111 note.

The Secretary of the Treasury may strike and sell duplicates in bronze of the gold medal struck pursuant to section 3 under such regulations as the Secretary may prescribe, at a price sufficient to cover the cost thereof, including labor, materials, dies, use of machinery, and overhead expenses, and the cost of the gold medals.

**SEC. 5. NATIONAL MEDALS.**

31 USC 5111 note.

The medals struck pursuant to this Act are national medals for purposes of chapter 51 of title 31, United States Code.

**SEC. 6. AUTHORITY TO USE FUND AMOUNTS; PROCEEDS OF SALE.**

31 USC 5111 note.

(a) AUTHORITY TO USE FUND AMOUNTS.—There is authorized to be charged against the United States Mint Public Enterprise Fund, such amounts as may be necessary to pay for the costs of the medals struck pursuant to this Act.

(b) PROCEEDS OF SALE.—Amounts received from the sale of duplicate bronze medals authorized under section 4 shall be deposited into the United States Mint Public Enterprise Fund.

Approved August 7, 2009.

LEGISLATIVE HISTORY—H.R. 2245 (S. 951):

CONGRESSIONAL RECORD, Vol. 155 (2009):
July 20, considered and passed House.
July 21, considered and passed Senate.

PUBLIC LAW 111–84—OCT. 28, 2009

# NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2010

## Subtitle B—Space Activities

**SEC. 911. SUBMISSION AND REVIEW OF SPACE SCIENCE AND TECHNOLOGY STRATEGY.**

(a) STRATEGY.—

(1) DIRECTOR OF NATIONAL INTELLIGENCE.—Paragraph (1) of section 2272(a) of title 10, United States Code, is amended by striking "The Secretary of Defense shall develop" and

inserting "The Secretary of Defense and the Director of National Intelligence shall jointly develop".

(2) REQUIREMENTS.—Paragraph (2) of such section is amended by adding at the end the following new subparagraph:

"(D) The process for transitioning space science and technology programs to new or existing space acquisition programs.".

(3) SUBMISSION TO CONGRESS.—Paragraph (5) of such section is amended to read as follows:

"(5) The Secretary of Defense and the Director of National Intelligence shall biennially submit the strategy developed under paragraph (1) to the congressional defense committees every other year on the date on which the President submits to Congress the budget for the next fiscal year under section 1105 of title 31.". Deadline.

(4) INITIAL REPORT.—The first space science and technology strategy required to be submitted under paragraph (5) of section 2272(a) of title 10, United States Code, as amended by paragraph (3) of this subsection, shall be submitted on the date on which the President submits to Congress the budget for fiscal year 2012 under section 1105 of title 31, United States Code. 10 USC 2272 note.

(b) GOVERNMENT ACCOUNTABILITY OFFICE REVIEW OF STRATEGY.—

(1) REVIEW.—The Comptroller General shall review and assess the first space science and technology strategy submitted under paragraph (5) of section 2272(a) of title 10, United States Code, as amended by subsection (a)(3) of this section, and the effectiveness of the coordination process required under section 2272(b) of such title.

(2) REPORT.—Not later than 90 days after the date on which the Secretary of Defense and the Director of National Intelligence submit the first space science and technology strategy required to be submitted under paragraph (5) of section 2272(a) of title 10, United States Code, as amended by subsection (a)(3) of this section, the Comptroller General shall submit to the congressional defense committees a report containing the findings and assessment under paragraph (1).

**SEC. 912. PROVISION OF SPACE SITUATIONAL AWARENESS SERVICES AND INFORMATION TO NON-UNITED STATES GOVERNMENT ENTITIES.**

(a) IN GENERAL.—Section 2274 of title 10, United States Code, is amended to read as follows:

**"§ 2274. Space situational awareness services and information: provision to non-United States Government entities**

"(a) AUTHORITY.—The Secretary of Defense may provide space situational awareness services and information to, and may obtain space situational awareness data and information from, non-United States Government entities in accordance with this section. Any such action may be taken only if the Secretary determines that such action is consistent with the national security interests of the United States.

"(b) ELIGIBLE ENTITIES.—The Secretary may provide services and information under subsection (a) to, and may obtain data and information under subsection (a) from, any non-United States Government entity, including any of the following:

"(1) A State.

"(2) A political subdivision of a State.

"(3) A United States commercial entity.

"(4) The government of a foreign country.

"(5) A foreign commercial entity.

"(c) AGREEMENT.—The Secretary may not provide space situational awareness services and information under subsection (a) to a non-United States Government entity unless that entity enters into an agreement with the Secretary under which the entity—

"(1) agrees to pay an amount that may be charged by the Secretary under subsection (d);

"(2) agrees not to transfer any data or technical information received under the agreement, including the analysis of data, to any other entity without the express approval of the Secretary; and

"(3) agrees to any other terms and conditions considered necessary by the Secretary.

"(d) CHARGES.—(1) As a condition of an agreement under subsection (c), the Secretary may (except as provided in paragraph (2)) require the non-United States Government entity entering into the agreement to pay to the Department of Defense such amounts as the Secretary determines appropriate to reimburse the Department for the costs to the Department of providing space situational awareness services or information under the agreement.

"(2) The Secretary may not require the government of a State, or of a political subdivision of a State, to pay any amount under paragraph (1).

"(e) CREDITING OF FUNDS RECEIVED.—(1) Funds received for the provision of space situational awareness services or information pursuant to an agreement under this section shall be credited, at the election of the Secretary, to the following:

"(A) The appropriation, fund, or account used in incurring the obligation.

"(B) An appropriate appropriation, fund, or account currently available for the purposes for which the expenditures were made.

"(2) Funds credited under paragraph (1) shall be merged with, and remain available for obligation with, the funds in the appropriation, fund, or account to which credited.

"(f) PROCEDURES.—The Secretary shall establish procedures by which the authority under this section shall be carried out. As part of those procedures, the Secretary may allow space situational awareness services or information to be provided through a contractor of the Department of Defense.

"(g) IMMUNITY.—The United States, any agencies and instrumentalities thereof, and any individuals, firms, corporations, and other persons acting for the United States, shall be immune from any suit in any court for any cause of action arising from the provision or receipt of space situational awareness services or information, whether or not provided in accordance with this section, or any related action or omission.

"(h) NOTICE OF CONCERNS OF DISCLOSURE OF INFORMATION.—

Deadline.
Determination.

If the Secretary determines that a commercial or foreign entity has declined or is reluctant to provide data or information to the Secretary in accordance with this section due to the concerns of such entity about the potential disclosure of such data or information, the Secretary shall, not later than 60 days after the Secretary makes that determination, provide notice to the congressional defense committees of the declination or reluctance of such entity.".

(b) CLERICAL AMENDMENT.—The table of sections at the beginning of chapter 135 of such title is amended by striking the item relating to section 2274 and inserting the following new item:

"2274. Space situational awareness services and information: provision to non-United States Government entities.".

(c) EFFECTIVE DATE.—The amendments made by this section shall take effect on October 1, 2009, or the date of the enactment of this Act, whichever is later. 10 USC 2274 note.

**SEC. 913. MANAGEMENT AND FUNDING STRATEGY AND IMPLEMENTATION PLAN FOR THE NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM PROGRAM.**

(a) MANAGEMENT AND FUNDING STRATEGY.—

(1) IN GENERAL.—The President shall develop a strategy for the management and funding of the National Polar-Orbiting Operational Environmental Satellite System Program (in this section referred to as the "Program") by the Department of Defense, the Department of Commerce, and the National Aeronautics and Space Administration. President.

(2) ELEMENTS.—The strategy required under paragraph (1) shall include the following:

(A) Requirements for the Program.

(B) The management structure of the Program.

(C) A funding profile for the Program for each year of the Program for the Department of Defense, the Department of Commerce, and the National Aeronautics and Space Administration.

(b) IMPLEMENTATION PLAN.—The President shall develop a plan to implement the strategy required under subsection (a)(1). President.

(c) LIMITATION ON USE OF FUNDS.—Of the amounts authorized to be appropriated for fiscal year 2010 by section 201(a)(3) for research, development, test, and evaluation for the Air Force and available for the Program—

(1) not more than 50 percent of such amounts may be obligated or expended before the date on which the strategy developed under subsection (a)(1) is submitted to the congressional defense committees, the Committee on Commerce, Science, and Transportation of the Senate, and the Committee on Science and Technology of the House of Representatives; and

(2) not more than 75 percent of such amounts may be obligated or expended before the date on which the plan developed under subsection (c) is submitted to the congressional defense committees, the Committee on Commerce, Science, and Transportation of the Senate, and the Committee on Science and Technology of the House of Representatives.

(d) SENSE OF CONGRESS.—It is the sense of Congress that once all requirements for the Program are fully agreed to by the Secretary of Defense, the Secretary of Commerce, and the Administrator of the National Aeronautics and Space Administration, the Program should be executed with no modifications to those requirements that would increase the cost, or extend the schedule, of the Program.

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One Hundred Eleventh Congress

of the

United States of America

AT THE FIRST SESSION

Begun and held at the City of Washington on Tuesday,

the sixth day of January, two thousand and nine

An Act

Making appropriations for the Department of Defense for the fiscal year ending September 30, 2010, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the `Department of Defense Appropriations Act, 2010'.

[ . . . ] Title III: Procurement

[ . . . ]Missile Procurement, Air Force

For construction, procurement, and modification of missiles, spacecraft, rockets, and related equipment, including spare parts and accessories therefor, ground handling equipment, and training devices; expansion of public and private plants, Government-owned equipment and installation thereof in such plants, erection of structures, and acquisition of land, for the foregoing purposes, and such lands and interests therein, may be acquired, and construction prosecuted thereon prior to approval of title; reserve plant and Government and contractor-owned equipment layaway; and other expenses necessary for the foregoing purposes including rents and transportation of things, $5,995,544,000, to remain available for obligation until September 30, 2012.

[. . . ] TITLE VIII: General  Provisions

[ . . . ] Sec. 8071. Funds available to the Department of Defense for the Global Positioning System during the current fiscal year may be used to fund civil requirements associated with the satellite and ground control segments of such system's modernization program.

[ . . . ]Sec. 8099. The Secretary of Defense shall create a major force program category for space for the Future Years Defense Program of the Department of Defense. The Secretary of Defense shall designate an official in the Office of the Secretary of Defense to provide overall supervision of the preparation and justification of program recommendations and budget proposals to be included in such major force program category.

# Public Law 111–125
# 111th Congress

## An Act

Dec. 28, 2009
[H.R. 3819]

To extend the commercial space transportation liability regime.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

**SECTION 1. COMMERCIAL SPACE TRANSPORTATION LIABILITY REGIME EXTENSION.**

Section 70113(f) of title 49, United States Code, is amended by striking "December 31, 2009." and inserting "December 31, 2012.".

Approved December 28, 2009.

LEGISLATIVE HISTORY—H.R. 3819:

CONGRESSIONAL RECORD, Vol. 155 (2009):
Oct. 20, considered and passed House.
Dec. 23, considered and passed Senate.

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# LAWS OF ALASKA

# 2009

**Source** | **Chapter No.**
SB 125 | ______

**AN ACT**

Changing the name of the Alaska Aerospace Development Corporation to Alaska Aerospace Corporation.

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**BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:**

THE ACT FOLLOWS ON PAGE 1

Enrolled SB 125

**AN ACT**

Changing the name of the Alaska Aerospace Development Corporation to Alaska Aerospace Corporation.

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*** Section 1.** AS 14.40.821(a) is amended to read:

(a) The Alaska Aerospace [DEVELOPMENT] Corporation is created as a public corporation of the state. The corporation is a body corporate and politic located for administrative purposes within the Department of Commerce, Community, and Economic Development and affiliated with the University of Alaska but with a separate and independent legal existence.

*** Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

REVISOR'S INSTRUCTION. The revisor of statutes shall substitute "Alaska Aerospace Corporation" for "Alaska Aerospace Development Corporation" in

(1) AS 14.40.841(a), 14.40.951(a), 14.40.956, 14.40.990(1), 14.40.990(2);

(2) AS 24.20.201(a)(12);

(3) AS 36.30.015(e), 36.30.990(1)(B)(vi);

(4) AS 36.90.300(c)(4);

(5) AS 38.05.810(h);

(6) AS 39.25.110(11)(F);

(7) AS 39.50.200(b)(53);

(8) AS 41.23.250(b);

(9) AS 44.12.200(b); and

(10) AS 44.99.030(a)(1), 44.99.400.

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HOUSE OF REPRESENTATIVES
TWENTY-FIFTH LEGISLATURE, 2009
STATE OF HAWAII

# H.B. NO. 994 H.D. 1 S.D. 2 C.D. 1

# A BILL FOR AN ACT

RELATING TO TOURISM.

**BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:**

SECTION 1. The legislature finds that tourism is the chief generator of employment and revenue in the state, and extends into all sectors of the State's economy. New developments in technology, visitor sophistication, and increased competition from other world tourism markets have challenged Hawaii's tourism industry to attract visitors with specific interests.

The legislature recognizes that expansion of the State's tourism product by developing new niche products, such as space tourism, can enhance Hawaii's appeal as a tourist destination.

In 2007, Virgin Galactic confirmed viability of space tourism, by earning approximately $31,000,000 in ticket revenue from over one hundred passengers. On December 15, 2008, the Federal Aviation Administration awarded a launch license for vertical and horizontal launch to the New Mexico Spaceport Authority to establish a commercial spaceport.

Space tourism is a potential billion dollar global industry that could significantly increase state revenue sources, provide new aerospace jobs, and rejuvenate economic development in the Kalaeloa area. The Federal Aviation Administration is expected to issue a limited number of spaceport licenses, and the legislature finds that it is crucial to position Hawaii for the economic advantages a license may bring.

The purpose of this Act is to appropriate funds for the application for a spaceport license from the Federal Aviation Administration.

SECTION 2. There is appropriated out of the airport revenue fund the sum of $250,000 or so much thereof as may be necessary for fiscal year 2009-2010 to be transferred from the department of transportation to the department of business, economic development, and tourism for the application for a spaceport license from the Federal Aviation Administration.

There is appropriated out of the tourism special fund the sum of $250,000 or so much thereof as may be necessary for fiscal year 2009-2010 to be transferred from the Hawaii tourism authority to the department of business, economic development, and tourism for the application for a spaceport license from the Federal Aviation Administration.

Notwithstanding sections 201B-11 and 261-5, the sums appropriated shall be expended by the department of business, economic development, and tourism for the purposes of this Act.

SECTION 3. This Act shall take effect on July 1, 2009.

H.B. NO. 994
H.D. 1
S.D. 2
C.D. 1

**Report Title:**
Tourism; Space Industry; Federal Aviation Administration; Spaceport License

**Description:**
Appropriates funds for the application for a spaceport license from the Federal Aviation Administration to establish space tourism in Hawaii. (HB994 CD1)

HB994 CD1 HMS 2009-4072

SENATE RESOLUTION

WHEREAS, Clyde Tombaugh, discoverer of the planet Pluto, was born on a farm near the Illinois community of Streator; and

WHEREAS, Dr. Tombaugh served as a researcher at the prestigious Lowell Observatory in Flagstaff, Arizona; and

WHEREAS, Dr. Tombaugh first detected the presence of Pluto in 1930; and

WHEREAS, Dr. Tombaugh is so far the only Illinoisan and only American to ever discover a planet; and

WHEREAS, For more than 75 years, Pluto was considered the ninth planet of the Solar System; and

WHEREAS, A spacecraft called New Horizons was launched in January 2006 to explore Pluto in the year 2015; and

WHEREAS, Pluto has three moons: Charon, Nix and Hydra; and

WHEREAS, Pluto's average orbit is more than three billion miles from the sun; and

WHEREAS, Pluto was unfairly downgraded to a "dwarf" planet in a vote in which only 4 percent of the International Astronomical Union's 10,000 scientists participated; and

WHEREAS, Many respected astronomers believe Pluto's full planetary status should be restored; therefore, be it

RESOLVED, BY THE SENATE OF THE NINETY-SIXTH GENERAL ASSEMBLY OF THE STATE OF ILLINOIS, that as Pluto passes overhead through Illinois' night skies, that it be reestablished with full planetary status, and that March 13, 2009 be declared "Pluto Day" in the State of Illinois in honor of the date its discovery was announced in 1930.

National Center for REMOTE SENSING, AIR and SPACE LAW

*The University of Mississippi School of Law*

# RES COMMUNIS

A blog on the legal aspects of human activities using aerospace technologies

## Selected bills and legislation

- H.R. 6063: National Aeronautics and Space Administration Authorization Act of 2008
- S. 3001: Duncan Hunter National Defense Authorization Act for Fiscal Year 2009
- H.R. 6984: Federal Aviation Administration Extension Act of 2008

## Selected interviews

- Mike Gold - Corporate Counsel, Bigalow Aerospace
- Tracey L. Knutson - Attorney, Knutson & Associates
- Glenn H. Reynolds - Professor of Law, University of Tennessee College of Law

## Selected primary sources

- Hearing: China's Proliferation Practices, and the Development of its Cyber and Space Warfare Capabilities
- Conference on Disarmament Statements
- Statement of Intent Regarding the International Lunar Network

## Selected guest bloggers

- Hiroshi Kiyohara - Chief Attorney, Musashi International Law Offices
- Col. M.V. "Coyote" Smith - United States Air Force
- Parviz Tarikhi - Department Head, Mahdasht Satellite Recieviing Station

## Selected court cases

- Enomoto v. Space Adventures
- Ladman Partners Inc. v, Globalstar Inc.
- Bowe v. Worldwide Flight Services
- Ary v. United States
- American Air Transport Association of America v. Cuomo

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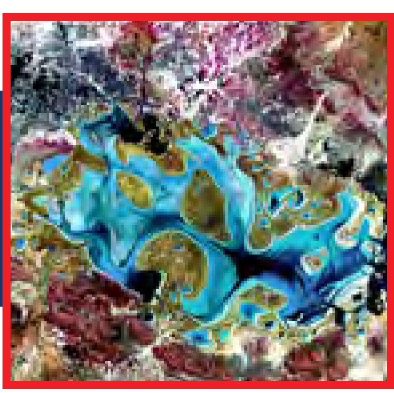

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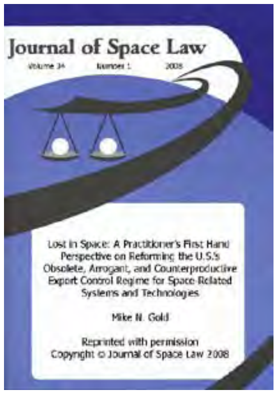
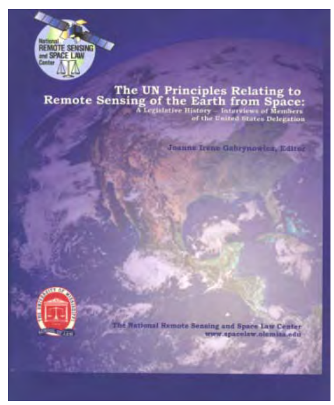



Remote Sensing, Air, and Space Law International Bibliography, 1930-2007: A Special Publication of the JOURNAL OF SPACE LAW – with CD-ROM - $45.00


The Remote Sensing Industry: A CEO Forum - $25.00


LandSat 7: Past, Present, and Future - $25.00




The UN Principles related to Remote Sensing of the Earth from Space - $25.00


Proceedings, The First International Conference On the State of Remote Sensing Law - $40.00


The Land Remote Sensing Laws and Policies of National Governments: A Global Survey - available free online

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