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August 26, 2002

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REQUEST FOR CONFIDENTIAL TREATMENT

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

By Hand Delivery

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W., TW-A325
Washington, D.C. 20554

FOR INTERNAL USE ONLY
NON-PUBLIC

Re: ICO Satellite Services G.P.
File No. 188-SAT-LOI-97; IBFS File Nos. SAT-LOI-19970926-00163;
SAT-AMD-20000612-00107; SAT-AMD-20001103-00155

Dear Ms. Dortch:

In response to a request from the International Bureau,¹ ICO Satellite Services G.P. ("ICO") submits the enclosed redacted copy of a Composite Compiled Satellite Contract (the "Contract") between ICO Global Communications (Operations) Ltd. and Boeing Satellite Systems International, Inc. ("Boeing"),² which is suitable for public inspection. The Contract verifies that ICO has satisfied the first milestone condition of its license to provide mobile satellite service ("MSS") in the 2 GHz band.

As an initial matter, ICO notes that it has made substantial progress in the construction and deployment of its system. Specifically, two satellites already have been launched. Although the first satellite failed to achieve orbit because of a launch vehicle failure, the second satellite was launched successfully on June 19, 2001 and is performing very well in orbit. Boeing is continuing work on the remaining satellites for the system. Specifically, six satellites have been assembled and are in the final stages of system testing. Moreover, all satellite parts and units have been delivered for the assembly of an additional four satellites. ICO also has constructed 11 ground stations, five of which already are being used to control the in-orbit satellite.

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¹ See Letter from Fern J. Jarmulnek, International Bureau, FCC, to Cheryl A. Tritt, Counsel to ICO (Aug. 16, 2002).

² Boeing is the successor-in-interest to Hughes Space and Communications International, Inc., the party with whom ICO initially entered into the Contract.

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The status of ICO's compliance with the implementation milestones is set forth below:

<u>Milestone</u>	<u>Deadline</u>	<u>Status</u>
Enter non-contingent satellite manufacturing contract.	July 17, 2002	COMPLETED
Complete critical design review	July 17, 2003	COMPLETED
Begin physical construction of all satellites	Jan. 17, 2004	COMPLETED
Complete construction and launch of first two satellites	Jan. 17, 2005	SUBSTANTIALLY COMPLETED
Certify entire system operational	July 17, 2007	Deployment of satellites and ground system continuing

As a result of the construction progress made, ICO has met the first three of the five required construction milestones more than two years ahead of schedule and is in substantial compliance with the fourth milestone. This places ICO well ahead of all other 2 GHz MSS licensees. Consequently, the submission of the enclosed Contract, together with the actual progress made on the construction of the ICO system, should provide the Commission with ample evidence of compliance with the first milestone.

An unredacted copy of the Contract also is being filed concurrently with the International Bureau.³ The unredacted version contains highly sensitive commercial and financial information that has been omitted from the redacted version. The redacted information includes specific information regarding amounts due under the Contract, payment terms, financial and performance incentives, technical specifications, and unique commercial terms and conditions. The disclosure of this information likely would cause substantial competitive and financial harm to ICO, and is therefore exempted from mandatory disclosure under Exemption 4 of the Freedom of Information Act ("FOIA Exemption 4")⁴ and Section 0.457(d) of the Commission's rules.⁵ Moreover, this information is not relevant to verifying whether ICO has met the first milestone.

³ In order to avoid the proliferation of copies of confidential information, ICO is filing only a redacted copy with the Secretary.

⁴ 5 U.S.C. § 552(b)(4). See *Public Citizen Health Research Group v. FDA*, 704 F.2d 1280, 1290-91 (D.C. Cir. 1983).

⁵ 47 C.F.R. § 0.457(d).

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Accordingly, pursuant to Sections 0.457 and 0.459 of the Commission's rules,⁶ ICO requests the Commission to withhold from public inspection and accord confidential treatment to the information omitted from the redacted version.

In support of its request for confidential treatment of certain portions omitted from the redacted version of the Contract, and pursuant to the requirements under Section 0.459(b) of the Commission's rules, ICO states the following:

1. ICO seeks confidential treatment of information omitted from the redacted version, including the following:

- (i) Exhibit B - Satellite Technical Specification
- (ii) Exhibit C - Product Assurance Plan
- (iii) Exhibit D - Acceptance Test Plan
- (iv) Exhibit E - Ground Control Equipment ("GCE") Implementation and Test Plan
- (v) Exhibit F - GCE Technical Specification
- (vi) Exhibit G - GCE Product Assurance Plan
- (vii) Exhibit H - Milestone Payment Plan
- (viii) Exhibit I - ICOGC Guarantee
- (ix) Exhibit J - Hughes Guarantee
- (x) Exhibit K - PCS Technical Specification and Test Plan
- (xi) Exhibit L - F2 Satellite Operations Statement of Work
- (xii) Amendment Nos. 8 through 22

This redacted information includes specific information regarding amounts due under the Contract, payment terms, financial and performance incentives, technical specifications, and unique commercial terms and conditions.

2. As noted above, the Contract is being submitted in response to a specific request from the International Bureau in connection with ICO's 2 GHz MSS authorization.

3. The Contract includes information regarding amounts due, payment terms, financial and performance incentives, technical specifications, and unique commercial terms and conditions, which constitutes trade secrets or sensitive commercial and financial information that "would customarily be guarded from competitors,"⁷ and is therefore exempted from mandatory disclosure under FOIA Exemption 4 and Section 0.457(d) of the Commission's rules.⁸

⁶ 47 C.F.R. §§ 0.457, 0.459.

⁷ 47 C.F.R. § 0.457(d)(2).

⁸ 5 U.S.C. § 552(b)(4); 47 C.F.R. § 0.457(d).

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Specifically, Exhibits B, C, D, E, F, G, K, and L contain detailed technical specifications for the construction, testing, and deployment of a unique, next-generation 2 GHz MSS system. As such, this information qualifies as a "trade secret," which is defined for FOIA purposes, as "a secret, commercially valuable plan, formula, process, or device that is used for the making, preparing, compounding, or processing of trade commodities and that can be said to be the end product of either innovation or substantial effort."⁹ In addition, Exhibits I and J and Amendments 8 through 22 set forth unique commercial terms and conditions that have been extensively negotiated by the parties to the Contract. Furthermore, Exhibit H and Amendments 8 through 22 provide detailed documentation of the progress of construction of the system. None of this information is customarily disclosed to competitors or the public, and thus all of it is exempt from mandatory disclosure.

4. The Contract concerns the implementation of a 2 GHz MSS system, which will be subject to competition from a number of other MSS systems.

5. Disclosure of information regarding amounts due, payment terms, financial and performance incentives, technical specifications, and unique commercial terms and conditions likely would result in substantial competitive harm to ICO. For example, disclosure of this information would allow competing 2 GHz MSS licensees to use this information to their competitive advantage. Specifically, knowledge of financial terms and other individually negotiated terms and conditions under the Contract could allow competitors to obtain equally or more favorable terms from other manufacturers. Knowledge of the unique technical specifications of the ICO system also could allow competitors to benefit from ICO's efforts and develop similar systems or improve upon those systems, while avoiding research and development expenses. Furthermore, disclosure would harm ICO in future negotiations regarding satellite construction by allowing manufacturers to extract more favorable terms.

6. Article 21 of the Contract contains specific provisions requiring both parties to the Contract to maintain confidentiality of information furnished in connection with the Contract or the transactions contemplated under the Contract.

7. Information regarding amounts due, payment terms, financial and performance incentives, technical specifications, and unique commercial terms and conditions is not available to the public. Consistent with and except as provided under the confidentiality provisions of the Contract, there has been no disclosure of such information to any third parties.

8. ICO requests confidential treatment of the redacted information for an indefinite period. During the operational life of the ICO system, satellite manufacturers and 2 GHz MSS competitors could use the otherwise confidential information to their competitive advantage and to ICO's detriment. Furthermore, Article 21 of the Contract provides that the confidentiality

⁹ See *Public Citizen Health Research Group v. FDA*, 704 F.2d 1280, 1288 (D.C. Cir. 1983).

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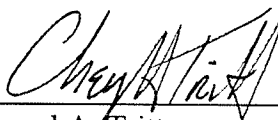
obligations of ICO under the Contract will indefinitely survive the expiration or termination of the Contract.

9. The Commission has acknowledged that satellite construction contracts contain competitively sensitive information requiring protection from public disclosure.¹⁰ Specifically, the Commission has found that financial and technical data contained in a satellite construction contract constitutes confidential information because its disclosure would cause substantial harm to the licensee's competitive position.¹¹ Moreover, in requiring Big LEO and 2 GHz MSS licensees to submit annual reports and any requested additional contract and construction information to demonstrate compliance with the milestones, the Commission expressly contemplated that licensees could seek confidential treatment of "any portion of their report, pursuant to Section 0.459 of the Commission's rules."¹²

In order to provide adequate protection from public disclosure, the Commission should strictly limit distribution of the unredacted version of the Contract within the Commission on a "need to know" basis. In the event that any person or entity outside the Commission requests disclosure of the unredacted version of the Contract, ICO requests that it be so notified immediately so that it can oppose such request or take other action to safeguard its interests as it deems necessary.

Please direct any questions regarding this submission to the undersigned.

Very truly yours,



Cheryl A. Tritt
Counsel to ICO Satellite Services G.P.

Enclosure

cc: Howard Griboff

¹⁰ See, e.g., *GE American Communications, Inc.*, 16 FCC Rcd 6731, 6731 (IB 2001).

¹¹ See *American Satellite Co.*, 1985 FCC Lexis 3117, at *19 (1985).

¹² See *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands*, 9 FCC Rcd 5936, 6010 (1994) (emphasis added); see also *The Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band*, 15 FCC Rcd 16127, 16181 (2000).

REDACTED

1

Satellite Contract

31 August 2000 - Amendment 7
Contract Number: ICOO/95-1002/NR

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

=====

COMPOSITE COMPILED SATELLITE CONTRACT

BETWEEN

HUGHES SPACE AND COMMUNICATIONS INTERNATIONAL, INC.

AND

I-CO GLOBAL COMMUNICATIONS (OPERATIONS) LIMITED

DATED AS OF 3 OCTOBER 1995

=====

CONTRACT NUMBER: ICOO/95-1002/NR

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THIS COMPOSITE COMPILED CONTRACT is effective as of the third day of October, 1995,

BETWEEN:

I-CO GLOBAL COMMUNICATIONS (OPERATIONS) LIMITED, a company incorporated in the Cayman Islands as an Exempted Company having its registered office at the Huntlaw Building, PO Box 1350, Fort Street, Georgetown, Grand Cayman, Cayman Islands (hereinafter referred to as "I-COGC") and

HUGHES SPACE AND COMMUNICATIONS INTERNATIONAL, INC., a company incorporated under the laws of the State of Delaware, USA, with a place of business in El Segundo, California, (hereinafter referred to as "Hughes").

WHEREAS, I-COGC desires to procure fifteen Satellites delivered on the ground to designated launch sites, together with delivery of an engineering model (EM) payload, an integrated TT&C ground segment and additional hardware and services for launch preparations, mission operations and post-launch commissioning and test as part of a fixed and mobile satellite communications system subject to the terms and conditions hereof; and

WHEREAS, Hughes desires to supply the same in accordance with the terms and conditions hereof; and

WHEREAS, the Parties to this Contract acknowledge that certain delivery requirements under this composite compiled contract have already been met.

WHEREAS, the Parties have entered into a separate but interrelated launch services supply and management contract ;and

WHEREAS, this Contract has been amended by Amendment 1 dated 26 June 1996, Amendment 2 dated 9 September 1996, Amendment 3 dated 6 April 1998, Amendment 4 dated 21 January 1998, Satellite Variation Agreement to the Contract on 11 March 1998, Amendment 5 dated 7 August 1998, and Amendment 6 dated 7 August 1998, the terms and conditions of all such amendments having been incorporated in this composite compiled Contract.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained and other good and valuable consideration, and intending to be legally bound hereby, the Parties hereto agree as follows:

ARTICLE 1 DEFINITIONS

In this Contract, unless the context otherwise requires, the following terms shall have the meaning stated hereunder:

- A. "ACCEPTANCE TEST PLAN" means the test plan which is incorporated herein and made a part of this Contract and is EXHIBIT D to this Contract.
- B. "Affiliate" means, with respect to a Party, any subsidiary or holding company (as determined by the Companies Act 1985 of Great Britain) at any tier of such Party.
- C. "Associate" means any individuals or legal entities, organized under public or private law, who shall, directly or indirectly, on behalf of or at the direction of either Party to this Contract fulfill any of the obligations undertaken by such Party in this Contract including, but without limitation, the Affiliates, Subcontractors, Consultants, employees, officers, directors or agents of each of them and of each of the Parties.
- D. "ATP" means the contract made between the Parties as of 05 July 1995 entitled "Preparatory Phase of Inmarsat-P Space Segment".
- E. "Available for Shipment" means that the Satellite, Engineering Model Payload or Satellite Control Equipment and other relevant Work has successfully passed all in-plant acceptance tests, has undergone a Pre-Shipment Review (if applicable) and has been agreed ready to be shipped.
- F. "Business Day" means a day on which I-COGC or Hughes (as appropriate for affected Party) is open for business, excluding Saturdays, Sundays and public holidays.

- G. "Consultant(s)" means a person or organization identified to Hughes, which person is retained by I-COGC to provide I-COGC with technical advice and/or management services.
- H. "Contract" means this written instrument embodying the agreement between Hughes and I-COGC, including the EXHIBITS annexed hereto and made a part of this Contract, as may be varied in accordance with the provisions of this Contract.
- I. "Contract Price" means the total amount expressed in this Contract ARTICLE 4, CONTRACT PRICE, PAYMENT AND ADJUSTMENTS, as may be varied in accordance with the provisions of this Contract.
- J. "Day" means a continuous 24-hour period commencing at 2400 Midnight (Greenwich Mean Time).
- K. "Delivery" shall have the meaning ascribed to it in ARTICLE 3, DELIVERY SCHEDULE.
- L. "Delivery Date" means in respect of a Satellite or GCE that Delivery date specified in ARTICLE 3, DELIVERY SCHEDULE, taking into account the number of Days of Excusable Delay, if any, within the meaning of ARTICLE 10, FORCE MAJEURE, or otherwise excused by the terms of this Contract
- M. "Delivery Schedule" means the timetable for Delivery set forth in ARTICLE 3, DELIVERY SCHEDULE.
- N. "Designated Launch Site" means the launch facility provided by the applicable Launch Services Provider.

- O. "Documentation" means documentation to be delivered under this Contract, as more fully described in EXHIBIT A, STATEMENT OF WORK.
- P. "Effective Date of Contract (EDC)" means the last date that this Contract was duly signed by both Parties.
- P1. "Employment Cost Index" or "ECI" means the U.S. Department of Labor Employment Cost Index for wages & salaries - professional, specialty, and technical workers and is published by the U.S. Department of Labor, Bureau of Labor Statistics.
- P2. "Engineering Model Payload" means that which is defined in EXHIBIT A, STATEMENT OF WORK.
- Q. "Excusable Delay" shall have the meaning ascribed to it in ARTICLE 10, FORCE MAJEURE.
- R. "Ground Control Equipment (GCE)" means Ground TT&C hardware and software services to support telemetry, tracking, command and spacecraft control monitoring equipment being manufactured and delivered under this Contract as part of the Work, as more particularly described in EXHIBIT A, STATEMENT OF WORK.
- S. "I-CO Program" means the program to establish a system for fixed and mobile communications, data, and ancillary services using the Satellites and any earth stations operating at any time in conjunction therewith. The term "Inmarsat P" as used in the Exhibits and as applied to various elements of this program shall have the same meaning as "I-CO".

- T. "I-COSL" means ICO Services Limited. I-COSL has been appointed a Consultant and has been given authority under an agreement with I-COGC to manage this Contract on behalf of I-COGC. All notices, instructions or consultations which are given or engaged in by I-COSL in the performance of its management and consultancy functions in relation to this Contract shall be deemed, pursuant to the aforesaid agreement, to have been given by I-COGC and shall be binding on I-COGC. Notwithstanding the foregoing, I-COSL is not authorized to vary the terms of this Contract in any manner whatsoever unless and to the extent that the I-COGC authorized representative referred to in ARTICLE 24, NOTICES, advises Hughes in writing to the contrary.
- U. "Intentional Ignition" means the intentional ignition of any first stage motor of the Launch Vehicle by the Launch Services Provider or, for Atlas Launch Services, the point in time during the launch countdown when initiation of the gas generator ignitors firing command and firing of any of the gas generator ignitors occurs.
- V. "Launch Attempt" or "Launch" means the point in time when there is Intentional Ignition.
- W. "Launch Operations Services for Satellites" means the services provided by Hughes in support of the launch mission as defined in EXHIBIT A, STATEMENT OF WORK.
- X. "Launch Readiness Review" shall have the meaning ascribed to it in ARTICLE 8.4.
- Y. "Launch Services" means the services which the applicable Launch Services Provider provides under its Launch Services agreement.
- Z. "Launch Services Provider" means the organization(s) which Hughes has contracted with under the proposed interrelated contract referred to in the Recitals to perform Launch

Services, including furnishing the Launch Vehicle, launch support, equipment and facilities for the purpose of launching the Satellites into orbit.

- AA. "Launch Vehicle" means a vehicle provided by the applicable Launch Services Provider by which a Satellite is to be launched into orbit.
- BB. "Less than Satisfactorily Operating Satellite" means a Satellite which exhibits Less than Satisfactory Operation
- CC. "Less than Satisfactory Operation" means that not all performance parameters for a Satellite meet the requirements of EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION.
- DD. "Major Subcontractor" shall have the meaning ascribed to it in ARTICLE 36, MAJOR SUBCONTRACTORS.
- EE. "Month" means a calendar month.
- FF. "Navigation Payload" means that element of the Satellite payload which provides navigation services in accordance with EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION, and which is separable from the Work as described in ARTICLE 6, NAVIGATION PAYLOAD.
- GG. "Operational Lifetime" means the twelve year (4383 Day) performance period of the Satellite. This performance period commences on the day when the Satellite is positioned at its Specified Orbit and completion of in-orbit testing, or forty-five (45) Days after Launch, whichever is earlier. The term "Service Life" shall have the same meaning.

- HH. "Party" or "Parties" means an entity or all entities, according to the context, which has or have signed this Contract.
- II. "Payload Control System (PCS)" means the integrated suite of hardware, software, and operations products that collectively will be used to support normal, on-station, ICO payload traffic control operations. The PCS will provide data to assist in operations relating to satellite diagnostics, calibration, payload trending, and short-term storage. PCS will also assist IOT and satellite failure investigation efforts as required.
- JJ. "Performance Commencement Date (PCD)" means 05 July 1995 being the date of the signature of the ATP.
- KK. "Pre-Shipment Review" shall have the meaning ascribed to it in ARTICLE 8, ACCEPTANCE.
- LL. "PRODUCT ASSURANCE PLAN" means the PRODUCT ASSURANCE PLAN which is incorporated herein and made a part of this Contract and is EXHIBIT C to this Contract.
- MM. "PCS System Requirement Review (SRR)" shall have the meaning ascribed to it in Article 5.2.5 of EXHIBIT A, STATEMENT OF WORK.
- NN. "Satellite" means the satellite(s) to be provided to I-COGC as part of the Work as defined below (including the firm and exercised optional satellites). The term "Spacecraft" shall be interchangeable with the term "Satellite" and has the same meaning.
- OO. "Satisfactorily Operating Satellite" means a Satellite which exhibits Satisfactory Operation

- PP. "Satisfactory Operation" means that all performance parameters for a Satellite meet the requirements of EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION.
- QQ. "Service Life" shall have the same meaning as "Operational Lifetime".
- RR. "Spacecraft Operating Procedures" means the written directives and instructions for operating the Satellite as described in EXHIBIT A, STATEMENT OF WORK.
- SS. "Specified Orbit" means, with respect to a Satellite, the intermediate circular orbit plane and spacing specified in accordance with EXHIBIT B, TECHNICAL SPECIFICATION.
- TT. "STATEMENT OF WORK" or "SOW" means the STATEMENT OF WORK which is incorporated herein and made a part of this Contract and is EXHIBIT A to this Contract.
- UU. "Subcontractor" means a person, firm, corporation, consultant or business entity which has been awarded a subcontract by Hughes, to provide a portion of the Work covered by this Contract.
- VV. "Successfully Launched Satellite" means that the elements of the Specified Orbit established by the Launch Vehicle and the orientation and time of separation are within three (3) sigma limits of the Launch Vehicle performance as established in the interface control document or equivalent, and the Satellite has not suffered damage caused by any failure or malfunction of the Launch Vehicle.
- WW. "Work" means all labor, services, acts (including tests to be performed), items, materials, articles, data, documentation, equipment, matters and things to be furnished, and rights to be transferred under this Contract.

The ARTICLE and ARTICLE headings are for convenience of reference only and shall not be considered in interpreting this Contract. Where the context so requires, words importing the masculine gender include the feminine and neuter genders where the context so requires. The Recitals of this Contract are descriptive only and shall not create or affect obligations of the Parties.

ARTICLE 2 SCOPE OF WORK

2.1 In accordance with the terms and conditions of this Contract, Hughes shall sell, and I-COGC shall purchase the Work (including fifteen (15) Satellites) and Hughes shall furnish and perform all elements of the Work for the purposes of such sale. Hughes shall furnish and perform the Work in accordance with the provisions of this Contract and shall perform the Work to the extent and in the manner specified in the following documents, which are attached hereto and made a part of this Contract:

Document	Date
EXHIBIT A - STATEMENT OF WORK	24 Aug 2000
EXHIBIT B - SATELLITE TECHNICAL SPECIFICATION	25 Aug 2000
EXHIBIT C - PRODUCT ASSURANCE PLAN	25 Aug 2000
EXHIBIT D - ACCEPTANCE TEST PLAN	24 Aug 2000
EXHIBIT E - GCE IMPLEMENTATION AND TEST PLAN	3 Oct 1995
EXHIBIT F - GCE TECHNICAL SPECIFICATION	3 Oct 1995
EXHIBIT G - GCE PRODUCT ASSURANCE PLAN	3 Oct 1995
EXHIBIT H - MILESTONE PAYMENT PLAN	24 Aug 2000
EXHIBIT I - I-COGC GUARANTEE	3 Oct 1995
EXHIBIT J - HUGHES GUARANTEE	3 Oct 1995
EXHIBIT K - PCS TECHNICAL SPECIFICATION AND TEST PLAN	10 Dec 1997

2.2 In the event of any inconsistency among or between the parts of this Contract, such inconsistency shall be resolved by giving precedence in the order of the parts as set forth below:

- A. CONTRACT ARTICLES
- B. STATEMENT OF WORK (EXHIBIT A)
- C. SATELLITE TECHNICAL SPECIFICATION (EXHIBIT B)
- D. ACCEPTANCE TEST PLAN (EXHIBIT D)
- E. PRODUCT ASSURANCE PLAN (EXHIBIT C)
- F. GCE TECHNICAL SPECIFICATION (EXHIBIT F)
- G. GCE IMPLEMENTATION AND TEST PLAN (EXHIBIT E)
- H. GCE PRODUCT ASSURANCE PLAN (EXHIBIT G)
- I. MILESTONE PAYMENT PLAN (EXHIBIT H)
- J. I-COGC GUARANTEE (EXHIBIT I)
- K. HUGHES GUARANTEE (EXHIBIT J)
- L. PCS TECHNICAL SPECIFICATION AND TEST PLAN (EXHIBIT K)

2.3 The ATP is hereby subsumed and incorporated into this Contract as if it had formed a part of this Contract ab initio. For the avoidance of doubt, monies paid by I-COGC under the ATP * are deemed to have been paid on account of the total Contract Price and Hughes' share of the cost of the ATP is included in the Contract Price.

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

ARTICLE 3 DELIVERY SCHEDULE

3.1 The following goods and services forming part of the Work to be provided under this Contract shall be delivered on or before the dates specified below.

Item	Delivery/Performance Date	Place of Delivery
1. Satellite F1	5 Oct 1998	Designated Launch Site
2. Satellite F2	18 Jan 2002	Designated Launch Site
3. Satellite F3	15 Feb 2002	Designated Launch Site
4. Satellite F4	15 Mar 2002	Designated Launch Site
5. Satellite F5	12 Apr 2002	Designated Launch Site
6. Satellite F6	17 May 2002	Designated Launch Site
7. Satellite F7	14 Jun 2002	Designated Launch Site
8. Satellite F8	12 Jul 2002	Designated Launch Site
9. Satellite F9	16 Aug 2002	Designated Launch Site
10. Satellite F10	13 Sep 2002	Designated Launch Site
11. Satellite F11	11 Oct 2002	Designated Launch Site
12. Satellite F12	8 Nov 2002	Designated Launch Site
13. Satellite F13	3 Jan 2003	Designated Launch Site
14. Satellite F14	16 Feb 2003	Designated Launch Site
15. Satellite F15	1 Apr 2003	Designated Launch Site
16. Ground Control Equipment (GCE)	5 Jun 1998	per SOW
17. Initial Satellite Mission Operations and In-Orbit Testing Services	Per EXHIBIT A	I-COGC Satellite Control Center and SAN Sites

18. Launch Site Operations Services	Per EXHIBIT A	Designated Launch Site
19. Training	Per EXHIBIT A	EL Segundo, California and SCC
20. Documentation	Per EXHIBIT A	EL Segundo, California
21. Engineering Model Payload	05 Jul 1997	El Segundo California*
22. Payload Control System	28 Nov 1998	El Segundo, California, SCC, and SANS per SOW

Notes:

* Hughes is acting as custodian of and will maintain and upgrade the Engineering Model Payload, as provided in the Statement of Work.

- 3.2 Delivery of a Satellite shall be deemed to have occurred upon arrival of the Satellite at the Designated Launch Site subject to a visual inspection by I-COGC to ensure that there is no apparent physical loss or damage in transit and that the Satellite is available for commencement of the launch campaign and subject also to the provisions of ARTICLE 8.6, and where applicable, ARTICLE 11.4.
- 3.3 Delivery of items 16 and 22 of ARTICLE 3.1 shall take place upon Final Acceptance pursuant to the provisions of ARTICLE 8, ACCEPTANCE. Deliverable Documentation which requires I-COGC approval shall not be deemed to be delivered and accepted until such approval is received from I-COGC.
- 3.4 Delivery of all other items of Work shall be deemed to have occurred upon arrival of the item at the place of delivery or upon completion of the service as the case may be.

- 3.5 For a Satellite having been determined Available for Shipment and placed into storage in accordance with ARTICLE 32, STORAGE, or ARTICLE 33, OPTIONS, Delivery shall be deemed to have occurred upon arrival of the Satellite at the storage location.

3.6 Packing and shipping will be in accordance with EXHIBIT A, STATEMENT OF WORK.

ARTICLE 4 CONTRACT PRICE, PAYMENT AND ADJUSTMENTS

4.1 CONTRACT PRICE AND PAYMENT

The Contract Price for the construction portion of this Contract (totaling *), together with the maximum potential incentives (Satellite Performance Incentives, * Incentives, * Incentives, * Incentives, and the * Incentive Payments) (totaling *), is (US) two billion two hundred and thirteen million eight hundred and ninety-five thousand six hundred ninety dollars (US\$2,213,895,690) as shown below. I-COGC shall pay the Contract Price to Hughes in accordance with the terms set forth below and in the Payment Schedule of EXHIBIT H, MILESTONE PAYMENT PLAN, and ARTICLE 5, SATELLITE PERFORMANCE PAYMENTS.

Construction Portion

Item	Price (US\$)
*	*
*	*
*	*
*	*
*	*
Subtotal Construction Price	*

* Does not include Launch Operations or Mission Operations Services, the price of which is determined in accordance with Article 31.

** The Contract Price for F15 is subject to escalation if placed in call-up status as provided in Article 37.

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requirements for such milestone event have been fulfilled. For the purpose of this ARTICLE 4.2, receipt by I-COGC of an invoice and of Hughes' certification shall occur upon receipt of a copy thereof by the authorized on-site representative referred to in ARTICLE 4.3.

- 4.3 The invoices will separately identify any applicable taxes and duties and shall be addressed to I-COGC at the following address:

I-CO Global Communications (Operations) Limited
Huntlaw Building
P.O. Box 1350
Fort Street
Georgetown, Grand Cayman
Cayman Islands

but submitted both via an internationally recognized air courier and via telefax to:

I-CO Services Limited
1 Queen Caroline Street
Hammersmith, London W6 9BN
United Kingdom
Attention: Contract Administrator (Space Segment)
Fax #44-208-600-1199

and with a copy given by hand to an authorized on-site representative of I-COGC at the Hughes' facility.

- 4.4 Amounts payable are to be remitted by telegraphic transfer to a bank to be advised in writing by Hughes.
- 4.5 Should Hughes fulfill the requirements for a particular payment milestone prior to the date specified in EXHIBIT H, MILESTONE PAYMENT PLAN, Hughes shall have the right to invoice and receive payment early for that milestone provided that:
 1. Hughes has not received a cumulative payment amount in excess of the total amount of the milestone payments scheduled for that calendar date, and

2. I-COGC agrees at its sole discretion that the early fulfillment of the milestone event significantly facilitates the timely performance of the Work under the Contract.
- 4.6 Hughes shall have no right to obtain partial payments for milestone events that are not completed but Hughes may, from time to time, request partial payment for a partially completed milestone, and if I-COGC (at I-COGC's sole discretion) determines such partial payment to be appropriate under the circumstances, then Hughes shall be entitled to submit an invoice. Such partial payment shall be made by I-COGC within fifteen (15) Days after the date of receipt of the invoice to which it relates. The remainder of the milestone payment shall be paid in accordance with ARTICLE 4.2.
- 4.7 With respect to any other amounts payable under the Contract, the Party entitled to payment shall make a written demand for, or shall submit an invoice if so requested by the payor, after such entitlement becomes established, and the payor shall make payment within thirty (30) Days after receipt of a valid written demand or valid invoice unless the Contract specifies to the contrary.
- 4.8 Within 15 Days of EDC, I-COGC shall provide a parent company guarantee of I-COGC's obligations substantially in the form set forth in EXHIBIT I, I-COGC GUARANTEE.
- 4.9 Within 15 Days of EDC, Hughes shall provide a parent company guarantee of Hughes' obligations substantially in the form set forth in EXHIBIT J, HUGHES GUARANTEE.
- 4.10 No dispute with respect to the payment of any amount under this Contract shall relieve the disputing Party of its obligation to pay all other amounts due and owing under this Contract. All disputed amounts, unless otherwise specified in the Contract, shall be paid

into an interest-bearing escrow account at Bank of America, Concord, California, Account No. (to be established later), within fifteen (15) Days after receipt of invoice. After the dispute is settled, the Party entitled to the amount or part thereof in escrow shall receive such amount together with all interest thereon and the costs and fees associated with such escrow account shall be paid by each Party in inverse proportion to the amounts received by each Party.

4.11 The Contract Price for Satellites F1-F12 includes all Launch Operations and Mission Operations Services. The Contract Price for F2-F12 Launch Operations and Mission Operations Services is based upon seven (7) Florida and four (4) Russia Launches (as shown in the table below). Should I-COGC direct a change(s) to this Launch site allocation, and such change is not the result of late Delivery of the Satellite(s), and such change has a material effect on the reasonably expected costs of such Launch Operations and Mission Operations Services, then the Contract Price will be adjusted (up or down) by the amount of such Launch Operations and Mission Operations Services increase or decrease in expected costs in accordance with ARTICLE 22.3.C.

For reference purposes, the designated Launch sites and sequence are as follows:

Satellite	Designated Launch Site
-----	-----
F2	Florida
F3	Florida
F4	Florida
F5	Florida
F6	Kazakhstan
F7	Kazakhstan
F8	Florida
F9	Florida
F10	Kazakhstan
F11	Kazakhstan
F12	Florida

ARTICLE 5 SATELLITE PERFORMANCE PAYMENTS; * INCENTIVES; * INCENTIVES

5.1 For Satisfactory Operation of the F1-F12 Satellites delivered under this Contract over their Operational Lifetime, Hughes shall, in addition to the amounts paid as specified in EXHIBIT H, MILESTONE PAYMENT PLAN, be entitled to payments in the amount of * for each Satellite.

For Satisfactory Operation of the F13-F15 Satellites delivered under this Contract over their Operational Lifetime, Hughes shall, in addition to the amounts paid as specified in Exhibit H, MILESTONE PAYMENT PLAN, be entitled to payments in the amount of * for each satellite.

The foregoing incentives for F1-F15 are referred to herein as the "Satellite Performance Incentives." No Satellite Performance Incentives will be owing with respect to any Satellite that is terminated pursuant to ARTICLE 17.

5.2 The first (US) * of potential liquidated damages for late delivery pursuant to ARTICLE 11, CONSEQUENCES OF LATE DELIVERY which are not incurred, (or such lesser amount which is actually available), shall be used to establish a performance refund pool (the "Refund Pool"). This pool represents an amount of additional Hughes' liability which shall be treated as if I-COGC had elected payment refund and had paid the Refund Pool as part of the Satellite Performance Incentives at the time of Launch, save that for this amount the Operational Lifetime of the Satellite shall be deemed to be nine (9) Months and earned accordingly

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on a linear basis over that period. This amount shall be apportioned equally over the 12 Satellites being delivered under this Contract. The foregoing amount is not an incentive that will be payable by I-COGC but instead is a Hughes liability that, if not extinguished by Satisfactory Operation of the 12 Satellites, will be paid by Hughes to I-COGC (or, at I-COGC's option, offset against any I-COGC payments to be made to Hughes).

- 5.3 Payment of these amounts shall be made on the basis of either payment refund or payment over time. Election of the basis of payment shall be made by I-COGC for each Satellite prior to the Available for Shipment date. Regardless of the manner of payment, incentives, or if applicable the balance of Satellite Performance Incentives not forfeited under ARTICLE 5.6 and/or 5.8 for each individual Satellite are earned linearly on a daily basis over the Operational Lifetime of the Satellite. Earned incentives are no longer subject to reduction for Less than Satisfactory Operation.
- A. If payment refund is selected, then the total amount of incentives due to Hughes on each Satellite as determined in ARTICLE 5.6 shall be invoiceable by I-COGC after successful completion of in-orbit tests or 45 Days after Launch, whichever is earlier.
- B. If payment over time is selected, then each Satellite shall start earning incentives commencing either forty five (45) Days after the launch date or upon successful completion of in-orbit tests, whichever is earlier. At the end of the first Month subsequent to such commencement date, Hughes shall invoice I-COGC for the partial Month's incentives earned during that Month. Thereafter, invoices shall be submitted at the end of each calendar Month for the next one hundred forty four (144) Months. The final invoice shall be for the outstanding balance of earned Satellite Performance Incentives for that Satellite which have not yet been paid.

The amount of each payment invoiced (save in respect of a partial Month) shall be one one-hundred-forty-fourth (1/144) of the total amount for each Satellite stated in ARTICLE 5.1, reduced by any percentage reduction calculated under this ARTICLE for Less than Satisfactory Operation, and increased by the compounded interest rate at a composite LIBOR + 3% starting from successful completion of in-orbit tests or forty-five (45) Days after Launch, whichever is earlier. When payments are being made on multiple Satellites, the invoices shall be aggregated and submitted for payment at the end of each calendar month. I-COGC shall pay each amount with fifteen (15) Days after receipt of the invoice. Whenever the term "interest" is used in this ARTICLE 5, the interest rate associated with said "interest" shall be LIBOR + 3%, compounded monthly, unless otherwise stated.

5.4 In the event that a Satellite is placed in storage, then the payment provisions of this ARTICLE shall be modified as follows:

- A. If the Satellite is stored for I-COGC convenience for a period exceeding 3 Months, then the Satellite Performance Incentive payments for that Satellite shall be handled as follows:
1. If payment refund is selected, then the full amount of the Satellite Performance Incentives for that Satellite is due and invoiceable in full 3 Months after the Delivery of the Satellite.
 2. If payment over time is selected, then calculation of the compound interest rate applied to each payment (when finally made) shall start 3

Months after Delivery of the Satellite, regardless of the time when the in-orbit tests are actually completed.

3. For avoidance of doubt, when such stored Satellite is removed from storage and launched, then the full amount of the Satellite Performance Incentives must still be earned (or forfeited) in accordance with the other provisions of this ARTICLE 5.
- B. In the event that the Satellite is placed into storage for reasons other than for I-COGC convenience (including but not limited to late Delivery of the Satellite or launch delays) then the provisions of ARTICLE 5.4.A shall not apply and no payment or escalation, as appropriate, shall be due or apply until completion of in-orbit tests or 45 Days after Launch, whichever is the earlier.
 - C. Notwithstanding the above, if such stored Satellite is not removed from storage within five (5) years after entry into storage for purposes of Launch, then all Satellite Performance Incentives for said Satellite shall be deemed to have been earned in full. If payment over time was selected, then the full amount of the Satellite Performance Incentives shall be immediately due and payable together with escalation thereon provided that storage was for I-COGC's convenience as provided for in ARTICLE 5.4.A.
- 5.5 In the event that a Satellite is launched but is not a Successfully Launched Satellite, then the full amount of the incentives for that Satellite shall be immediately due and payable by I-COGC in full within 3 Business Days after receipt of the corresponding insurance proceeds but in no event later than 30 days after such launch.

- A. Notwithstanding the above, if a failure to achieve the Specified Orbit can be remedied by utilization of the Satellite propulsion system such that the Satellite can be placed into the Specified Orbit, then the Satellite shall be treated as a Successfully Launched Satellite only for purposes of this ARTICLE with the proviso that the Operational Lifetime shall be recalculated based on the amount of propellants remaining at the beginning of the Operational Lifetime. Such Satellite Performance Incentives will be linearly earned over that resultant lifetime.
- B. If it is later proven that the Satellite failed to achieve the status of a Successfully Launched Satellite because the Launch Vehicle was destroyed or damaged by the Satellite, then the Satellite Performance Incentives payment on that Satellite will be refunded by Hughes, together with interest at LIBOR + 3%.

5.6 A Successfully Launched Satellite shall immediately be subjected to a series of in-orbit tests as specified in EXHIBIT D, ACCEPTANCE TEST PLAN. The results of these tests shall be used by I-COGC to determine the status of the Satellite as either exhibiting Satisfactory Operation, or Less than Satisfactory Operation.

If election of the basis of Satellite Performance Incentive payments made by I-COGC pursuant to ARTICLE 5.3 was payment refund, then:

- A. If the Satellite was determined to be a Satisfactorily Operating Satellite, then I-COGC shall pay to Hughes under the terms of ARTICLE 5.3.A above, the full amount of Satellite Performance Incentives for the Satellite as stated in ARTICLE 5.1.

- B. If the Satellite was determined to be a Less than Satisfactorily Operating Satellite, then I-COGC shall determine the amount of reduction in the Satellite Performance Incentives stated in ARTICLE 5.1 and ARTICLE 5.2 (if any) in accordance with the other provisions of ARTICLE 5.8. The balance of said Satellite Performance Incentives shall be deemed available to be earned as described in other sections of this ARTICLE. The resultant amounts shall be paid to Hughes by I-COGC in the case of Satellite Performance Incentives referred to in ARTICLE 5.1 under the terms of ARTICLE 5.3.A and by Hughes to I-COGC in the case of Satellite Performance Incentives referred to in ARTICLE 5.2. If Hughes disputes I-COGC's determination, then this dispute shall be resolved pursuant to ARTICLE 30, DISPUTES AND ARBITRATION.

If election of the basis of performance payments made by I-COGC pursuant to ARTICLE 5.3 was payment over time, then:

- C. If the Satellite was determined to be a Satisfactorily Operating Satellite, then the full amount of Satellite Performance Incentives for the Satellite as stated in ARTICLE 5.1 shall be deemed available to be earned and paid as described in other sections of this ARTICLE.
- D. If the Satellite was determined to be a Less than Satisfactorily Operating Satellite, then I-COGC shall determine the amount of reduction in the Satellite Performance Incentives stated in ARTICLE 5.1, in accordance with the other provisions of ARTICLE 5.8. The balance of said Satellite Performance Incentives shall be deemed available to be earned and paid as described in other sections of this ARTICLE. If Hughes disputes I-COGC's determination, then this dispute shall be resolved pursuant to ARTICLE 30, DISPUTES AND ARBITRATION.

- 5.7 To the extent that any failure to maintain Satisfactory Operation is caused by 1) a failure of I-COGC to operate or have operated the Satellite in accordance with the written directives and instructions furnished to I-COGC in the Spacecraft Operating Procedures and any applicable service notes for the Satellites, such having been furnished under this Contract and not being such as to prevent I-COGC from achieving Satisfactory Operation, save that this exclusion shall not apply to operation by Hughes; or 2) radio interference by third parties (over and above that for which the Satellite is specified), then Hughes' entitlement to Satellite Performance Incentives shall not be affected, provided that Hughes shall have the burden of proving such causation.
- 5.8 During periods of time that a Satellite does not provide the performance specified in EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION but I-COGC elects to continue using the Satellite for communications services, a reduction in the Satellite Performance Incentives not previously forfeited under ARTICLE 5.6 or this ARTICLE will be calculated as set forth below in this ARTICLE 5.8 and in ARTICLE 5.9. If payment refund was elected, then the reduction in the incentive amount shall be due and payable by Hughes to I-COGC at such time as the amount of reduction is agreed between the Parties, save that if the reduction is determined at the time of the initial in-orbit tests, then said reduction shall be subtracted from the payment due Hughes at completion of said tests. If payment over time was elected, then the percentage reduction shall apply to all remaining Satellite Performance Incentive payments for that Satellite, and no reduction shall apply to payments already made.
- A. I-COGC will determine the effective loss of capacity (number of communications circuits) or availability (link margin available to initiate and maintain a communications circuit).

- B. Capacity will be determined by inspecting the non-conforming specified parameter(s) and calculating the effective loss of S-band or C-band EIRP.

If the Satellite continues to support the full design capacity, (assuming availability is unaffected) * of Satellite Performance Incentives will be earned.

If the effective EIRP is reduced by 3 dB relative to that available from a Satellite which meets the performance in EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION, Satellite Performance Incentive earnings reduce to * .

Partial Satellite Performance Incentives will be earned for effective degradations between 0 dB and -3 dB according to the following linear scale:

S-band or C-Band EIRP Degradation, dBW	% Capacity	Incentives Earned
0	*	*
-1	*	*
-2	*	*
-3	*	*

- C. Availability will be determined by inspecting the non-conforming specified parameter(s) and calculating the effective loss of S-band G/T.

If the Satellite continues to support the full availability, (assuming capacity is unaffected), then * of Satellite Performance Incentives will be earned.

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If the effective S-band G/T is reduced by 3 dB relative to that available from a Satellite that meets the performance in EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION then Satellite Performance Incentive earnings reduce to * .

Partial Satellite Performance Incentives will be earned for effective degradations between 0 dB and -3 dB according to the following scale:

S-Band G/T Degradation, dB	Incentives Earned
-----	-----
0	*
-1	*
-2	*
-3	*

- D. The Parties acknowledge that capacity or availability loss may also result from out-of-specification performance of other parameters due to loss of usable bandwidth, or inability to use EIRP or G/T at full efficiency. These effects are difficult to determine a priori. I-COGC will perform appropriate analyses to compute the impact on capacity or availability if and when such specific non-conformances occur.
- E. Earned incentives will be based on the lower of the degraded capacity as calculated per paragraph (B) above, or degraded availability as calculated per paragraph (C), taking into account the factors under paragraph (D) above.
- F. Where performance can be fully restored by a one time switch to redundant equipment, full Satellite Performance Incentive earnings apply.

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- G. In the case of the S-band antennas, where antenna element redundancy is not required, a graceful performance loss is expected if individual element paths fail or do not perform to specification. If performance loss is solely due to loss of an element path, then full Satellite Performance Incentives will be earned provided seven (7) or less elements fail or cease to achieve specified performance.

If more than seven (7) elements fail or cease to achieve specified performance, then the capacity and availability calculations discussed above shall be made. The reference for the EIRP and G/T reductions shall be the level of performance specified in EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION less the 0.7 dBW EIRP and 0.4 dB G/T reductions associated with loss of elements as permitted in EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION.

- H. I-COGC will determine the extent of non-conforming specification parameters for the purpose of incentive calculations based on a combination of:
- i. In-orbit performance measurements using the I-COGC in-orbit test facilities
 - ii. The on-board self test facility
 - iii. Antenna pattern computations based on element excitation coefficients.

I-COGC will not seek to lower Satellite Performance Incentive payments for performance reduction resulting from a non-conformance with a specification, to the extent such non-conformance is within the measurement uncertainties of the in-orbit test results.

I-COGC will grant to Hughes access to all in-orbit performance and/or diagnostic data available to allow Hughes to perform an independent assessment of degraded performance.

I. Notwithstanding the above determinations, if performance is degraded below 50% capacity or availability but I-COGC at its sole discretion elects to use the Satellite for revenue-bearing purposes, the Parties will negotiate an equitable incentive plan.

5.9 Outages due to intermittent equipment operation or faulty hardware/software design (for example, ESD induced switchoffs, passive intermodulation, attitude control loop failures) shall result in loss of Satellite Performance Incentives equated to disruption of services, not time to recover outage. For outages which are less than one day in duration, the loss of Satellite Performance Incentives for each such outage in a twelve month period beginning at the commencement or anniversary of Operational Lifetime ("Operational Year") shall be as follows, where the incentives lost will be that amount which would have been otherwise earned in the time period stated:

Outage -----	Lost Incentives -----
First	*
Second	*
Third	*
Fourth	*
Fifth	I-COGC may declare the Satellite a total loss per ARTICLE 5.10

For the first outage in an Operational Year which is longer than one day in duration, the loss of incentives shall be one calendar month for each week or fraction thereof that the Satellite is out of service during said outage. Upon occurrence of the second such outage in an Operational Year, or if any outage cannot be rectified within one Month, then I-COGC may declare the Satellite as a total loss pursuant to ARTICLE 5.10. For the purpose of this ARTICLE 5.9, outages will not result in a reduction in the Satellite Performance Incentives due Hughes if:

- 1) The outage(s) occurs on a spare Satellite, or
- 2) The outage(s) occurs on a Satellite prior to the commencement of commercial service on that Satellite and the outage(s) do not impact system test and/or pre-commercial service trials.

5.10 I-COGC shall have the right to claim a total loss if repeated outages result in the Satellite failing to offer a satisfactory service and results in I-COGC withdrawing the Satellite from operational service. If I-COGC uses said Satellite for experiments or testing in lieu of operational service, no Satellite Performance Incentives shall be due to Hughes for said usage. If I-COGC elects to use the Satellite for a degraded service a partial incentive payment shall be negotiated.

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- 5.11 If I-COGC has to make investment in additional ground segment staffing or facilities (hardware or software) to keep a Less than Satisfactorily Operating Satellite in operational service, the cost of the additional investment will be deducted from Hughes' unearned incentives for that Satellite if payment over time has been selected by I-COGC, or Hughes will pay I-COGC the corresponding cost (not to exceed the unearned incentives for that Satellite) if payment refund has been selected by I-COGC.
- 5.12 If at any time after Satellite Performance Incentives are reduced by this ARTICLE the performance of a Satellite improves, the incentives will be adjusted to the percentage applicable to the new performance level adjusted for the incentive provisions of ARTICLE 5.11, if applicable. I-COGC will test each Satellite placed out of service quarterly to determine if such Satellite's performance level has improved.
- 5.13 Hughes shall have the opportunity to re-earn all partial Satellite Performance Incentives lost, not to exceed * , during the first twelve (12) operational years of each Satellite, including any performance refund amounts paid by Hughes to I-COGC under ARTICLE 5.2, if a Satellite(s) is (are) providing revenue generating communications services in accordance with this ARTICLE during the 13th and 14th operational years. (For the purpose of this ARTICLE, in-orbit spares shall be considered to be providing revenue generating communication services.) However, if a Satellite is declared a total loss, then only the incentives lost prior to total loss declaration are re-earnable. The re-earnable amount will be the amount of incentives lost prorated by the number of operational days for that Satellite divided by four thousand three hundred and eighty (4,380). An extended life Satellite Performance Incentive pool will be established. At no time shall the extended life performance pool amount be less than zero. All re-earnable lost Satellite Performance Incentives will be added to this pool, it being understood that the said pool be notional only and shall not require I-COGC to segregate any monies for this purpose. The extended life Satellite Performance Incentive value for each Satellite

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will be determined by dividing the total number of operational Satellites in their first twelve operational years (and still providing revenue generating communications services in accordance with this ARTICLE) into the total value of the extended life performance pool at that time. However, such extended life Satellite Performance Incentives shall not exceed * per year for each Satellite.

The amount of each Satellite's extended life Satellite Performance Incentives will be determined at the completion of each Satellite's 12th operational year. No additional lost Satellite Performance Incentives will be added to, or deleted from, a Satellite's extended life performance pool once that Satellite is operating in its extended life period. The value of each Satellite's extended life Satellite Performance Incentive will be evaluated in accordance with this ARTICLE and earned linearly over the 13th and 14th operational years. All extended life Satellite Performance Incentives shall only be earned by Hughes if the Satellite(s) is providing revenue generating communications services in accordance with this ARTICLE which, for the avoidance of doubt, shall not include use for test or experimental purposes.

Payment of these extended life Satellite Performance Incentive amounts shall be made on the basis of either payment refund or payment over time with interest in accordance with Article 5.3 of this Contract, except that the interest rate is calculated at LIBOR, at the time the incentives and any associated interest are lost.

- 5.14 In addition to the Satellite Performance Incentives specified in ARTICLE 5.1 above for Satisfactory Operation of the F13-F15 Satellites over their Operational Lifetime, Hughes shall, in addition to the amounts paid as specified in Exhibit H, MILESTONE PAYMENT PLAN, be entitled to payments in the amount of * for each Satellite (the * Incentive Payments") for the satisfactory operation of the * on board the F13-F15 Satellites. *

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* The amounts specified above are independent of one another and will only be paid if the * on board such Satellite operates satisfactorily. Determination of satisfactory operation of the * will be based upon the * performance verification procedure specified in ARTICLE 5.18 below. If any of the prior delivered Satellites (F2-F12) is not demonstrating on-orbit satisfactory operation of the * operation (up to a maximum of three complete failures of such Satellites, no * Incentive Payments being payable if such F2-F12 failures exceed three), then the maximum amount payable for each of the F13-F15 Satellites will be reduced by the such maximum amount multiplied by a fraction, the numerator of which is the number of such prior delivered Satellites not demonstrating on-orbit satisfactory operation and the denominator of which is 11. For the purposes of this paragraph, a "complete failure" shall be deemed to have occurred when the * the point at which the incentives earned will have reached zero percent (0%) under the table in Section 5.18.

The * Incentive Payments will be payable six (6) months after Launch.

If I-COGC directs that any of the F13-F15 Satellites be placed into storage and such storage continues for six or more months, the amount of the * Incentive Payments (reduced as described above in the event any of the F2-F12 Satellites are not demonstrating successful on-orbit * operation), will be payable six months after placement into storage. If, after successful launch of the previously stored (F13-F15) Satellite(s), the Satellite does not demonstrate successful * operation on-orbit, the * Incentive Payments received by

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Hughes for that Satellite shall be immediately refunded to I-COGC with interest from the date of payment at LIBOR + 3%, compounded monthly.

In the event that any of the F13-F15 Satellites is launched but is not a Successfully Launched Satellite, then the full amount of the * Incentive Payments for that Satellite(s) shall be due and payable by I-COGC six months after the launch. If any of the F13 through F14 Satellites are terminated for I-COGC's convenience as specified in ARTICLE 17 TERMINATION, then in addition to I-COGC's obligations under ARTICLE 17, the * Incentive Payments (reduced as described above in the event any of the F2-F12 Satellites are not demonstrating successful on-orbit * operation) for the terminated Satellite(s) shall be due and payable by I-COGC on the then current nominal Delivery Date for the F13 and/or F14 Satellite(s). In the event, that any of the eleven (11) F2-F12 Satellites were terminated for I-COGC's convenience prior to I-COGC's termination of F13 and/or F14, I-COGC's * Incentive Payment shall be reduced by 1/11th for each terminated F2-F12 Satellite. No interest is to accrue on the * Incentive Payments payable by I-COGC.

- 5.15 * incentives (the " * Incentives") totaling * will be paid by I-COGC to Hughes after completion of * events to be mutually agreed upon by the Parties no later than 30 Days after the completion of the System Preliminary Design Review (PDR). The target will be approximately 20%, 40% and 40% in 2001, 2002 and 2003, respectively. If Hughes and I-COGC have not mutually agreed upon the definition of * events within 30 Days after the completion of PDR as provided above, the dispute resolution process specified in ARTICLE 30, DISPUTES AND ARBITRATION, will apply.

Notwithstanding any other provision in this Contract, the foregoing * Incentives will not be payable unless and until the corresponding *

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event has occurred (regardless of the reasons for any failure of such event to occur). * I-COGC will use its commercially best efforts to negotiate with each of its key suppliers system incentives generally tied to the same events and proportionately similar in amount as incentives for Hughes in order to maximize alignment of interest and avoid gaming by individual suppliers at the expense of other companies. No interest will accrue on the * Incentives payable by I-COGC.

5.16 Integrated * incentives (the " * Incentives") totaling * will be defined by the Parties and paid by I-COGC to Hughes in accordance with a performance formula and definition of * parameters to be mutually agreed upon by the Parties no later than 30 Days after the completion of the System Preliminary Design Review (PDR). Formula variables will include, for example, system capacity and quality of service parameters measured over applicable time periods * . The target appropriation for the integrated * incentives will be approximately 80% divided approximately equally for performance periods expected to occur in calendar years 2003, 2004, 2005, and 2006, with the remaining 20% divided approximately equally for performance periods events expected to occur in calendar years 2007 through 2014. Notwithstanding any other provision in this Contract, the

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foregoing * Incentives will not be payable unless and until the corresponding * has occurred (regardless of the reasons for any failure of such performance to occur). No interest will accrue on the * Incentives payable by I-COGC. In the event that Hughes and I-COGC have not mutually agreed to the definition of * parameters within 30 Days after the completion of the PDR as provided above, the dispute resolution process specified in ARTICLE 30, DISPUTES AND ARBITRATION, will apply.

5.17 * incentives (the * Incentives") totaling * are included in the price specified in ARTICLE 4: * The incentive amounts specified above are independent of one another and will be paid in accordance with the following criteria. These incentives will be conditioned upon full demonstration of * performance on the first * Satellite (including all affected unit design and unit manufacturers) and will be payable within fifteen (15) Days after I-COGC's determination that the requirements for each of the following events has occurred: 25% on successful completion of unit test (including all affected unit designs and unit manufacturers); 25% on successful completion of spacecraft test (including all affected unit designs and unit manufacturers); and 50% on successful verification as set forth in ARTICLE 5.18 after six months on-orbit for the first in-orbit * Satellite (including all affected unit designs and unit manufacturers). No interest will accrue on these * incentives.

5.18 The Satellite * will be tested in accordance with the test methodology as described in Section 6.7 of EXHIBIT D. For purposes of accountability, Hughes will supply specific procedures to measure the performance described below. I-

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COGC will be responsible for procuring and making available the `cooperative emitter', generating the operating plan, and obtaining the permits, licenses, and authority to operate the "cooperative emitter" used as a source for the test. In addition, I-COGC shall obtain and disclose calibration data for the source so that the validity of the test results can be established. If a calibrated, suitable source is not available to provide the ability to verify spacecraft performance in-orbit, then a modified test approach shall be mutually agreed between the Parties within six (6) Months after Launch of the first * Satellite. Based upon the results of the testing, the * Performance Incentives shall be paid in accordance with the following criteria:

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* Incentive Criteria

Given a cooperative S-band interference source on the ground with an uplink EIRP of no more than * at the edge of coverage (no more than * incident flux density at the Satellite), within * and a signal bandwidth between *, partial * incentives shall be earned according to the following formula:

S-band G/T degradation relative to Exhibit B Table 3.4.3-1 Specification -----	Incentives Earned -----
degradation (less than or equal to) 4 dB	*
degradation (greater than) 4 dB	*
degradation (greater than) 4.5 dB	*
degradation (greater than) 5 dB	*

The intent of this formula is to devise a simple quantitative metric (averaged over at least 10 seconds of integration time) to capture the gross noise floor changes due to all * including spurious and harmonic products.

* Incentive Criteria

The * performance shall be measured in accordance with Section 6.7 of EXHIBIT D to verify that the * function properly executes and that the equivalent G/T disturbance duration (based on * plus measurement margin due to the in-orbit environment) is within 20% of the specified time in EXHIBIT B Table 3.5.14-1. Measurement margin shall be mutually agreed at the time of the * CDR. If * occurs and the disturbance duration is verified, then the * incentives will be paid to Hughes.

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If the in-orbit performance of a Satellite suggests that the * modifications are not operating correctly, and no * in-orbit testing has yet been performed on the Satellite, then Hughes agrees to perform appropriate in-orbit testing to verify the performance of the * modification.

- 5.19 Hughes agrees not to insure against the risk of losing (or, in the case of the Refund Pool, paying) any of the incentives (including, without limitation, the Satellite Performance Incentives, the Refund Pool, the * in this ARTICLE (including such incentives as may be applicable to F15 or any of the optional Satellites).

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ARTICLE 7 PERMITS AND LICENSES: GOVERNMENT APPROVALS

7.1 Hughes shall, at its own expense, secure all Government permits, licenses, approvals and consents as may be required for the performance of the Work under this Contract. Hughes shall perform the Work in accordance with the conditions thereof. I-COGC shall, make commercially reasonable efforts to provide to Hughes in a timely manner all applicable updating information related to the ownership and control of the "new" ICO to include foreign and domestic ownership, corporate structure, members of the board, and governance. Hughes and I-COGC agree to develop a process for working together to resolve all licensing issues in a manner and on a schedule that is consistent with the scheduled delivery dates. Such process will include periodic meetings to review program export status, consultation with I-COGC prior to submission of new or materially-amended export licenses, and, as applicable, provision to I-COGC of copies of export licenses and subsequent provisos.

In addition, I-COGC will be responsible for the cost of any new license requirements that results from a change to the Contract requested or directed by I-COGC, whereas Hughes will be responsible for the cost of any license modifications/updates not resulting from a change to the Contract requested or directed by I-COGC.

If I-COGC directs that Hughes relocate the Hughes-provided TT&C equipment currently at the I-COGC's SAN site in India to another location, I-COGC agrees to reimburse Hughes on a cost reimbursement basis for all reasonable costs incurred, including a ten percent (10%) fee.

7.2 Notwithstanding this or any other ARTICLE in this Contract, the Parties understand and agree that certain restrictions are placed on access to Hughes' plant and the use of technical data and hardware delivered under this Contract with relation to the approvals

Hughes must obtain from the U.S. Government. As a result, the Parties agree that such access and the actual delivery of any technical data will be under a separate agreement which shall require prior U.S. Government approval. Hughes shall prepare said agreement and, in consultation with I-COGC, shall request U.S. Government approval. Request for U.S. Government approvals shall be sufficiently comprehensive to allow Hughes to fulfill all of its obligations hereunder including but not limited to the rights of access and inspection granted to I-COGC and its Consultants under this Contract.

- 7.3 The hardware ("hardware products") furnished under this Contract will be authorized by the U.S. Government for export only to I-COGC or to the Designated Launch Site for Launch into space or in the case of GCE to the installation sites. The products may not be resold, diverted, transferred, trans-shipped or otherwise be disposed of in any other country, either in their original form or after being incorporated through an intermediate process into other end items without the prior written approval of the U.S. Government. Additionally, transferring registration or control to any other person or business entity of the products furnished under this Contract is considered an export and as such also requires prior written approval from the U.S. Government. I-COGC represents and warrants that the ultimate end use of the products is for telecommunications services.
- 7.4 I-COGC is responsible for obtaining all Governmental licenses and permits, approvals and consents as may be required for the importation of the Work (other than the Satellite(s)) to the applicable delivery location (including those which are required for GCE and PCS installation), or relating to the use or operation of the Work following delivery, including the Satellite(s), GCE, PCS and other related items.
- 7.5 The obligations contained in this ARTICLE 7 shall survive expiration or termination of this Contract for whatever cause.

ARTICLE 8 ACCEPTANCE

- 8.1 Final Acceptance of any Satellite shall only arise following the occurrence of each of the following events:
 - A. Preliminary acceptance (following successful completion of the Pre-Shipment Review); and
 - B. Successful completion of the Launch Readiness Review, following Delivery of the Satellite to the Designated Launch Site.
- 8.2 No Satellite shall be delivered either to a Designated Launch Site or into Storage until preliminary acceptance of that Satellite, whereupon the Satellite shall be Available for Shipment.
- 8.3 The procedure for effecting a Pre-Shipment Review shall be as follows:
 - A. Hughes shall conduct a Pre-Shipment Review at its premises prior to dispatch of any Satellite from its premises;
 - B. The Pre-Shipment Review shall verify that:
 - 1. The Satellite protoflight or acceptance testing has been satisfactorily completed in accordance with EXHIBIT D, ACCEPTANCE TEST PLAN;
 - 2. All discrepancies or non-conformances have been corrected or dispositioned;

3. The Satellite, ground support equipment, and supporting documentation as specified in EXHIBIT A, STATEMENT OF WORK, and EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION, are ready for shipment based on an inspection of the Satellite and examination of the data package. A Pre-Shipment Review cannot be deemed completed until all documentation relating to such review has been delivered.
- C. At least fifteen (15) Business Days written notice of the date of the Pre-Shipment Review shall be given by Hughes to I-COGC;
- D. I-COGC shall have the right to send representatives to attend the Pre-Shipment Review;
- E. Preliminary acceptance shall arise upon the occurrence of any of the following:
 1. The Pre-Shipment Review complies in all respects with the provisions of ARTICLE 8.3.B, and I-COGC notifies Hughes of their acceptance of the Pre-Shipment Review within 5 Business Days following successful completion. Failure of I-COGC to so notify Hughes shall be deemed to constitute acceptance of said review; or
 2. The Pre-Shipment Review complies in all respects with ARTICLE 8.3B save for minor non-conformances that have not been corrected or dispositioned which Hughes demonstrates at the review to I-COGC's reasonable satisfaction have no adverse affect upon the capability of the Satellite to perform its on-orbit mission throughout its Operational Lifetime, and I-COGC notifies Hughes of their acceptance of the Pre-Shipment Review within 5 Business Days following successful

completion. Failure of I-COGC to so notify Hughes shall be deemed to constitute acceptance of said review; or

3. If the Pre-Shipment Review contains non-conformances which require correction, within five (5) Business Days after the said review, I-COGC shall request correction of non-conforming conditions affecting the Satellite in writing ("PSR Correction Notice"). Hughes shall promptly correct the non-conforming conditions referred to therein and, promptly following such correction, shall notify I-COGC that the corrections have taken place and shall invite I-COGC to send representatives to attend an inspection at which they will be entitled to verify that such corrections have been satisfactorily made. The provisions of this ARTICLE 8.3 shall thereafter apply mutatis mutandis to that inspection as if that inspection was the original Pre-Shipment Review.

8.4 Prior to integration of any Satellite with the Launch Vehicle at the Designated Launch Site, a Launch Readiness Review (LRR) shall be jointly conducted by Hughes and I-COGC. Hughes shall give I-COGC 15 days notice of shipment of the Satellite to the Designated Launch Site and I-COGC shall have the right to send representatives to attend the LRR. The purpose of the LRR is to confirm:

- A. The Satellite is ready for Launch. Any defects or non-conformances as may remain from the Pre-Shipment Review (which I-COGC has agreed may be corrected at the Designated Launch Site), or resulting from shipment or otherwise discovered during Satellite launch preparations shall have been satisfactorily corrected or dispositioned in the reasonable opinion of I-COGC;
- B. The TT&C Ground Control is ready to support launch and in-orbit operations of the Satellite. Readiness consists of prior Final Acceptance of the GCE, and the

preparedness of the GCE and the mission operations team to support launch and in-orbit operations; and

C. The Launch Vehicle is ready for Launch.

Upon successful completion of the LRR, the Satellite shall be released by I-COGC for Launch Vehicle integration.

8.5 Final Acceptance shall arise upon the occurrence of any of the following:

- A. The LRR demonstrates compliance in all respects with the provisions of ARTICLE 8.4.A (and 8.4.B for Satellite F1), and I-COGC notifies Hughes of their acceptance of the LRR within 5 Business Days following its successful completion. Failure of I-COGC to notify Hughes shall be deemed to constitute acceptance of said review; or
- B. The LRR demonstrates compliance in all respects with ARTICLE 8.4A (and 8.4B for Satellite F1) save for minor non-conformances that have not been corrected or dispositioned which Hughes demonstrates at the review to I-COGC's reasonable satisfaction have no adverse affect upon the capability of the Satellite to perform its on-orbit mission throughout its Operational Lifetime, and I-COGC notifies Hughes of their acceptance of the LRR within 5 Business Days following its successful completion. Failure of I-COGC to notify Hughes shall be deemed to constitute acceptance of said review; or
- C. If the LRR contains non-conformances which require correction, within five (5) Business Days after the said review I-COGC shall request correction of non-conforming conditions affecting the Satellite in writing ("LRR Correction Notice"). Hughes shall promptly correct the non-conforming conditions referred to therein

and, promptly following such correction, shall notify I-COGC that the corrections have taken place and shall invite I-COGC to send representatives to attend an inspection at which they will be entitled to verify that such corrections have been satisfactorily made. The provisions of this ARTICLE 8.4 shall thereafter apply mutatis mutandis to that inspection as if that inspection was the original Launch Readiness Review.

- 8.6 For the purposes of ARTICLES 3.2 and 11, CONSEQUENCES OF LATE DELIVERY, in the event that I-COGC serve a valid LRR Correction Notice upon Hughes:
- A. Delivery of the relevant Satellite shall be deemed to have occurred only upon Final Acceptance; and
 - B. for the purposes of calculating any amounts payable pursuant to ARTICLE 11, CONSEQUENCES OF LATE DELIVERY:
 - 1. No account shall be taken of the period from actual physical arrival of the relevant Satellite at its Designated Launch Site, subject to a visual inspection by I-COGC to ensure that there is no apparent physical loss or damage and that the Satellite is available for commencement of the launch campaign, until (and including) the date of a valid LRR Correction Notice relating to that Satellite; and
 - 2. the obligation to pay liquidated damages shall terminate on the Day that Final Acceptance of that Satellite occurs.
- 8.7 Prior to shipment of the GCE to the sites selected by I-COGC Hughes shall conduct a Pre-Shipment Review at the Hughes plant. The Pre-Shipment Review shall be

conducted in accordance with EXHIBIT A, STATEMENT OF WORK. Hughes shall provide I-COGC fifteen (15) Business Days notice of the Pre-Shipment Review.

- 8.7.1 I-COGC shall direct Hughes to ship the GCE to the selected site(s) upon successful completion of the Pre-Shipment Review. The Pre-Shipment Review shall be deemed complete and preliminary acceptance occurs when the Parties agree that:
- A. factory acceptance testing in accordance with EXHIBIT E, GCE IMPLEMENTATION AND TEST PLAN, is complete;
 - B. all open actions have been closed or a closure plan agreed by I-COGC;
 - C. all non-conformances have been corrected or dispositioned.
- 8.7.2 I-COGC shall not withhold its preliminary acceptance of the GCE for minor non-conformances which Hughes demonstrates to I-COGC's reasonable satisfaction have no adverse effect upon the operation of the GCE in accordance with EXHIBIT F, GCE TECHNICAL SPECIFICATION.

- 8.8 Final Acceptance of the GCE shall occur upon successful completion of installation and checkout of the SCC at its installation site, TT&C equipment at the SAN site, an acceptance test of the complete GCE system, and closure of all action items from the Pre-Shipment Review. Provided however if there is a delay in installation and checkout due to unavailability of hardware or facilities not the responsibility of Hughes, and in particular if the beneficial occupancy dates for the SCC and SAN in accordance with the table in ARTICLE 29.1.A are not met by I-COGC, then there shall be a day for day adjustment to the Delivery Date for the GCE and I-COGC shall be responsible for any reasonable costs directly related to the delay.

- 8.9 Final Acceptance of the Engineering Model Payload shall occur upon successful completion of the testing specified in the Engineering Model Payload Test Plan of EXHIBIT D, ACCEPTANCE TEST PLAN.
- 8.10 Final Acceptance of the Software Simulator (DSS) shall occur upon completion of the testing specified in EXHIBIT E, GCE IMPLEMENTATION AND TEST PLAN
- 8.11 No approvals given by I-COGC in respect of the Work, whether at any design review or other meetings or in respect of any testing or any documentation, or any concurrence with or acceptance of Hughes' actions in the performance of the Work, shall release or be deemed to release Hughes from its obligations to deliver Work in accordance with the requirements of the Contract.
- 8.12 If during any monitoring, review or inspection of Work in progress I-COGC discovers that any of the Work does not conform to the requirements of the Contract, then I-COGC shall so inform Hughes and Hughes will promptly respond with a corrective action plan to rectify or otherwise disposition said non-conformance. Hughes shall not be relieved from any contractual obligations should I-COGC fail to detect any such non-conformances.
- Should a dispute arise as to whether Work does or does not conform with the requirements of the Contract, or whether the plan for corrective action is adequate, then, unless otherwise agreed, the dispute shall be resolved in accordance with ARTICLE 30, DISPUTES AND ARBITRATION.
- 8.13 Final Acceptance of the Payload Control System shall occur upon successful completion of SAT as described in EXHIBIT K, PCS TECHNICAL SPECIFICATION AND TEST PLAN. I-COGC shall not withhold its acceptance of the PCS for minor

nonconformances which Hughes demonstrates to I-COGC's reasonable satisfaction to have no adverse effect upon the operation of the PCS in accordance with EXHIBIT K, PCS TECHNICAL SPECIFICATION AND TEST PLAN.

ARTICLE 9 TITLE AND RISK OF LOSS

- 9.1 Title and risk of loss or damage to the Satellites to be delivered under this Contract shall pass from Hughes to I-COGC at the time of Launch of that Satellite(s) or upon expiration of the warranty period, whichever occurs earlier.
- 9.2 Notwithstanding the above, in the event that there is a Launch Attempt by the Launch Services Provider for any Satellite(s) such that the Launch Vehicle is shut-down and the launch activity is thereby terminated prior to lift-off, Hughes agrees to re-acquire risk of loss or damage for the affected Satellite, until the Intentional Ignition of the Launch Vehicle for the re-launch of that Satellite, subject to the following conditions:
- A. Such transfer of risk of loss or damage back to Hughes from I-COGC shall not occur until the launch pad has been declared safe by the Launch Services Provider.
 - B. Such risk of loss or damage coverage then assumed by Hughes shall cover ground risks only which occur after the launch pad has been declared safe and prior to Intentional Ignition of the Launch Vehicle used for the re-launch of the Satellite. I-COGC shall then re-acquire risk of loss or damage for the affected Satellite at Intentional Ignition of the Launch Vehicle used for the re-launch.
 - C. Any damage sustained by the affected Satellite from the period of Intentional Ignition up to and including the point in time when the launch pad has been declared safe, shall be the sole responsibility of I-COGC.

- D. Any and all additional costs and expenses necessarily incurred by Hughes associated with this re-acquiring of risk of loss or damage, including but not limited to de-mating the Satellite from the Launch Vehicle, defueling operations, inspection and testing, refurbishment, storage, transportation, and additional launch operations effort for the re-launch of the Satellite, shall be the sole responsibility of I-COGC. Hughes shall use its reasonable endeavors taking into account all the circumstances to mitigate any such additional costs and expenses.
- E. Additionally, in the event that Hughes' insurance capacity limit for the relevant launch site would be exceeded by the addition of an affected Satellite, I-COGC shall be responsible for Hughes' consequent additional insurance premium required to provide adequate coverage for that Satellite.

9.3 Not later than forty-five (45) Days before Launch of a Satellite, I-COGC shall request and Hughes shall provide a report within fifteen (15) Days of the insurance situation pertaining to the relevant Designated Launch Site. If such report indicates that Hughes believes that its insurance capacity limits will or may be exceeded for the relevant Designated Launch Site then the Parties will discuss the appropriate options. If requested by I-COGC, Hughes will use its reasonable efforts to obtain additional insurance capacity at I-COGC's cost. If Hughes cannot obtain the said additional coverage, then I-COGC will bear risk of loss or damage to the Satellite to the extent not covered by Hughes' existing insurance until and unless the Satellite is put into storage in accordance with ARTICLE 32, STORAGE or ARTICLE 33, OPTIONS.

9.4 In relation to that affected Satellite, in the event that the Launch Vehicle is shutdown again and the launch activities are thereby terminated prior to lift off, Hughes agrees to re-acquire risk for the affected Satellite, until the Intentional Ignition of the Launch

Vehicle for the re-launch of that Satellite, subject to the conditions set out in paragraphs A) to E) of ARTICLE 9.2 and also ARTICLE 9.3 (both of which shall apply mutatis mutandis to any subsequent attempted re-launch).

- 9.5 Title to and risk of loss or damage to all items to be delivered under this Contract other than Satellites and Documentation, shall pass from Hughes to I-COGC at the time of Final Acceptance by I-COGC in accordance with ARTICLE 8, ACCEPTANCE save for title to the GCE which shall pass from Hughes to ICO GLOBAL COMMUNICATIONS HOLDINGS B.V. at the time of Final Acceptance by I-COGC of the GCE in accordance with ARTICLE 8.8.
- 9.6 Title and risk of loss to all Documentation shall pass to I-COGC at the time of Delivery, save that intellectual property rights in Documentation shall be dealt with in accordance with the provisions of ARTICLE 18, DATA RIGHTS.

ARTICLE 10 FORCE MAJEURE

Notwithstanding any other provisions of this Contract, in the event Hughes or its Associates performing Work under the Contract are delayed by act of God, or of the public enemy, fire, flood, epidemic, quarantine restriction, or lockout, strike, walkout, (other than those solely affecting Hughes' or its Associates' workforce) or freight embargo, acts of Government, including but not limited to the Government of the United States, (including the refusal, suspension, withdrawal, or non-renewal of export or import licenses essential to the performance of the Contract not caused by Hughes or its Associates) whether in its sovereign or contractual capacity, or any other event which is beyond the reasonable control and without the fault or negligence of Hughes and its Associates performing any part of the Work, then such event shall constitute an "Excusable Delay". In the event of an Excusable Delay, there shall be an equitable adjustment to the time for the performance of the affected obligations under this Contract provided that Hughes informs I-COGC immediately of the occurrence of the event giving rise to the Excusable Delay and provides I-COGC within seven (7) Business Days of the date of such notice with a detailed description of the performance affected by such event as well as such Hughes' plans for minimizing the effects of such event upon the performance of its obligations under the Contract. In all cases Hughes shall use reasonable efforts to avoid or minimize such delay.

In the event the Excusable Delay condition continues beyond six (6) Months, I-COGC shall have the right to terminate the Contract in accordance with ARTICLE 17.1, TERMINATION FOR I-COGC'S CONVENIENCE, except that there shall be no payment to Hughes for lost profit on the uncompleted Work.

ARTICLE 11 CONSEQUENCES OF LATE DELIVERY

- 11.1 A. In the event that the second Satellite (F2) to be delivered for Launch or placement into storage hereunder is not delivered on or before its Delivery Date, then, on the * Day after such scheduled Delivery Date, Hughes shall pay I-COGC * . Starting with the * Day after such scheduled Delivery Date, for a period not to exceed * Days, Hughes shall pay I-COGC * for each Day the second Satellite (F2) is late, up to a maximum cumulative total for F2 of * .
- B. In the event the fifth Satellite (F5) to be delivered for Launch or placement into storage hereunder is not delivered on or before its Delivery Date, then, on the * Day after such scheduled Delivery Date, Hughes shall pay I-COGC * . Starting with the * Day after such scheduled Delivery, for a period not to exceed * Days, Hughes shall pay I-COGC * for each Day the fifth Satellite (F5) is late, up to a maximum cumulative total for F5 of * .
- C. In the event that the eighth through twelfth Satellites (F8 through F12) to be delivered for Launch or placement into storage hereunder are not delivered on or before their respective Delivery Dates, then, commencing on the Day after such scheduled Delivery Date, for a period not to exceed two hundred and seventy

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(270) Days, Hughes shall pay * for each Day the eighth, ninth, tenth, eleventh, or twelfth Satellite (F8-F12) is late, up to a maximum amount of * each and a maximum cumulative total of * for all five (5) Satellites.

- D. If a * entered into by the Parties and Hughes is in the *, then system delivery liquidated damages in the amount of * will be allocated to events and criteria to be defined and mutually agreed to by the Parties by the execution of such * contract (and, if the Parties are unable to agree, the dispute resolution process specified in Article 30, Disputes an Arbitration will apply). If such * contract is entered into, liquidated damages provided in Article 11.1.B will be reduced proportionately from * to *. Notwithstanding any other provision in this Contract, the foregoing system delivery liquidated damages will be payable if the corresponding system delivery event has not occurred (regardless of the reasons for any failure of such event to occur). *
- E. In the event the thirteenth through fourteenth Satellites (F13-F14) to be delivered for Launch or placement into storage hereunder are not delivered on or before

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their respective Delivery Dates, then, on the * Day after such scheduled Delivery Date, Hughes shall pay I-COGC * for each F13 through F14 Satellite that is late. Starting with the * Day after such scheduled Delivery, for a period not to exceed * , Hughes shall pay I-COGC * for each Day the F13 through F14 Satellites are late, up to a maximum amount of * each and a maximum cumulative total of * for both Satellites.

- F. In the event the F15 Satellite to be delivered for Launch or placement into storage hereunder is not delivered on or before its respective Delivery Date, then, commencing on the * Day after such scheduled Delivery Date, for a period not to exceed one hundred and fifty (150) Days, Hughes shall pay * for each Day the fifteen Satellite (F15) is late, up to a maximum amount of * .
- G. In the event that any of the F16 through F20 Satellites are procured under ARTICLE 33 OPTIONS by I-COGC to be delivered for Launch or placement into storage hereunder and is not delivered on or before its Delivery Date, then, commencing on the * Day after such scheduled Delivery Date, for a period not to exceed * Days, Hughes shall pay * for each Day that any of the F16 through F20 Satellites are late, up to a maximum amount of * per

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Satellite and a cumulative maximum total of * for all five Satellites.

Therefore, the maximum aggregate liquidated damages payments under this ARTICLE 11 shall never exceed * for the firm Satellites; and, an additional * if all OPTION Satellites are exercised, for a cumulative maximum aggregate total liquidated damages of ONE HUNDRED THIRTEEN MILLION FOUR HUNDRED THOUSAND US dollars (US\$113,400,000).

Notwithstanding the above, if such late Delivery of the eighth through twelfth Satellites (F8-F12) does not cause the relevant Launch to be later than 3.5 Months after the Delivery Date, then any amounts paid by Hughes to I-COGC in respect of the affected Satellite(s) shall be refunded to Hughes within fifteen (15) Days of Launch.

If any of the eighth through twelfth Satellites (F8-F12) is delivered into storage for I-COGC's convenience on a date which is less than 2.5 Months after the Delivery Date, then any amounts paid by Hughes to I-COGC in respect of the affected Satellite(s) shall be refunded to Hughes within forty-five (45) Days of placement into storage.

- 11.2 As used in this Contract, the designations of Satellite F1 through F12 shall be considered for reference purposes only. For purposes of assessment of liquidated damages, each Satellite delivered shall be designated the numerical designation relative to the actual Delivery Date, i.e., if the Satellite F4 is actually the second Satellite

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delivered to the Designated Launch Site or storage it would be deemed F2 even though its reference designation was F4. Hughes is entitled to Deliver any Satellite in any order regardless of reference designation provided that each Satellite complies with the applicable Delivery Date. If the Satellite designated for protoflight testing (nominally the first Satellite through environmental test) is not the first Satellite to be delivered, then such protoflight testing shall be successfully completed before any Satellite may be launched.

- 11.3 If a Satellite is put into storage because the Launch is delayed for other than I-COGC's convenience, then Hughes shall bear all related costs of such storage, including but not limited to actual storage costs, program stretch out costs, post-storage retest costs, and any costs relating to deployment of crews and/or Satellite shipment, until such time as the Satellite and Launch Vehicle are ready for a Launch.
- 11.4 Notwithstanding anything to the contrary, Delivery of the first Satellite will not be deemed to have occurred until Final Acceptance of the GCE has occurred. Additionally, Delivery of the second Satellite cannot occur prior to Delivery of the first Satellite. However, if payments for late delivery are incurred through this ARTICLE 11.4 solely due to late Final Acceptance of the GCE, then account shall be taken of any adjustments to the GCE Delivery Date.
- 11.5 The Parties agree and declare that any payments for late delivery payable in accordance with this ARTICLE 11 and where applicable subject to ARTICLE 8.6, shall constitute full and final settlement (and shall therefore be in lieu of all other claims for damages, actual or consequential or otherwise) for all claims howsoever arising resulting from the late delivery of any Satellite, other than as provided in ARTICLE 17, TERMINATION, and ARTICLE 11.3 and the amount payable in accordance with this ARTICLE 11 shall constitute liquidated damages which the Parties believe and declare,

represent a genuine pre-estimate of all losses suffered by reason of any such late delivery and are not, therefore, penalties.

- 11.6 I-COGC may elect to set off any amounts then due and payable by I-COGC under this Contract against any amounts payable by Hughes to I-COGC pursuant to this ARTICLE. In the event I-COGC alternatively elects to have Hughes make payment under this ARTICLE such payment shall be due within 30 Days of receipt by Hughes of a valid invoice from I-COGC. For billing purposes to Hughes, I-COGC shall aggregate amounts owed on a monthly basis.

ARTICLE 12 ACCESS TO WORK IN PROGRESS AND DATA

- 12.1 Hughes shall provide I-COGC and its Consultant(s) reasonable access to all Work, related data and documentation being performed under this Contract (including observation of tests in accordance with the requirements of EXHIBIT D, ACCEPTANCE TEST PLAN), such that I-COGC may fully and effectively monitor the progress of the Work and its compliance with the requirements of this Contract at Hughes' facilities provided that such access does not unreasonably interfere with such Work and access to Work is coordinated with the Hughes Program Manager or designated alternative(s). Hughes may, at its reasonable discretion, deny access to persons who are employed by or affiliated with a company manufacturing satellites or major subsystems for satellites. Such access shall be in compliance with Hughes' security requirements, and United States law. I-COGC and its Consultant(s) shall also be afforded such access to the Major Subcontractors' facilities pursuant to ARTICLE 36, MAJOR SUBCONTRACTORS and also Subcontractors' facilities to the extent that Hughes is permitted to provide such access, subject to I-COGC providing sufficient notice to Hughes so as to assure that if desired by the Hughes Program Manager, Hughes personnel can accompany I-COGC and its Consultant(s) on any such visit.
- 12.2 I-COGC and/or its Consultant(s) visiting Hughes facilities (a) will abide by Hughes' security regulations and applicable US Government regulations; and (b) will not use or disclose except as provided in ARTICLE 18, DATA RIGHTS, ARTICLE 20, RIGHTS IN INVENTIONS, and ARTICLE 21, CONFIDENTIALITY to a third party any information received in connection with the access provided hereunder.
- 12.3 For purposes of access, I-COSL and ICO-Teledesic Global Limited, their respective Affiliates and successors of the foregoing shall be considered the same as I-COGC.

- 12.4 I-COGC shall be provided adequate office space so as to accommodate the I-COGC on-site monitoring team (approximately ten people) as is more particularly described in EXHIBIT A, STATEMENT OF WORK.

ARTICLE 13 INDEMNIFICATION

- 13.1 Each Party shall indemnify and hold harmless the other Party and its Associates, (or any of them) from any loss, damage, liability or expense, resulting from damage to all property and personal injury, including death, arising out of or based upon any occurrence prior to arrival at the Designated Launch Site to the extent caused by a negligent act or omission of the indemnifying Party or its Associates in the performance of the Work and at the indemnifying Party's expense shall defend any suits or other proceedings brought against the indemnified Party and/or its Associates (or any of them) on account thereof, and satisfy all judgements which may be incurred by or rendered against them, or any of them, in connection therewith.
- 13.2 Notwithstanding the foregoing, each Party ("the Indemnifying Party") will indemnify the other Party for any loss or damage to the Indemnifying Party's property or death or personal injury to the Indemnifying Party's personnel whilst on the premises of either Party provided however that the first US\$100,000 of any such loss, damage, death or personal injury shall be dealt with in accordance with ARTICLE 13.1.
- 13.3 Prior to the time that either Party or its Associates enter the Designated Launch Site, (and as a precondition of such entry) each Party shall ensure that they and their respective relevant Associates shall sign a no-fault, no-subrogation inter-party waiver of liability consistent with that between the Launch Services Provider and Hughes.
- 13.4 In the event that either I-COGC or Hughes fails to obtain the aforesaid inter-party waiver of liability from their respective Associates, then I-COGC and Hughes shall indemnify and hold each other harmless from claims brought by the other Party or its Associates for damage to any such persons'

property or injury to, or death of, any such persons' employees in connection with launch operations at the Designated Launch Site. For these purposes, Hughes or its Affiliates or any of its subcontractors or employees or agents performing work under the interrelated contract for Launch Services referred to in the Recitals shall not be deemed to be an Associate of I-COGC for the purposes of this Contract.

- 13.5. Notwithstanding any other provision of this Contract, but without prejudice to any indemnities or insurance coverage as may be provided by Launch Services Providers under the interrelated contract for Launch Services referred to in the Recitals, I-COGC shall indemnify and hold harmless Hughes and its Associates from any liabilities, losses and damages including but not limited to those based on negligence, including any costs, expenses and damages whatsoever incurred by Hughes in defending, or assisting I-COGC in its defense, against any and all third party claims, including but not limited to, I-COGC's customer(s) or an agency of any Government with whom I-COGC shall have any obligation related to the Satellites, arising after Launch Attempt of a Satellite, and I-COGC shall obtain waivers of subrogation rights against Hughes and its Associates from I-COGC's insurers if any.

This indemnity shall not apply to Hughes or its Associates to the extent that they make a claim against I-COGC as a direct or indirect customer of I-COGC and shall not apply to any intellectual property-related claims, which are instead intended to be the subject of Article 19, Intellectual property Indemnity.

ARTICLE 14 WARRANTY

- 14.1 Notwithstanding any prior inspection or acceptance, Hughes warrants in respect of the Work that all equipment (including, but not limited to, the Satellite) shall be free from defects in materials or workmanship and all services shall be performed in a professional and workmanlike manner consistent with generally accepted custom and practice in the industry and further that all equipment and services shall conform to the specifications and other technical requirements of the Contract.
- 14.2 I-COGC shall have the right at any time during the period of this warranty to require that any Work not conforming to the above warranty be promptly corrected or replaced (at Hughes' option after taking into account any of the representations by I-COGC and at Hughes' expense) with conforming Work. If Hughes fails to correct or replace such defective Work within a reasonable period after notification from I-COGC, I-COGC may elect, in lieu of its other rights and remedies, to require Hughes to repay such portion of the Contract Price and/or make such modifications to the performance incentive scheme as are equitable under the circumstances in lieu of repairing or replacing such defective Work.
- 14.3 This warranty with respect to a Satellite, (but excluding any Satellite batteries) shall begin upon Final Acceptance of the Satellite and shall run for a period of five (5) years, or until Launch, whichever is earlier.
- 14.4 The Satellite batteries are warranted for 36 Months after cell activation. This Satellite battery warranty may be extended to 54 Months by resetting the battery precharge, as long as direction is received from I-COGC to perform this reset no later than 30 Months after activation.

- 14.5 With respect to GCE, Software Simulator (DSS), and Engineering Model Payload, this warranty shall begin upon Final Acceptance and shall run for a period of two years therefrom.
- 14.6 For the avoidance of doubt, nothing herein shall limit Hughes' obligations as stated in ARTICLE 28, CORRECTIVE MEASURES IN UNLAUNCHED SATELLITES nor limit I-COGC's rights to be repaid monies pursuant to ARTICLE 5, SATELLITE PERFORMANCE PAYMENTS.
- 14.7 With respect to the PCS, this warranty shall begin upon Final Acceptance and shall run for a period of one year therefrom; except for the PCS baseband equipment which shall have a ten (10) month warranty period.

ARTICLE 15 SATELLITE NOT LAUNCHED AFTER AVAILABLE FOR SHIPMENT DATE

- 15.1 A Satellite which is not shipped to the Designated Launch Site following agreement that the Satellite is Available for Shipment shall be stored by Hughes pursuant to ARTICLE 32, STORAGE or ARTICLE 33, OPTIONS.

Upon receipt by Hughes of a written request from I-COGC at least six (6) Months prior to the applicable rescheduled launch date, Hughes shall remove the Satellite from storage and based upon an on-site inspection, ship it to either the Designated Launch Site or the Hughes facility for inspection, test and refurbishment if required. If Hughes receives less than six Months notice of a re-scheduled launch date, it shall nevertheless use its commercially reasonable efforts to meet I-COGC's schedule requirements. The Parties will determine which destination is more appropriate under the then existing circumstances. All the costs of any such inspection, test and refurbishment shall be included in the prices for storage in ARTICLE 32, STORAGE or ARTICLE 33, OPTIONS.

- 15.2 If a Satellite has not been launched within five (5) years after its Available for Shipment date and Hughes is otherwise not in default, Hughes shall be entitled to receive all payments which are due and owing, any Satellite Performance Incentive payments not yet due shall be deemed earned and owed, and Hughes shall be entitled to retain without obligation all payments previously made with respect to that Satellite. Neither Party shall have any further obligations to the other Party under this Contract with respect to that Satellite, provided that I-COGC and Hughes have met their obligations under this Contract with respect to that Satellite, and I-COGC shall have title to the Satellite. Disposition of the Satellite shall be at the option of I-COGC, subject to U.S.

Government export controls, with such costs to be borne by I-COGC. Hughes shall have no liability in the event an export license is not issued for the benefit of I-COGC. In this event, Hughes shall assist I-COGC by using its reasonable endeavors in locating an alternative buyer for the affected Satellite for which an export license may be obtained.

- 15.3 If the Satellite is not launched within one hundred eighty (180) Days from its Available for Shipment date other than due to the fault of Hughes or due to Excusable Delay, Final Acceptance will be deemed to have occurred at such time.

ARTICLE 16 TAXES AND DUTIES

- 16.1 Hughes shall be responsible for all United States federal and state taxes which are levied upon Hughes or its Affiliates in connection with the Work, excluding any sales tax on property or services delivered to I-COGC.
- 16.2 Hughes shall also be responsible for all non-U.S. taxes assessed upon Hughes or its Affiliates except any future non-U.S. income tax, value added tax, sales tax, personal, withholding or business tax, or goods and services tax, duties, or other governmental assessments which are levied on Hughes or its Affiliates in connection with the Work related to the launching of the Satellite(s) from the Designated Launch Site(s) and except for all present and future taxes etc. as aforesaid for Work related to installation, checkout and testing of the GCE and PCS at the selected installation site(s).

However, should any such taxes be the result of an incremental increase in any pre-existing Hughes tax obligation, I-COGC shall be responsible only for such incremental increase. Further, should Hughes utilize an Affiliate to perform Work at the Designated Launch Site or at the selected installation site, then I-COGC shall not be responsible for any taxes which would not have been levied on Hughes if Hughes had performed said Work.

Should any taxes paid or reimbursed by I-COGC under the Contract eventually be subject to tax equalization by reimbursement to Hughes from a governmental entity or otherwise, Hughes shall repay I-COGC an equivalent amount.

I-COGC shall not be liable for any personal taxation incurred by employees of Hughes or its Affiliates, but shall pay to Hughes an amount equal to the additional compensation

paid by Hughes or its Affiliates to such employees as compensation for such incremental taxes incurred by such employees as part of its normal compensation package for employees while performing Work at the Designated Launch Site or selected installation site. Provided further that I-COGC shall not be responsible for any element of said compensation package in respect of the Designated Launch Site, except to the extent it is increased to take account of future taxation.

- 16.3 Hughes shall consult with I-COGC or its designated Consultant(s) on any taxes or duties which may be the responsibility of and payable by I-COGC under ARTICLE 16.1 and 16.2 above. In the event any of the items in ARTICLE 16.1 and 16.2 above, for which I-COGC is responsible, are levied upon Hughes or its Affiliates, or employees, Hughes shall immediately notify I-COGC of such requirement. I-COGC, within fifteen (15) Business Days of receipt of such notification from Hughes, shall either have the charges waived or pay the charges to Hughes. For those items in ARTICLE 16.1 and 16.2 that Hughes is required by law to pay immediately, I-COGC shall reimburse Hughes the full amount of the charges in a manner which leaves Hughes net of all such charges within fifteen (15) Days of I-COGC's receipt of Hughes' valid invoice. The reimbursement request will be accompanied by evidence of the amount and purpose of such payments.

In any event, provided Hughes or its Affiliates have appropriate legal standing, I-COGC may direct Hughes to file any appropriate protests or appeals with the applicable governmental agency. I-COGC agrees to reimburse Hughes for all costs incurred as a result of such protest or appeal and also for any resultant taxes that Hughes is required to pay.

- 16.4 For the avoidance of doubt, I-COGC is not responsible for any taxes, fees, or duties as they relate to any Work performed by Subcontractors of Hughes.

16.5 This ARTICLE shall survive the expiration, completion, or termination of this Contract.

ARTICLE 17 TERMINATION

17.1 Termination for I-COGC's Convenience

- A. I-COGC may, upon written notice to Hughes, at any time terminate in whole or in part the Work with respect to this Contract in accordance with the terms set forth below, and Hughes shall immediately cease Work in the manner and to the extent specified. Notwithstanding the foregoing, in no event shall there be a Termination for Convenience for a Satellite after said Satellite has been launched.
- B. Upon receipt of a notice of termination, as provided in ARTICLE 17.1.A above, Hughes shall take the following actions:
1. stop Work under this Contract on the date and to the extent specified in the notice of termination;
 2. place no further orders, subcontracts for materials, services, or facilities, except as may be necessary for completion of such portion of the Work as is not terminated;
 3. terminate orders and subcontracts to the extent that they relate to the performance of Work terminated by the notice of termination;
 4. settle all outstanding liabilities and all claims arising out of such termination or orders, subcontracts for materials, services, or facilities;
 5. take such action as may be necessary, or as I-COGC may direct, for the protection and preservation of the property related to this Contract which is in the possession of Hughes or any Subcontractor and in which I-COGC has or may acquire an interest.

- C. Within ninety (90) Days or longer (as determined by Hughes) after determination by Hughes of the cost of all Work terminated, Hughes shall submit to I-COGC its termination claim consisting of the costs of all Work done up to the date of termination, including pre-payments which are non-refundable to Hughes, and including the settlement and other costs connected with the termination. Settlements with the Major Subcontractors identified in ARTICLE 36, MAJOR SUBCONTRACTORS and such other subcontractors having a subcontract hereunder with a value exceeding U.S.\$30,000,000, shall be made with the approval of I-COGC with such approvals not to be unreasonably withheld or unduly delayed. The term "costs" as used herein includes but is not limited to direct costs and indirect costs (including general and administrative expense), which have been posted to Hughes' books of account in accordance with the standard accounting practice for commercial contracts, consistently applied. In addition to these incurred costs, such termination claim shall include, and I-COGC shall be obligated to pay, a profit of nine percent (9%) on such costs. I-COGC shall also pay 1.8% profit on the uncompleted Work which is terminated. The termination claim shall give credit for all amounts already paid by I-COGC to Hughes in respect of the terminated Work. In no event shall a termination settlement (including such credit for amounts already paid by I-COGC) exceed the Contract Price inclusive of performance incentives.
- D. Each termination claim shall be accompanied by a certificate signed by the Controller of Hughes stating that the claim properly includes the costs incurred by Hughes in connection with the Work terminated. In the event I-COGC desires independent verification of the claim, it may request to have Hughes' independent Certified Public Accountants (CPA) audit the costs incurred by Hughes and report to the Parties. Such audit shall be subject to ARTICLE 30, DISPUTES AND ARBITRATION, save that, if the costs determined by such report exceed the amount of Hughes' termination claim, I-COGC shall only be obliged to pay the amount of Hughes' termination claim.

- E. I-COGC shall within thirty (30) Days pay to Hughes for any termination for convenience hereunder the amount claimed by Hughes unless I-COGC requests verification by Hughes' independent CPA. In the event verification is requested, I-COGC shall place the amount claimed by Hughes into an interest-bearing escrow account at Bank of America, Concord, California, within thirty (30) Days after receipt of a valid invoice. Within thirty (30) Days after an agreed resolution of the dispute or resolution in accordance with ARTICLE 30, DISPUTES AND ARBITRATION I-COGC shall cause to be released from such escrow account, such amount agreed due or determined due to Hughes in accordance with ARTICLE 30, DISPUTES AND ARBITRATION together with interest on such amount; and the costs and fees of such escrow account shall be borne by each Party in inverse proportion to the amounts received by each party. I-COGC shall be responsible for all non-Hughes costs associated with any audit of Hughes' termination claim, unless such audit determines a discrepancy in I-COGC's favor in excess of five (5) percent or more of the total claim value; in this latter case Hughes shall bear said audit costs.
- F. Title to all items of Work, which would have been incorporated into a deliverable item under this Contract, and which are in progress before the giving of notice under ARTICLE 17.1.A above, shall, upon payment in full of all amounts due hereunder, vest in I-COGC, and Hughes shall deliver, FOB Hughes plant El Segundo, California, subject to US Export Regulations for which Hughes has no liability in the event of failure to obtain stated export authorizations (other than due to Hughes' fault or negligence), all such items to I-COGC who shall remove such items. All such items of Work which are under the custody or control of Hughes shall until delivery to I-COGC be insured by Hughes at its cost and risk therein shall pass to I-COGC on such delivery.
- G. If in Hughes' sole judgment it is feasible for Hughes to utilize any items of terminated Work, it shall submit to I-COGC an offer to acquire such items. If such offer is accepted, Hughes' termination claim shall be credited with the agreed acquisition price. Hughes

shall have no obligation to use any of the Work in any other project or for any other customer and any decision to do so shall be made at Hughes' sole discretion.

- H. Hughes shall place subcontracts for Major Subcontractors, and shall use reasonable efforts for other Subcontractors, to place subcontracts on terms that will enable Hughes to terminate in a manner consistent with this ARTICLE.
- I. Upon a partial termination, Hughes may equitably reprice the Work not terminated and the Contract Price shall be adjusted accordingly. For purposes of this ARTICLE, the word "equitably" shall mean that the repricing must be based upon, and that Hughes can demonstrate to I-COGC, that the partial termination for convenience caused such price increase and that the repricing reflects the actual increased prices. Two examples, among many potential situations, where repricing would be deemed to be equitable under this ARTICLE are; (1) where certain non-recurring costs have been spread over a certain number of Satellites and that number had now been decreased through termination, the repricing would respread the non-recurring over the lesser number of Satellites remaining; and (2) the prices of certain Subcontractors' goods and services have been increased to Hughes on a per unit basis retroactively based on the decreased quantity buy.

17.2 Termination for Hughes' Default

A. I-COGC may issue a written notice of default (the "Default Notice") to Hughes if:

1. Subject to the prior operation of the provisions of ARTICLE 11, CONSEQUENCES OF LATE DELIVERY as modified by ARTICLE 17.2.A(3), hereof, any of the following Satellite(s) is not delivered by a date which is nine (9) Months after the date specified in ARTICLE 3, DELIVERY SCHEDULE, as such date may be adjusted by ARTICLE 10, FORCE MAJEURE, or as otherwise mutually agreed for such Satellite(s):
 - (a) F2
 - (b) F7
 - (c) F8, F9, F10, F11, F12, F13, F14, F15 and, if exercised, any of F16-F20; or
2. Hughes shall (A) commence a voluntary case under the US Bankruptcy Code (as now or hereafter in effect) (the "Code"); (B) file a petition seeking to take advantage of any other laws, domestic or foreign, relating to bankruptcy, insolvency, reorganization, winding up or composition or adjustment of debts; (C) consent to or fail to contest in a timely and appropriate manner any petition filed against it in an involuntary case under the Code or other laws or such a case shall not have been dismissed or stayed within thirty (30) days of the filing of the petition commencing the same; (D) apply for, or consent to, or fail to contest in a timely and appropriate manner, the appointment of, or the taking of possession by, a receiver, custodian, trustee, liquidator or the like of itself or of a substantial part of its assets, domestic or foreign; (E) admit in writing its inability to pay, or generally not be paying its debts (other than those that are the subject of a bona fide disputes) as they become due; (F) make a general assignment for the benefit of creditors; or (G) Hughes or the Hughes Parent Company sells,

transfers or otherwise disposes of all or substantially all of its assets (other than for full consideration) and as a result the Parent Company Guarantee provided by Hughes is prejudiced and adequate security, in a form reasonably acceptable to I-COGC, is not additionally provided; or (H) take any action for the purpose of effecting any of the foregoing; or (I) a case or other proceeding shall be commenced against Hughes in any court of competent jurisdiction seeking (i) relief under the Code or under any other laws, domestic or foreign, relating to bankruptcy, insolvency, reorganization, winding up or adjustment of debts; or (ii) the appointment of a trustee, receiver, custodian, liquidator or the like of Hughes or of all or any substantial part of its assets, domestic or foreign and such case or proceeding shall continue undismissed or unstayed for a period of 30 days, or an order granting the relief request in such case or proceeding (including, but not limited to, an order for relief under the Code) shall be entered;

3. Notwithstanding the provisions of ARTICLE 11, CONSEQUENCES OF LATE DELIVERY, it is demonstrable by I-COGC that Hughes will be unable to deliver any of the following Satellites F2, F7, F8, F9, F10, F11, F12, F13, F14, or F15 or, if exercised, any of F16-F20 by a date which is nine Months after the relevant date specified in ARTICLE 3, DELIVERY SCHEDULE, as such date may be adjusted by ARTICLE 10, FORCE MAJEURE, or as otherwise agreed by the Parties. The determination of Hughes ability to deliver any Satellite within the applicable time period will be subject to dispute in accordance with ARTICLE 30, DISPUTE AND ARBITRATION.

- B. I-COGC's service of a Default Notice on Hughes shall operate to terminate this Contract forthwith in whole or in part with respect to the Work which is in default under ARTICLE 17.2.A, as I-COGC shall elect. In the event I-COGC terminates this Contract, or any part thereof, as provided in ARTICLE 17.2.A, then the Contract Price stated in ARTICLE 4.1 will be adjusted downward as follows:

1. If the Contract is terminated in whole, then all payments made to Hughes under this Contract are immediately refundable and no further payments will be due to Hughes.
2. If the Contract is terminated in part, then the total Contract Price shall be reduced by the price of the Work terminated. That price shall be (a) for all Work other than Satellites F8-F12, the price determined by I-COGC. Such determination shall be subject to dispute in accordance with ARTICLE 30, DISPUTES AND ARBITRATION; and (b) for any of Satellites F8-F12, as per the following tables:

Contract Price Reduction	
Item(s) Terminated	Per Satellite

Satellite F8	*
Satellites F9-F12	*

Within 30 Days of receipt of the aforementioned termination notice, Hughes shall refund to I-COGC the difference, if any, between the revised total Contract Price and the total amount of the payments received by Hughes under the Contract.

In addition to the Contract Price reduction and refund described above, I-COGC shall be entitled, at its option, to either:

1. receive a payment of its excess direct costs of procurement of the terminated Work to materially similar specifications up to a maximum amount of forty percent (40%) of the price of the terminated Work; or
2. receive, if I-COGC elects not to reprocore, payment of interest on the amount refunded at LIBOR. Under a full termination, interest shall be calculated on each payment made by I-COGC from the date of payment to the date of the termination. Under a partial termination, such interest

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

shall be calculated as if the amount refunded for each Satellite terminated hereunder had been paid to Hughes in a lump sum on a date sixteen (16) Months before the Delivery Date specified for that Satellite in ARTICLE 3, DELIVERY SCHEDULE, as such date may be adjusted by ARTICLE 10, FORCE MAJEURE, or as otherwise mutually agreed for such Satellite(s) provided always that interest shall not be payable in respect of the refund for of any launched Satellites which are terminated.

- C. In the event I-COGC terminates this Contract as provided in ARTICLE 17.2.B, then, with the exception of launched Satellites, Hughes shall be entitled to retain title to any and all terminated Work, work in progress, parts, material, or other items used in the performance of this Contract, together with any associated warranties, and any subcontracted items which Hughes has specifically produced or acquired or entered into in accordance with this Contract.
- D. If, after termination of this Contract under the provisions of this ARTICLE 17.2, it is determined by arbitration or admitted in writing by I-COGC that Hughes was not in default under the provisions of this ARTICLE, or that the default was excusable under the provision of ARTICLE 10, FORCE MAJEURE, such termination shall be considered a termination for convenience of I-COGC and Hughes shall be paid in accordance with the calculations set forth in ARTICLE 17.1 hereof.
- E. The rights and remedies provided to I-COGC under this ARTICLE 17.2 shall be exclusive and in lieu of any other rights and remedies under this Contract or otherwise provided by law or in equity in relation to the termination of this Contract for Hughes' default of its obligations to perform the Work.
- F. Should I-COGC terminate the Contract after one or more Satellite(s) have been launched, and notwithstanding that I-COGC is refunded monies paid for such Satellite(s), then I-COGC shall retain title to such launched Satellite(s) which have been

terminated provided always that any net profits derived by I-COGC from such Satellite(s) shall be shared between Hughes and I-COGC in proportion to the monies refunded by Hughes in respect of the Satellite(s) and the monies expended by I-COGC for launch and insurance costs (as adjusted to take account of interest at LIBOR from the date of payment by I-COGC to the date of termination) until such time as Hughes' refund of monies has been defrayed.

- G. Prior to Delivery of F7, I-COGC may terminate previously delivered Satellites under this ARTICLE 17.2B and be repaid monies in respect thereof, but after Delivery of F7, delivered Satellites may not be terminated, and I-COGC shall not be entitled to be repaid monies in respect thereof.
- H. Notwithstanding the other provisions of this ARTICLE, a termination for Hughes' default shall not relieve the Parties of their obligations with respect to previously delivered Satellites which have not been terminated.

17.3 Termination for Default of I-COGC

- A. Hughes may terminate this Contract in whole upon written notice to I-COGC at any time after the occurrence of any of the following:
 - 1. Failure of I-COGC to make any payment validly due to Hughes hereunder when due, provided such failure is not cured within a period of thirty (30) Days following receipt of written notice thereof from Hughes.
 - 2. I-COGC passes a resolution for winding-up or a petition is presented for I-COGC's winding-up (unless such resolution or petition for winding up is pursuant to a scheme of corporate reconstruction or amalgamation and there is no adverse effect on the payment obligations to Hughes hereunder) and, unless granted, is not dismissed within thirty (30) Days from presentation; or I-COGC

becomes unable to pay its debts as they become due; or a receiver is appointed over all or a substantial part of I-COGC's assets and the appointment is not discharged within thirty (30) Days; or I-COGC or I-COGC's Parent Company sells, transfers, or otherwise disposes of all or the greater part of its assets (other than for full consideration) and as a result the Parent Company Guarantee provided by I-COGC is prejudiced and adequate security in a form reasonably acceptable to Hughes is not additionally provided.

B. If a termination occurs under ARTICLE 17.3.A above, the termination will be treated as if a Termination for I-COGC's Convenience (ARTICLE 17.1) except that Hughes shall have the following additional rights:

1. I-COGC shall pay to Hughes the amounts specified in ARTICLE 17.1.C, except that I-COGC shall pay three and six-tenths percent (3.6%) profit on the uncompleted Work.
2. Hughes shall have the right to immediately stop any Work, the delivery of which has not been completed.
3. For launched Satellites, all unpaid a) Satellite Performance Incentives Payments, b) * Incentive Payments, and c) Incentives * under ARTICLE 5, shall be deemed earned and immediately due and payable to Hughes. Such payments shall be calculated using the presumption that all Satellites would have continued to operate at the performance level in effect on the date preceding the date of termination, or if such termination occurred prior to establishing such level, then Satisfactory Operation shall be presumed.

C. The rights and remedies provided to Hughes under this ARTICLE 17.3 shall be exclusive and in lieu of any other rights and remedies under this Contract or otherwise

provided by law or in equity in relation to the termination of this Contract for I-COGC's default of its obligations under this Contract.

ARTICLE 18 DATA RIGHTS

- 18.1 Subject to the provisions of ARTICLE 21, CONFIDENTIALITY and ARTICLE 7, PERMITS AND LICENSES: GOVERNMENT APPROVALS, I-COGC shall have the royalty-free, world-wide, non-exclusive right to use and to have used by others:
- A. the data delivered by Documentation under the Contract or data generated under the Contract for the I-CO Program; and
 - B. any other data furnished under the Contract required for the purposes of using, maintaining, operating, modifying and repairing the Work.

I-COGC shall also have the right to make copies of the Documentation for its own use or for third parties granted rights to use under this ARTICLE; provided, however, that if any of the written Documentation is copyrighted by Hughes, Hughes does hereby grant to I-COGC a royalty-free, non-exclusive right and license under Hughes' copyrights to make such copies for the I-CO Program. With respect to all written Documentation that is copyrighted, I-COGC shall apply the appropriate copyright notice to all copies made thereof. All rights to Documentation not owned by Hughes or to which Hughes has no transmissible right of use now or hereafter are limited to the extent of Hughes' rights and interests therein.

- 18.2 Notwithstanding any other provision hereof, the ownership and title to copyrights in computer programs, and their related Documentation, delivered to I-COGC by Hughes in accordance with this Contract shall remain in Hughes or its licensor. Hughes shall grant to I-COGC a paid-up non-exclusive non-transferable license solely for the I-CO Program to use and to have used by others and make additional copies of the deliverable computer programs and related documentation specified in the Contract and required for the I-CO Program.
- 18.3 Hughes agrees to grant to I-COGC, only for the subsequent generation follow-on programs for fixed and mobile communications, data, and ancillary services, a royalty-free license to make, have made, and use any component or invention developed primarily under this Contract. This license grant shall not apply to any component or invention developed before this Contract, or developed primarily with Hughes Internal Research and Development funds. Furthermore, this license does not include any rights to any drawings, schematics, manufacturing documentation or any other documentation of any kind, except that Hughes will provide a top level summary description which shall include the nature, purpose, operation and general physical characteristics of such component or invention.

ARTICLE 19 INTELLECTUAL PROPERTY INDEMNITY

19.1 Hughes agrees to indemnify and defend at its own expense any claims, actions, or proceedings or request for royalty payments or any claims for equitable relief or damages against I-COGC based on an allegation that the manufacture of the Work under this Contract or the use, lease, or sale thereof infringes any intellectual property rights including, but not limited to, Letters Patent or trade mark, or any copyright, in the U.S. or place of manufacture or delivery of the Work where such infringement directly results solely from the manufacture, use, lease, or sale of the Work. In such event, Hughes agrees to pay any royalties and other costs related to the settlement of such request and to pay the costs and damages, including reasonable legal fees, finally awarded as the result of any suit based on such claim, provided that Hughes is given prompt written notice of such request or claims by I-COGC and given authority and such assistance and information as is available to I-COGC for resisting such request or for the defense of such claim. Any such assistance or information which is furnished by I-COGC at the written request of Hughes is to be at Hughes' expense. In no event shall Hughes' entire liability under this ARTICLE exceed ONE HUNDRED MILLION US Dollars (US\$100,000,000.00) and the existence of one or more claims or lawsuits shall not extend this amount. Nothing in this Contract shall be construed as requiring Hughes to defend a suit or pay royalties, costs or damages if the infringement claim is based upon the manufacture, use, lease, or sale of any Work that has been modified, altered or used in combination with other components or systems to the extent the infringement would not have occurred but for such modification, alteration or combined use. If the use of any Work is enjoined in said suit, Hughes shall at its option and with the limitation of liability for damages stated above use best efforts to procure for I-COGC the right to use the Work or modify (such modification to comply with the requirements of the Contract) the same to render them non-infringing. Hughes shall have no liability or responsibility for incidental, special, or

consequential damages incurred by I-COGC save and insofar they are included in any claim by a third party for which I-COGC is indemnified under this ARTICLE 19.1.

- 19.2 I-COGC agrees to indemnify and defend at its own expense any claims, actions, or proceedings or request for royalty payments or any claims for equitable relief or damages against Hughes based on an allegation that the Satellite(s) being a component of a larger system, mandated by I-COGC requirements such as, for example, a Satellite constellation or multiple Satellite configuration, or the use, lease, or sale thereof infringes any intellectual property rights including, but not limited to Letters Patent or trade mark, or any copyright in the U.S. or place of manufacture or delivery of the Work, and to pay any royalties and other costs related to the settlement of such request and to pay the costs and damages, including reasonable legal fees, finally awarded as the result of any suit based on such claim, provided that I-COGC is given prompt written notice of such request or claims by Hughes and given authority and such assistance and information as is available to Hughes for resisting such request or for the defense of such claim. Any such assistance or information which is furnished by Hughes at the written request of I-COGC is to be at I-COGC's expense. In no event shall I-COGC's entire liability under this ARTICLE exceed ONE HUNDRED MILLION US Dollars (US\$100,000,000.00) and the existence of one or more claims or lawsuits shall not extend this amount, and in no event shall I-COGC be liable for incidental, special, or consequential damages incurred by Hughes save and insofar they are included in any claim by a third party for which Hughes is indemnified under this ARTICLE 19.2.
- 19.3 Hughes agrees to provide reasonable internal assistance to I-COGC regarding certain patent claims made by TRW. Should Hughes decide to solicit external assistance relative to these claims, Hughes shall notify I-COGC for purposes of reaching agreement on the expected budget and expenditures for the above stated external assistance. After the

notification and upon I-COGC agreement, I-COGC shall reimburse Hughes for such external costs.

ARTICLE 20 RIGHTS IN INVENTIONS

- 20.1 As used in this Contract, "Invention" shall mean any invention, discovery or improvement conceived in the performance of Work under this Contract. Information relating to Inventions shall be treated as confidential information in accordance with the provisions of this Contract.
- 20.2 In the case of joint Inventions, that is, Inventions conceived jointly by one or more employees of both Parties hereto, the following shall apply:
- A. Each Party shall have an equal, undivided one-half interest in and to such joint Inventions, as well as in and to patent applications and patents thereon in all countries.
 - B. In the case of such joint Inventions, Hughes shall have the first right of election to file patent applications in any country, and I-COGC shall have a second right of election. Each Party in turn shall make its election at the earliest practicable time, and shall notify the other Party of its decision. All filings shall be in the joint names of both Parties.
 - C. The expenses for preparing, filing and securing each joint Invention application, and for issuance of the respective patent shall be borne by the Party which prepares and files the application. The other Party shall furnish the filing Party with all documents or other assistance that may be necessary for the filing and prosecution of each application. Where such joint Invention application for a patent is filed by either Party in a country which requires the payment of taxes, annuities or maintenance fees on a pending application or on an issued patent, the

Party which files the application shall, prior to filing, request the other Party to indicate whether it will agree to pay one-half of such taxes, annuities or maintenance fees. If within sixty (60) Days of receiving such request, the non-filing Party fails to assume in writing the obligation to pay its proportionate share of such taxes, annuities or maintenance fees, or if either Party subsequently fails to continue such payments within sixty (60) Days of demand, it shall forthwith relinquish to the other Party, providing that said other Party continues such payments, its share of the title to such application and patent, subject, however, to retention of a paid-up, non-exclusive, non-assignable license in favor of the relinquishing Party, its parent, and any subsidiary thereof to make, use, lease and sell, apparatus and/or methods under said application and patent.

- 20.3 Each owner of a jointly-owned patent application or patent resulting therefrom shall, provided that it shall have fulfilled its obligation, if any, to pay its share of taxes, annuities or maintenance fees on such pending application or patent, have the right to grant non-exclusive licenses thereunder and to retain any consideration that it may receive therefor without obligation to account therefor to the other Party. In connection therewith, each of the Parties hereby consents to the granting of such non-exclusive licenses by the other Party and also agrees not to assert any claim with respect to the licensed application or patent against any licensee of the other Party thereunder during the term of any such license.
- 20.4 Sole inventions conceived of solely or jointly by one or more employees of Hughes shall be the exclusive property of Hughes and sole inventions conceived of solely or jointly by one or more employees of I-COGC shall be the exclusive property of I-COGC.
- 20.5 For the avoidance of doubt, nothing herein shall or be deemed to grant to either Party any license or right of use to intellectual property rights owned or created by third parties.

Without limiting the foregoing, the Parties recognize that no such rights as are owned or created by a customer for the navigation payload are intended to be included under this Article 20.

ARTICLE 21 CONFIDENTIALITY

- 21.1 The Parties may provide or exchange proprietary information during the performance of the Work, in oral or written form, which may include specifications, drawings, sketches, models, samples, computer programs, reports, data, techniques, designs, codes, documentation, and financial, statistical or other technical information ("proprietary information") essential to the objectives of this Contract. All disclosures will be treated as proprietary in accordance with this ARTICLE 21 if marked as "Proprietary" by the Party (or in accordance with ARTICLE 21.11, by the Hughes Subcontractor, if applicable) making the disclosure at the time of disclosure.
- 21.2 Subject to the provisions of ARTICLE 21.3 below, the Party receiving the proprietary information of the other Party shall maintain such information in confidence and shall not use such information except as expressly authorized by this Contract. Each Party agrees to use the same care and discretion to avoid unauthorized disclosure, publication or dissemination of the other's proprietary information and the unauthorized use thereof as the receiving Party uses with respect to similar information of its own, but in no event, less than reasonable care. Should it become legally necessary for either Party to disclose certain of the other's proprietary information to a third party (such as licensing or regulatory activities, or for filing with and reporting to government agencies, stock exchanges, securities market systems and similar bodies), it shall be disclosed only to the extent required by law and after a three (3) Business Day prior written notification to the other Party (or to Subcontractor, if applicable, in accordance with ARTICLE 21.11) of the requirement for disclosure.
- 21.3 The obligations of confidentiality and restrictions on use specified in this ARTICLE shall not apply to any information that:

- A. is already in the possession of the receiving Party without obligation of confidentiality at the time of disclosure;
- B. is independently developed by the receiving Party or any of its Affiliates or subcontractors prior to disclosure as evidenced by appropriate documents;
- C. is or becomes publicly available without breach of this Contract and without the fault of the receiving Party;
- D. except as provided in ARTICLE 21.11, is lawfully and rightfully received by the receiving Party from a third party; or
- E. is released for public disclosure by the disclosing Party.

Specific information shall not be deemed to be available to the public or in possession of the receiving Party merely because it is embraced by more general information so available or in the receiving Party's possession.

- 21.4 Hughes shall take best efforts necessary, including the appropriate contractual provisions in subcontracts, to ensure the confidentiality of all proprietary information of I-COGC which may be disclosed to Subcontractors.

I-COGC shall take best efforts necessary, including the appropriate contractual provision in consulting agreements, to ensure the confidentiality of all proprietary information of Hughes which may be disclosed to Consultants.

- 21.5 Except as otherwise provided in this Contract including but not limited to ARTICLE 18, DATA RIGHTS herein, the receiving Party agrees that: (i) any proprietary information disclosed hereunder shall be used by the receiving Party solely for the purpose of performing its functions in connection with the Parties' relationship with respect to the Work; (ii) it will not use the proprietary information disclosed hereunder for any other purpose; and (iii) it will not distribute, disclose or disseminate to anyone such proprietary information of the disclosing Party, except that either Party may disclose to its own employees or subcontractors on a need-to-know basis, provided that such employees and subcontractors have agreed in advance and in writing to protect proprietary information in accordance with terms consistent with that provided herein; and further except that either Party may disclose proprietary information to a third party with the consent of the disclosing Party, which consent will not be given unless such third party executes a proprietary data protection agreement with terms consistent with the requirements herein prior to receiving such proprietary information.
- 21.6 The Parties will specify individuals in writing as the point for receiving proprietary information exchanged between the Parties pursuant to this Contract.
- 21.7 Hughes shall maintain EXHIBIT B, SATELLITE TECHNICAL SPECIFICATIONS in strict confidence in accordance with this ARTICLE 21 as if it is proprietary information.
- 21.8 The confidentiality obligations in this ARTICLE 21 shall survive expiration or termination of this Contract for whatever cause.
- 21.9 Nothing herein shall require a Party to disclose proprietary information to another.
- 21.10 The obligations imposed by this ARTICLE 21 shall be limited in time only by the events listed in ARTICLE 21.3, A through E.

- 21.11 I-COGC may, upon the request of I-COGC, have access to proprietary information of a Subcontractor with respect to its performance of the Work hereunder. Either Hughes may, at the request of I-COGC, disclose proprietary information of its Subcontractor to I-COGC or Hughes may request that its Subcontractor discloses its proprietary information directly to I-COGC. I-COGC agrees to treat such proprietary information of such Subcontractor, whether disclosed to I-COGC directly by such Subcontractor or indirectly by Hughes, in accordance with the terms of this ARTICLE 21 for the benefit of such Subcontractor.
- 21.12 Except as otherwise provided in ARTICLE 7, PERMITS AND LICENSES: GOVERNMENT APPROVALS, on a need-to-know basis:
- (i) each Party shall have the right to disclose proprietary information of the other, subject to non-disclosure agreements having terms and conditions comparable to those herein, to Teledesic and persons and entities under common control with Teledesic and to The Boeing Company and persons and entities under common control with Boeing; and
 - (ii) I-COGC shall have the right to disclose the proprietary information of Contractor, subject to non-disclosure agreements having terms and conditions comparable to those herein, to actual and potential investors, service providers, lenders, insurers and other financing advisors and analysts; provided that the disclosed information is limited to top-level satellite information (e.g., block diagrams), status and schedule information, and performance information. Any other disclosures of proprietary information shall require the prior consent of Contractor (not to be unreasonably withheld), which, if not denied within two Business Days of notice to the designee identified in ARTICLE 24 NOTICES of a request to disclose such information, shall be deemed to have been granted.

ARTICLE 22 INTERPRETATION

22.1 Applicable Law

This Contract, and any performance related thereto shall be interpreted and construed, governed and enforced in accordance with the Laws of England; it being understood that the UN Convention on the International Sale of Goods shall not be applicable.

22.2 Amendments

The Contract may not be modified except by written amendment signed by duly authorized representatives of both Parties.

For the purpose of administration of this Contract, including amendments, any communication between I-COGC and Hughes shall be enforceable and binding upon the Parties only if signed by the appropriate responsible authorized representatives.

22.3 Changes Requested by Hughes or I-COGC

- A. Any changes requested by Hughes during the performance of this Contract, within the general scope of this Contract, which will or may add or delete Work, affect the design of the Satellite, or place or time of delivery, or will affect or may affect any other requirement of this Contract, shall be submitted in writing to I-COGC within an acceptable time period prior to the proposed date of the change. Such submittal shall allow I-COGC a reasonable period of time to evaluate Hughes' requested change. If such Hughes' requested change causes an increase or decrease in the total Contract Price, Hughes shall submit a proposal to I-COGC.

- B. I-COGC shall notify Hughes in writing within thirty (30) Days after receipt of the requested change and price adjustment, if any, whether or not it agrees with and accepts such change. If I-COGC agrees with and accepts the Hughes' requested change, Hughes shall proceed with the performance of the Contract as changed and an amendment to the Contract reflecting such change, and price adjustment, if any, shall be issued. If I-COGC does not agree with such Hughes' requested change, the Parties shall attempt to reach agreement on such change. In the event the Parties are unable to reach agreement on such change, or price adjustment, if any, or both, Hughes shall proceed with the performance of the Contract, as unchanged.
- C. For any changes requested by I-COGC during the performance of this Contract, within the general scope of the Contract, which will or may add or delete Work, affect the design of the Satellite, change the method of shipment or packing, or place or time of delivery, or will affect any other requirement of this Contract, Hughes shall respond to that request in writing to I-COGC within thirty (30) Days after such request. If such I-COGC requested change causes an increase or decrease in the total Contract Price, Hughes shall submit to I-COGC, at the time the response to the requested change is submitted, the details of such increase or decrease. I-COGC shall notify Hughes in writing, within a reasonable time after receipt of Hughes' response, whether or not it agrees with and accepts Hughes' response. If I-COGC agrees with and accepts Hughes' response, Hughes shall proceed with the performance of the Contract as changed and an amendment to the Contract reflecting such change, and price adjustment, if any, shall be incorporated into the Contract. In the event the Parties are unable to reach agreement on such change, or price adjustment, if any, or both, I-COGC may direct Hughes to perform the said change, pending resolution of such dispute

subject to I-COGC paying any undisputed amounts to Hughes and any disputed amounts into escrow at such time as they would have been paid under Hughes' response. The mechanism for escrow shall be as set forth in ARTICLE 4.11, save that in calculating amounts due from escrow, account shall be taken of the proposed milestones for payment of the disputed change. If I-COGC does not direct such change, then Hughes shall proceed with the performance of the Contract as unchanged.

- D. If requested, Hughes shall provide I-COGC with the basic rationale and methodology used in developing a proposal pursuant to this ARTICLE 22.3 to the same level of detail in respect of Hughes' costs for this change proposal as were granted to I-COGC in respect of the prices set forth in Hughes' original proposal for this Contract, so as to demonstrate that the prices of the proposal are fair and reasonable.

ARTICLE 23 PUBLICITY

Each Party shall obtain the prior written approval of the other Party, which approval shall not be unreasonably withheld or delayed, concerning the content and timing of news releases, articles, brochures, advertisements, prepared speeches and other information releases concerning the Work performed or to be performed hereunder, within a reasonable time prior to the release of such information. For the avoidance of doubt, Hughes shall be allowed to publicize the award of the Contract and the general capabilities of the Satellites, subject to the approval process stated above.

ARTICLE 24 NOTICES

All notices, demands or other communications required or permitted to be given or made hereunder shall be in writing and delivered personally or sent by prepaid first class post, or by telex, telefax or cable addressed to the intended recipient thereof at its address set out below or to such other address or telex or telefax number as either Party may from time to time duly notify the others.

A. In respect of I-COGC, to: ICO Global Communications (Operations) Ltd.
c/o I-CO Services Limited
1 Queen Caroline Street
Hammersmith, London W6 9BN
United Kingdom
Telephone: 44 (208) 600-1203
Facsimile: 44 (208) 600-0775
Attention: Paul Regulinski

cc: Space Segment Contracts Administrator
ICO Program Office
Hughes Space and Communications
MS: SC/S10/S354
PO Box 92919
Los Angeles, CA. 90009
Phone: (310) 364-9407
Facsimile: (310) 364-9495

B. In respect of Hughes, to: Hughes Space & Communications
International, Inc.

Bldg. S10, M/S S350,
Post Office Box 92919 Airport Station
Los Angeles, California 90009
Telephone: (310) 364-5729
Facsimile: (310) 364-7990
Attention: Dennis R. Beeson
Manager, Contracts

Any notice or other document if served by post, shall be deemed to have been served at the expiration of 7 Days after the time when the letter containing the same was posted, and in proving such service it shall be sufficient to prove that the letter containing the notice or document was properly addressed, stamped and posted. A notice sent by telex, telefax or cable is deemed to have been served: (1) two hours after dispatch, if dispatched on a Business Day before 3:00 PM; or (2) in any other case, at 10:00 AM on the Business Day after the date of dispatch. Here a Business Day means a Business Day in the city or other location to which the notice is sent, and the times mentioned are those in that location.

ARTICLE 25 INTEGRATION

This Contract, together with the EXHIBITS, contains the entire agreement between the Parties relating to the subject matter hereof. All prior understandings, representations and warranties (including those contained in sales, promotional and/or marketing materials) by and between the Parties, written or oral, which may be related to the subject matter hereof in any way, are superseded by this Contract.

ARTICLE 26 ASSIGNMENT

- 26.1 Hughes shall not assign, novate or transfer this Contract or any of its rights, duties or obligations thereunder to any person or entity, in whole or part without the prior written consent of I-COGC (which approval shall not be unreasonably withheld or unduly delayed) except that Hughes may assign or transfer this Contract, and its duties and obligations thereunder either in whole or in part, to any Hughes Affiliate which is not engaged in business competitive to I-COGC provided always that Hughes shall remain liable with respect to performance of all duties and obligations set forth in this Contract, including compliance with all applicable laws and regulations and provided further that the Parent Company Guarantee referred to in ARTICLE 4.10 hereof remains in full force and effect.
- 26.2 I-COGC has the right to assign, novate or transfer this Contract, or any of its rights, duties or obligations hereunder to any I-COGC Affiliate or to a third party financing the Satellites provided that no such assignment, novation or transfer shall have a material adverse effect on a material obligation of I-COGC including, but not limited to, payment obligations to Hughes under this Contract.

In those cases where an assignment, novation or transfer of this Contract by I-COGC shall in I-COGC's reasonable opinion create a material adverse effect on a material obligation of I-COGC under this Contract, I-COGC shall obtain the prior written consent of Hughes, (which approval shall not be unreasonably withheld or unduly delayed) to any such assignment, novation or transfer providing that I-COGC can demonstrate to Hughes' reasonable satisfaction that:

- (1) its successor or assignee possesses the financial resources to fulfill all I-COGC's obligations under this Contract; and

- (2) any such assignment, novation or transfer shall not jeopardize Hughes data rights or be in favor of a competing satellite manufacturer, or violate U.S. laws related to export or technology transfer.

If I-COGC cannot so demonstrate, Hughes agrees to negotiate in good faith suitable modifications and new provisions to this Contract which would mitigate the above risks.

- 26.3 I-COGC shall give fifteen (15) Business Days prior notice to Hughes of any assignment, novation or transfer and brief details explaining the proposed transaction.
- 26.4 This Contract shall be binding upon the Parties hereto and their successors and permitted assigns.

ARTICLE 27 SEVERABILITY

In the event any one or more of the provisions of this Contract shall, for any reason, be held to be invalid or unenforceable, the remaining provisions of this Contract shall be unimpaired, and the invalid or unenforceable provision shall be replaced by a mutually acceptable provision which, being valid and enforceable, comes closest to the intention of the Parties underlying the invalid or unenforceable provision.

ARTICLE 28 CORRECTIVE MEASURES IN UNLAUNCHED SATELLITES

- 28.1 Without limiting the obligations of Hughes under other provisions of this Contract, if the data available from the Satellites delivered hereunder or any HS-601 satellite shows that there is a material deficiency in the design or manufacture of such satellite which, in the reasonable opinion of Hughes, based on the data available could adversely affect the Satellites produced under this Contract, Hughes shall notify I-COGC of any such material deficiency coming to Hughes' attention and shall, promptly upon written request of I-COGC, take appropriate corrective measures to the Work, at its own expense, with respect to all unlaunched Satellites so as to satisfactorily eliminate from each unlaunched Satellite all such material deficiencies discovered in such satellites.
- 28.2 In the event that corrective measures taken pursuant to this ARTICLE cause a delay, there shall be an equitable adjustment to the time for performance of the affected Work.
- 28.3 If Hughes, in accordance with this ARTICLE, replaces any equipment or any part which was determined to be deficient, such deficient equipment or part shall remain or become the property of Hughes.
- 28.4 Nothing in this ARTICLE requires Hughes to disclose in-orbit data from satellites owned by others.

ARTICLE 29 I-COGC'S RESPONSIBILITIES

29.1 The responsibilities of I-COGC, which will be discharged at no cost to Hughes are contained in or are to be identified in EXHIBIT A, STATEMENT OF WORK, and as set forth below:

- A. Beneficial access shall be furnished to all necessary facilities (buildings, power, phones, etc.), services, and interface hardware at the ground station sites so as to enable Hughes to install and test the deliverable equipment in accordance with EXHIBIT A, STATEMENT OF WORK, EXHIBIT E, GCE IMPLEMENTATION AND TEST PLAN, and EXHIBIT K, PCS TECHNICAL SPECIFICATION AND TEST PLAN. All installation and checkout of I-COGC-provided SCC, NMC, and SAN equipment which is necessary to allow completion of Hughes' tasks (which includes installation, local checkout and system checkout) shall also be completed by I-COGC prior to these dates. The schedule for this access is as follows: (For the PCS, I-COGC shall identify the SAN site locations by name at least sixty (60) days prior to the dates specified below.)

GCE*		PCS*	
----		----	
SCC Site 1	5 Dec 97	SCC Site 1	5 Aug 98
SCC Site 2	19 Jan 98	SCC Site 2	5 Aug 98
SAN Site 1	2 Jan 98	Brewster, WA., USA	1 July 98
SAN Site 2	16 Jan 98	SAN Site 2	17 July 98
SAN Site 3	13 Feb 98	SAN Site 3	5 Aug 98
SAN Site 4	27 Feb 98	SAN Site 4	17 Aug 98
SAN Site 5	13 Mar 98	SAN Site 5	31 Aug 98
SAN Site 6	27 Mar 98	SAN Site 6	14 Sep 98

* Access to the Chhattarpur, India, SAN site was previously granted. I-

COGC may designate another SAN site to be utilized in lieu of the Indian SAN site. At I-COGC's direction, and in compliance with any required US Government authorizations, Hughes will relocate and install the GCE at such new site. Hughes will be compensated for any such relocation pursuant to Article 7.1 herein.

- B. Pursuant to the Convention on Registration of Objects Launched into Outer Space (TIAS 8480), I-COGC shall be responsible for registration of any and all Satellites launched. In addition I-COGC shall be responsible for obtaining any license required for radio telecommunications with any and all Satellites after separation from the Launch Vehicle.
- C. I-COGC shall, if it obtains launch insurance, include within its policy terms waivers of subrogation rights against Hughes and its Associates.
- D. I-COGC shall provide the final ICDs which will describe all necessary information required for the PCS to function properly with external systems. The specifications in the PCS interface control documents shall be mutually agreed upon by I-COGC and Hughes by the time of the PCS CDR.

29.2 In the event that I-COGC procures the Launch Services for any of the Satellites delivered hereunder (other than those Launch Services procured through Hughes), then I-COGC and their Launch Service Provider(s) shall have the following additional responsibilities as applicable:

- A. Launch Vehicle(s) and Launch Services, together with standard support equipment and interface documentation for all Satellites.

- B. Coupled loads and coupled thermal analyses data relating to the Launch Vehicle furnished to Hughes no later than twelve (12) Months after PCD or four (4) Months after receipt of coupled loads and thermal models from Hughes, whichever is later.
- C. All separation hardware and the flight adapter for a fit check of the flight adapter delivered to Hughes' plant in El Segundo within eighteen (18) Months after PCD.
- D. Beneficial access shall be furnished to all necessary facilities (buildings, power, phones, data lines, etc.), services (transportation, storage, fueling, photo, x-ray special test facility, etc.), and interface hardware at the Designated Launch Site.

29.3 In the event that the above I-COGC furnished facilities, equipment or services are not suitable for the intended purpose and/or are not timely provided, and Hughes is delayed as a result thereof, then Hughes shall be given an equitable adjustment to the delivery schedule for the affected Work and any reasonable costs directly resulting therefrom plus a reasonable profit.

ARTICLE 30 DISPUTES AND ARBITRATION

- 30.1 If, during the course of performance hereunder, a dispute arises between I-COGC and Hughes as to the rights or obligations of either Party under this Contract, either Party may give written notice of its objections and the reasons therefor ("Dispute Notice") and may recommend corrective action. Hughes' Program Manager shall consult with I-COGC's authorized senior program management representative in an effort to reach a mutual agreement to overcome such objections. In the event mutual agreement cannot be reached within five (5) Business Days of such notice, the respective positions of the Parties shall be forwarded to I-COGC's Chief Executive and Hughes' President, for discussion and an attempt to reach mutual agreement.
- 30.2 If mutual agreement cannot be reached within fifteen (15) Business Days of the Dispute Notice such dispute may be referred on the application of either Party for final determination to an arbitration tribunal convened by the London Court of International Arbitration which shall be conducted by three arbitrators in the English language.
- 30.3 The place of arbitration shall be London, England.
- 30.4 The award rendered by the arbitration tribunal shall be binding on both Parties, and shall be enforceable by any court of competent jurisdiction. The cost of arbitration, including the fees and expenses of the arbitrators, will be shared equally by the Parties, unless the award otherwise provides. Each Party shall bear the cost of preparing and presenting its own case, unless the award otherwise provides.
- 30.5 Notwithstanding anything else contained herein, the Parties agree that time is of the essence with regard to the time limits imposed by this ARTICLE 30 in resolving such dispute.

ARTICLE 31 MISSION OPERATIONS AND LAUNCH SUPPORT

The Contract Price identified in ARTICLE 4 includes all required Satellite launch support and mission operations for the F1 through F12 Satellites. If requested by I-COGC, Hughes will provide the required Satellite launch support and mission operations for the F13 through F15 Satellites and for any of the optional F16 through F20 Satellites, if exercised by I-COGC.

With respect to the F13 through F20 Satellites, if any of the Atlas IIAS, Delta III, Sea Launch Zenit 3SL, or Proton D-1e launchers is utilized and the mission operations are provided from the Backup Control Center (BCC) located in the El Segundo, California, area, the following firm fixed pricing shall apply in 2000 year dollars and subject to escalation from 1 January 2001 until the date of option exercise at an escalation amount equal to the greater of the * .

Mission Operations: *
 Launch Support: *

 Launch Support: *

The above pricing is based upon a nominal minimum separation of * between Launches (following the previous launched Satellite).

In accordance with ARTICLE 22.3 "Changes Requested by Hughes or I-COGC", Hughes agrees to prepare a contract change proposal in response to a request by I-COGC to provide mission operations and launch support for a different launch vehicle other than the Atlas IIAS, Zenith 3SL, Delta III or Proton D-1e launch vehicles.

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

ARTICLE 32 STORAGE

If I-COGC requests for its convenience that Hughes deliver a Satellite or Satellites into storage, Hughes agrees that it will store up to two (2) Satellites at any one time for up to a period of 6 Months for each Satellite. Such storage shall be at no additional cost to I-COGC if storage occurs at Hughes' premises in El Segundo, and Hughes will exercise reasonable efforts to effect storage on said premises. If storage occurs at a place other than Hughes premises, I-COGC's sole storage expense shall be the cost of transit to and from the storage location.

ARTICLE 33 OPTIONS

33.1 Hughes hereby grants to I-COGC the below listed options to be exercised at I-COGC's sole discretion in accordance with the terms specified for each option.

A. Additional Satellites F16 through F20

I-COGC may direct Hughes via exercise of this option to manufacture, test, and deliver ("Build") Satellites F16 through F20 (i.e., from one to five additional Satellites) for the prices and on the Delivery Dates indicated below, which price(s) shall be in addition to the prices shown in ARTICLE 4.1 hereof. Delivery, for the purpose of this ARTICLE 33, shall mean Delivery at the Designated Launch Site. These Satellites shall be procured sequentially in order of option exercise (F16-F20). I-COGC will designate whether the Satellite is to undergo launch processing or be placed into storage no later than six months prior to scheduled Delivery.

Unless otherwise indicated in this Contract, all other relevant ARTICLES and EXHIBITS of this Contract shall apply to the order of a 16th, 17th, 18th, 19th, and 20th Satellites, mutatis mutandis, including the * .

Satellite Offer Terms:

1. I-COGC may exercise the following F16 Satellite option on or before 31 December 2004, and the specified firm fixed pricing and Delivery criteria will apply:

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

F16:

*

*

*

*

*

* Construction pricing in 2000 year dollars and subject to escalation from 1 January 2001 until the date of option exercise at an escalation amount equal to the greater of the *

F16 Delivery Date: 30 Months after option exercise

In the event I-COGC elects to proceed with a long lead authorization for F16 (in lieu of a full option exercise), Delivery will occur within twenty-four Months after the F16 full-build authorization is received (assuming this full-build authorization is received six months or more after the long lead authorization is received, but in any event, no later than 31 December 2004). Long lead authorization is defined as the receipt by Hughes of I-COGC's payment for F16's long lead parts. The long lead price for F16 is * with such pricing in 2000 year dollars and subject to escalation from 1 January 2001 until the date of option exercise at an escalation amount equal to the greater of the *.

- 2. Should I-COGC proceed with the full-build authorization prior to 31 December 2004, then the long lead price will be credited against the F16 Satellite price. In the event that Hughes does not receive the full-build authorization prior to 31 December 2004 and Hughes subsequently elects to use any of the long lead parts on other programs, Hughes will reimburse I-COGC for the cost of such long lead parts. If I-COGC notifies Hughes

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

prior to 31 December 2004 that I-COGC desires to defer the continuation of the F16 full-build, Hughes will provide a proposal to I-COGC for such deferment under ARTICLE 22.3. The intent is to provide schedule and cost adjustments for completion of the Satellite, taking into account any useable residual material that may have been previously procured under the F16 long lead authorization.

3. In addition to the F16 Satellite option specified above, I-COGC may exercise options for up to four additional Satellites (F17-F20) any time prior to 31 December 2004. A firm fixed price of * for construction and * for Satellite Performance Incentives) each shall apply to these Satellites with such pricing in 2000 year dollars and subject to escalation from 1 January 2001 until the date of option exercise at an escalation amount equal to the greater of the * . Delivery will occur thirty (30) Months after I-COGC's option exercise is received.
 4. The above F16-F20 Satellite option pricing includes the * as delineated in the EXHIBIT B SATELLITE TECHNICAL SPECIFICATION.
 5. Deliveries are anticipated to be nominally no closer than *
 6. The payment schedule for the optional Satellites will be based upon mutually agreed to milestones and amounts to be determined by the Parties upon option exercise. Consequences for late Delivery of the F16-F20 optional Satellites are addressed in ARTICLE 11.1.G.
- * Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

7. I-COGC may procure the Launch Services for the optional Satellites independently from Hughes or under the interrelated Launch Services Contract between I-COGC and Hughes.

B. Long Term Storage (F2 through F12 Satellites)

In addition to the storage provisions of ARTICLE 32, STORAGE, if I-COGC requests for its convenience that Hughes deliver any of the F2 through F12 Satellites into storage at Hughes' facility, Hughes will provide long term storage (not to exceed 60 Months) for a price of * in accordance with the following pricing and terms:

1. Placement of Satellite into storage price: * .
(Price includes but is not limited to the following non-deliverable items and services: storage tent, support cart, unique systems test support equipment and cables, Satellite disassembly and battery storage, Satellite transport to storage location and setup and use of remote telemetry, command and power checkout equipment.)
2. Monthly storage price: no charge
3. Post storage (removal) price: * . (Price includes but is not limited to the following non-deliverable items and services: removal of Satellite from storage tent, Satellite re-assembly, flight re-finalization, cleaning, post-storage testing (same as launch site functional tests) and subsystem tests and checkout, and also includes multiple transportation of Satellite, equipment and crew if required.)

Long Term Storage Offer Terms (F2 through F12 Satellites):

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

1. The specified prices are in January 1995 U.S. dollars. Actual prices will be increased at an annual rate of five (5) per cent compounded monthly from 1 January 1995.
2. The placement into storage price shall be invoiced upon completion of placement into storage. The removal from storage price shall be invoiced upon completion of all activities and testing associated with removal from storage. The escalation referred to in term 1 above shall be applied individually to these invoices.

C. Long Term Storage (F13 through F20 Satellites)

In addition to the storage provisions of ARTICLE 32, STORAGE, if I-COGC directs Hughes to deliver any of the F13-F20 Satellites into storage at Hughes' facility, Hughes will provide long term storage (not to exceed 60 Months) in accordance with the following terms:

1. Placement of Satellite into storage price: * each, subject to escalation from 1 January 2001 until the date of placement into storage at an annual rate of five percent (5%) compounded monthly. Price includes the following non-deliverable items and services: storage location, support cart, unique systems test support equipment and cables, Satellite disassembly and battery storage, Satellite transport to storage location and setup and use of remote telemetry, command and power checkout equipment.

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2. Annual storage price: * per year, or amortized fraction thereof, for each stored Satellite. These prices are subject to escalation from 1 January 2001 at an annual rate of five percent (5%) compounded monthly.
3. Post storage (removal) price: * each. Price includes the following non-deliverable items and services: removal of Satellite from storage location, Satellite re-assembly, flight re-finalization, cleaning, post-storage testing (same as launch site functional tests), subsystem tests and checkout, and transportation of Satellite, equipment and crew if required. This price is subject to escalation from 1 January 2001 at an annual rate of five percent (5%) compounded monthly. This price does not include the post storage thermal stress test (TST). In the event I-COGC requests additional testing, Hughes agrees to provide a price proposal for such testing.

D. Additional Satellite Batteries

Relative to the F2 through F12 Satellites, I-COGC may direct Hughes at any time prior to 5 September 2005 to provide replacement Satellite batteries at a price of * each plus escalation from 5 September 2000 at an annual rate of 5%, compounded monthly. Delivery of the Satellite batteries shall be no later than 18 Months after receipt of order. In the event I-COGC requests replacement batteries for any of the F13 through F20 Satellites, Hughes agrees to provide a price proposal in accordance with ARTICLE 22.3 for such batteries.

E. Battery Precharge Reset

Should I-COGC desire to extend an F2-F12 Satellite's battery warranty beyond 36 Months after activation to a total battery warranty of 54 Months, I-COGC may direct Hughes at any time prior to thirty (30) Months after activation or six (6) Months prior to the Satellite's planned completion date, whichever is earlier, to reset the precharge on an F2-F12

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Satellite battery for * each. In addition, I-COGC may direct Hughes to reset the precharge on additional Satellite batteries (beyond F12) prior to thirty (30) Months after activation, but in any event no later than six (6) Months prior to the Satellite's planned completion date, for * each, subject to escalation from 1 January 2001 at an annual rate of five percent (5%) compounded monthly.

- 33.2 Any modifications, agreed subsequent to the date of this Contract, to any item above shall, upon written request of I-COGC, be incorporated subject to a mutually agreed adjustment to the price of the relevant item.
- 33.3 Exercise of any option in this ARTICLE 33 shall be accomplished in writing in accordance with ARTICLE 24, NOTICES.
- 33.4 Should I-COGC exercise any or all of the options described above, the Parties shall amend the Contract as soon as is reasonably possible after option exercise to incorporate the changes to the Contract which are made necessary by such exercise.

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ARTICLE 34 LIMITATION OF LIABILITY

- 34.1 Hughes makes no warranty, express or implied, to any person or entity other than I-COGC concerning the Satellites, the Ground TT&C Hardware or the performance of the I-CO Program, and I-COGC shall defend and indemnify the Hughes from any claims made by any third party against Hughes arising from any misrepresentation by I-COGC or any of its Affiliates to any third party in connection with this Contract.
- 34.2 The Parties to this Contract expressly recognize that the I-CO Program is a commercial space venture and as such, it involves substantial risks. Therefore, the Parties recognize the commercial need to define, apportion and limit contractually all of the risks associated with this commercial space venture.

THE WARRANTIES, OBLIGATIONS AND LIABILITIES OF HUGHES AND REMEDIES AGAINST HUGHES WHICH ARE EXPRESSLY SET OUT IN THIS CONTRACT ARE EXCLUSIVE. ALL OTHER REPRESENTATIONS, WARRANTIES, CONDITIONS AND ASSURANCES, EXPRESS OR IMPLIED, AND WHETHER STATUTORY OR OTHERWISE, ARE HEREBY EXPRESSLY EXCLUDED (SAVE FOR ANY LIABILITY FOR FRAUDULENT MISREPRESENTATION). WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, THERE ARE EXCLUDED IN PARTICULAR ANY OTHER WARRANTIES AND CONDITIONS AS TO SATISFACTORY QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR, PURPOSE AND AS TO DESCRIPTION AND/OR PERFORMANCE AS REGARDS THE I-CO PROGRAM INCLUDING, WITHOUT LIMITATION, THE SATELLITES AND GROUND TT&C HARDWARE TO BE PROVIDED BY HUGHES HEREUNDER. WITHOUT PREJUDICE TO THE FOREGOING, THE PROVISIONS OF THIS ARTICLE 34.2 SHALL APPLY WITH RESPECT TO ANY BREACH OF THIS CONTRACT FOR WHICH THERE IS A STATED REMEDY, INCLUDING DELAY OR DEFAULT, AND WITH RESPECT TO ANY DEFECT

NON-CONFORMANCE OR DEFICIENCY IN ANY PRODUCT DELIVERED UNDER THIS CONTRACT OR IN ANY INFORMATION, INSTRUCTIONS, SERVICES OR OTHER THINGS PROVIDED PURSUANT TO THIS CONTRACT.

- 34.3 Notwithstanding the foregoing, the Parties shall not have any liability to the other Party for any special, collateral, punitive, exemplary, consequential, indirect and/or incidental damages (including but not limited to, lost profit or revenues, loss of goodwill, loss of savings, loss of use, interruptions of business or for any other form of economic loss).
- 34.4 The provisions of this ARTICLE 34 shall survive the termination or expiration of this Contract for whatever reason or cause.

ARTICLE 35 MISCELLANEOUS

35.1 Regulatory Support

Hughes agrees that it will, if so requested by I-COGC, render at Hughes' own cost reasonable assistance to I-COGC in relation to the obtaining of regulatory and governmental approvals for the successful implementation in the United States of America of mobile satellite communications services by I-COGC or its Affiliates or its or their major service providers. Such assistance shall normally be provided from the internal resources of Hughes Telecommunications and Space Company of which Hughes is a subsidiary and shall not, unless otherwise agreed, require Hughes to provide assistance of its external consultants or advisors. Hughes and I-COGC acknowledge that, for the avoidance of doubt, the provision of regulatory support by Hughes or its Affiliates to American Mobile Satellite Corporation and its subsidiaries shall not constitute a breach of Hughes' obligations under this ARTICLE 35.1.

35.2 Cancellation for Non-Allocation of Frequencies

I-COGC may terminate the Contract for its convenience under ARTICLE 17, TERMINATION, if WRC 95 does not advance the availability of the 2GHz band, or does not allocate the feeder link for the space segment, or if as a result of WRC 95, it appears that the allocation of frequencies will be sufficiently delayed so as to jeopardize the I-CO Program provided however I-COGC may terminate the Contract for these reasons by written notice to Hughes between 1 December 1995 and 31 March 1996 as if for Force Majeure (ARTICLE 10), (except that the six (6) month duration requirement will be waived), if written notice is given to Hughes between 1 December 1995 and 31 March 1996.

35.3 Insurance

Hughes agrees to provide All Risks Insurance for the Satellites (to their full replacement value) at no additional cost to I-COGC and will provide evidence of such insurance if so requested by I-COGC. With regard to risk insurance for damage caused by earthquake, Hughes will provide coverage up to the limits and premiums which are commercially feasible.

35.4 Excess Mass

Should a Satellite(s) exceed the launch mass specified in EXHIBIT B, SATELLITE TECHNICAL SPECIFICATION, Hughes agrees to bear any resultant increased launch and other associated costs incurred by I-COGC ("Mass Cost Increase") resulting from such mass increase, provided that if I-COGC directs that Hughes utilize the services of a specific Launch Services Provider where Hughes is otherwise able to procure Launch Services which meet the mass capability requirements from an alternative Launch Services Provider at a lower Mass Cost Increase, and where such alternative Launch Services are of a comparable heritage and reliability and meet the key schedule and other requirements of (a) this Contract, (b) the interrelated Launch Services Contract referred to in the Recitals, and (c) the I-CO Program, then I-COGC shall bear the difference between the Mass Cost Increase with the said Hughes suggested alternative Launch Services Provider and the Mass Cost Increase with the Launch Services Provider directed by I-COGC. The Parties agree to consult with one another in order to minimize such costs, subject to schedule and other requirements of the I-CO Program.

35.5 Key Personnel

Hughes agrees that the following individuals are necessary for the successful completion of the Work to be performed under this Contract and shall not be removed from the performance of the Work without the consent of I-COGC, which consent shall not be unreasonably withheld. In the event that these personnel become unavailable for any reason and consent is given, Hughes shall select suitable replacement personnel who possess comparable levels of experience, qualifications and ability. Notwithstanding its role in approving key personnel and their replacements, I-COGC shall have no supervisory control over their work, and nothing in this ARTICLE shall relieve Hughes of any of its obligations under this Contract, or of its responsibility for any acts or omissions of its personnel.

Name	Title
----	-----
K. Reiley	ICO Program Director
T. Lamb	ICO Space Segment Program Director
W. Scanlon	Tropo IPT Leader

35.6 Disclaimer of Agency

None of the provisions of this Contract shall be construed to mean that either Party hereto is appointed or is in any way authorized to act as an agent of the other Party. This Contract does constitute, create, give effect to, or otherwise recognize a joint venture, partnership or formal business organization of any kind, and the rights and obligations of the Parties shall be limited to those expressly set forth herein.

35.7 Waiver of Breach of Contract

A waiver of any breach of a provision hereof shall not be binding upon either Party unless the waiver is in writing and such waiver shall not affect the rights of the Party not in breach with respect to any other or future breach. No failure or delay by any Party or time or indulgence given by it in or before exercising any remedy or right under or in relation to this Contract shall operate as a waiver of the same nor shall any single or partial exercise of any remedy or right preclude any further exercise of the same or the exercise of any other remedy or right.

35.8 Term of Contract

This Contract shall be in full force and effect as long as either Party is or may be required to perform any obligation pursuant to this Contract.

35.9 Language

With respect to all correspondence relating to this Contract and to all material, including labels and markings of equipment, submitted by Hughes hereunder, the English language shall be used. Controlling language for this Contract shall therefore be the English language.

ARTICLE 36 MAJOR SUBCONTRACTORS

The following companies are identified as potential Major Subcontractors under this Contract:

Saab Ericsson Space AB
NEC Corporation
Mitsubishi Electric Corporation

In addition, any Subcontractor with a subcontract in excess of \$US30,000,000 will be deemed to be a Major Subcontractor under this ARTICLE 36.

Hughes shall incorporate the substance of ARTICLE 12, ACCESS TO WORK IN PROGRESS AND DATA and ARTICLE 18, DATA RIGHTS, into all subcontracts with Major Subcontractors, and shall use reasonable efforts to incorporate the same into all subcontracts between Hughes and any Subcontractor performing Work pursuant to this Contract.

ARTICLE 37 SPECIAL PROVISION APPLICABLE TO SATELLITE F15

The following special (additional) terms apply to the F15 Satellite:

37.1 Hughes agrees to defer all F15 invoices and I-COGC will not be required to make any F15 payments until 1 February 2002.

37.2 I-COGC may place the manufacture of F15 on hold in accordance with the following:

A. Should I-COGC elect to place F15 on hold as of * , Hughes will store the F15 parts and material until 31 December * and invoice I-COGC for * in accordance with ARTICLE 37.1. Should I-COGC provide a restart notice directing Hughes to proceed with the manufacture of F15 prior to * , Hughes will complete and Deliver F15 within * of receiving I-COGC's F15 restart notice. Upon restart of F15, the Parties will agree on an equitable adjustment of billing milestones associated with F15 over the remaining Delivery schedule. The remaining * of the price of F15 will be subject to escalation during the hold period at an escalation amount equal to the greater of the * .

B. Should I-COGC elect to place F15 on hold as of * , Hughes will store the F15 parts and material until * , and invoice I-COGC for * in accordance with ARTICLE 37.1, if applicable. Should I-COGC provide a restart notice directing Hughes to proceed with the manufacture of F15 prior to * , Hughes will complete and Deliver F15 within * of receiving I-COGC's F15 restart notice. Should I-COGC provide a restart notice directing Hughes to proceed with the manufacture of F15 after *

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the event that Hughes does not receive the full-build authorization prior to * and Hughes subsequently elects to use any of the long lead parts on other programs, Hughes will reimburse I-COGC for the cost of such long lead parts. If I-COGC notifies Hughes prior to * that I-COGC desires to defer the continuation of the F15 full-build, Hughes will provide a proposal to I-COGC for such deferment under ARTICLE 22.3. The intent is to provide schedule and cost adjustments for completion of the Satellite, taking into account any useable residual material that may have been previously procured under the F15 production authorization.

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

ARTICLE 38 ADDITIONAL SATELLITES OF THE SAME GENERATION AND DESIGN

I-COGC agrees that Hughes will be the sole source for any additional Satellites (including ground spares) procured by I-COGC, or any of its Affiliates, if such satellites are of both the same current generation and design as the Satellites delivered hereunder, but only if such additional satellites are ordered by I-COGC or any of its Affiliates prior to the earlier of (i) 1 January 2004 or (ii) the order of the F16 Satellite. Notwithstanding the foregoing, Hughes agrees that, prior to such date, any of I-COGC and its Affiliates is entitled to take delivery of any satellites that are either of a different generation or of a different design from the Satellites delivered hereunder, including any Satellite operating wholly or significantly in the Ka-Band.

ARTICLE 39 FINALIZATION OF RADAR SPECIFICATION AND MODIFICATION

- 39.1 Hughes and I-COGC acknowledge that radar systems exist in the I-COGC frequency allocation. Hughes' design approach, as defined under Exhibit B (the "Radar Design"), is intended to mitigate the impact of radar systems on the Satellites when illuminated by radar pulses having a radar pulse duration, magnitude, and repetition as defined by I-COGC.
- 39.2 The Parties agree to conduct further analysis to characterize the performance of the Radar Design. Therefore, the Parties agree to proceed as follows:
- 39.2.1 Hughes will perform an analysis (the "Hughes Study") to verify the disturbance duration of a satellite with the Radar Design that is illuminated by a radar pulse as defined by I-COGC. The analysis and results of the Hughes Study will be completed and presented to I-COGC on or before *. At the same time the analysis and results are presented to I-COGC, Hughes will provide a radar pulse disturbance duration commitment and, if accepted by I-COGC, the specification will be amended to incorporate the radar pulse disturbance duration commitment. If the analysis, results and radar pulse disturbance duration commitment are not presented to I-COGC on or before *, then Hughes shall continue to perform all its obligations under the Contract (including all work necessary to maintain the schedule), and *

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

39.2.2 I-COGC shall conduct an analysis in parallel with the Hughes Study to characterize the system impacts of radar pulse disturbance duration. The results of such analysis shall be presented to Hughes no later than September 21, 2000.

39.3 Within seven (7) Days from the receipt of the analysis and results of the Hughes Study and commitment to a radar pulse disturbance duration, I-COGC will provide written notification directing Hughes to do one of the following:

39.3.1 Implement the specification (as amended to include the radar pulse disturbance duration commitment) resulting from the Hughes Study with no change to the Contract price, schedule, or terms; or

39.3.2 Prepare a contract change proposal in accordance with Article 22.3(B), Changes Requested by Hughes or I-COGC, to change the design approach to mitigation of radar pulses or to conduct further analysis and testing of the Radar Design. Such new design or further analysis and testing shall be completed and presented to I-COGC no later than forty-five (45) days after receiving such written notification from I-COGC. After receiving the results of such new design or further analysis and testing, I-COGC shall have the right to exercise the same options as set forth in this ARTICLE 39.3.1, 39.3.3, and 39.3.4, or the Parties will mutually agree on further studies or other actions; or,

39.3.3. Terminate the Contract for Convenience. Such termination shall be subject to Article 17.1, Termination for I-COGC's Convenience, * or,

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

39.3.4. Terminate * for Convenience. Such termination shall be subject to ARTICLE 17.1, TERMINATION FOR I-COGC'S CONVENIENCE, * and all termination liability under such article will in no event exceed * (the " * Termination Liability"). If * is terminated for convenience, the January 25th Memorandum of Agreement (as amended) between the Parties, the Stipulation and Agreement between the Parties dated 1 December 1999 (as amended), the Stipulation and Order regarding Cure Payment and Terms and Conditions of Assumption of Contract with Hughes Space and Communications International, Inc. dated 3 May 2000, and this Contract * will continue in full force and effect as if * had never been entered into.

39.4 In the event that I-COGC's written notification required under Article 39.3. above is received after the seven (7) Day requirement, the * Termination Liability shall increase as reasonably required to maintain the Delivery schedule.

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

ARTICLE 41 SPACE SEGMENT SUPPORT TO SEIT

- 41.1 This Article sets forth the terms under which Hughes, as the ICO Program Space Segment provider, will support the ICO Program System Engineering, Integration, and Test (SEIT) efforts. Hughes shall provide a nominal level of effort consisting of six (6) engineers for a period of three years commencing 25 August 2000 to provide Space Segment technical support to SEIT and assist in evaluating Space Segment impacts arising from the revision of the ICO Program Ground Segment. This effort will be supplemented, as required, by limited managerial and administrative support to assure that proper attention is applied to the SEIT support effort by the scientific support team. Hughes will consult with I-COGC concerning the assignment of key team members prior to being assigned to the space segment support to SEIT effort. The Hughes team may include selected vendor or subcontracted effort, as appropriate, to ensure timely completion of required tasks. Hughes will furnish to I-COGC on a quarterly basis a description of the work in process and a summary of Hughes' financial expenditures to date versus current I-COGC funding, including a budgetary forecast of anticipated expenditures for future work. Hughes and I-COGC will mutually agree on the planned tasking and estimated staffing levels on a quarterly basis.
- 41.2 Hughes will provide such support and perform such tasks as I-COGC may request from time to time. Without limiting the foregoing, Hughes support to the SEIT effort may include, without limitation, the following:
- (a) Performance of detailed system level integration planning and testing with the first and subsequent spacecraft launches.
 - (b) Support to system level analyses, integration planning and testing for the spacecraft, PCS and GCE systems interface to the ICO system.

- (c) Participation in trade-offs as the system gets further designed and integrated.
- (d) Support to system test bed changes and additions.
- (e) Review and provide assessment of new requirement flowdown.
- (f) Support of Operations.
- (g) Provide on the job training.

41.3 Estimated Support to SEIT Price

The estimated funding required for the support to SEIT effort is (* over three years).

- (b) All Hughes' support to SEIT effort will be performed on a cost reimbursement basis, to include a * fixed fee.

41.4 Invoices and Payment

- (a) Hughes will submit invoices to I-COGC on a quarterly basis. Each invoice will reflect the labor and non-labor costs incurred during the previous quarter. Hughes will make a good faith effort to notify I-COGC if Hughes expenditures appear to be materially inconsistent with the budgeted forecast. Labor and non-labor costs shall be invoiced at a price that includes applicable burden(s), plus * fixed fee.
- (b) I-COGC shall pay each invoice within fifteen (15) Days after receipt of invoice. Invoices shall include a certification from Hughes stating that the invoiced amount reflects an accurate account of the charges incurred while performing the support to SEIT effort under this Contract for the previous quarter.

* Confidential Treatment Requested and the Redacted Material has been separately filed with the Commission.

CONTRACT NUMBER ICOO/95-1002/NR

EXHIBIT A
STATEMENT OF WORK

24 AUGUST 2000

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Appendix A: Contract Documents Requirements List (CDRL)

EXHIBIT A: STATEMENT OF WORK

1. SUMMARY

This Statement of Work (SOW) defines the work to be performed by Hughes Space and Communications, International, Inc. (HSCI), referred to hereafter as the Contractor, in implementation of the Space Segment under contract with ICO Global Communications (Operations) Limited, referred to hereafter as the Customer.

The Contractor shall design, develop, manufacture, test and deliver the following equipment.

- a) Fifteen (15) Spacecraft delivered to Designated Launch Sites. The first spacecraft (ICO F1) delivered shall not include the Tropo/Radar modification. ICO F2 to F15 shall be configured to include the Tropo/Radar modification.
- b) A compatible, fully integrated and operational Spacecraft Ground Control Equipment (GCE) system delivered to facilities designated and provided by the Customer. The GCE includes central control computer systems located at a Customer provided primary satellite control center (SCC), a back-up satellite control center (BCC) located at Contractor's facility in El Segundo, California, and remotely located TT&C baseband and interface equipment installed at 6 Customer TT&C SAN sites. The GCE shall operate up to twelve (12) satellites (expansion of the design to 14 satellites shall also be possible). The deliverables also includes 2 dynamic software simulators (DSS) with host computer hardware located and interfaced at the SCC and BCC, and two in-orbit test (IOT) systems, one primary and one back-up spare, located in Chhattarpur, India and Brewster, Washington USA. Only one of the IOT systems can be operated at any one time. Contractor agrees to relocate the BCC to a site in Japan or other comparable location to be designated by Customer at a later date.
- c) An Engineering Model (EM) communications payload and associated support equipment as set forth in herein.
- d) A Payload Control System (PCS) to support traffic related configurations of the ICO payload. The PCS will be comprised of an integrated suite of hardware, software, and operations products that collectively will be used to support normal, on-station, ICO payload traffic control operations for up to twelve (12) satellites. It shall be possible to extend the number of supported satellites to 24 with additional hardware and software. The PCS will provide data to assist in operations relating to satellite diagnostics, calibration, payload trending, and short-term storage. PCS will also assist IOT and satellite failure investigation efforts as required.

The above equipment shall be delivered by the dates defined in the Spacecraft Contract. The SOW also defines associated documentation and services including: training, launch vehicle interface and preparation, mission operations and post-launch commissioning, testing and support.

2. DELIVERABLE EQUIPMENT, DOCUMENTATION AND SERVICES

2.1 FLIGHT SPACECRAFT

The Contractor shall deliver fifteen (15) complete spacecraft fulfilling all requirements of the Contract, compatible with the required launch vehicles and including propellants, and airborne support equipment as applicable.

The first spacecraft to be delivered, called the protoflight model, shall be subjected to a series of qualification tests using protoflight levels, as specified in Exhibit-D, entitled Acceptance Test Plan. The first spacecraft configured with the Tropo/Radar modification shall be subject to a series of protoflight tests as specified in Exhibit D, to validate the Tropo/Radar design and its consequences to the overall payload and spacecraft design.

2.2 GROUND CONTROL EQUIPMENT (GCE) SYSTEM

The fully operational GCE system shall comprise:

- Two (2) satellite control centers, comprising one primary center (SCC) and one backup center (BCC). The BCC will initially be located at Contractor's facility in El Segundo, California. At Customer's request, Contractor will relocate the BCC to a site in Japan or another comparable location selected by Customer. Interface equipment at the SCC and BCC will allow interfaces for communication with at least six (6) TT&C out-station facilities. The GCE shall operate up to twelve (12) satellites (expansion of the design to 14 satellites shall also be possible.)
- Six (6) SAN sites equipped with TT&C equipment, switching, ranging and baseband equipment adequate to control three (3) satellites through five (5) antennas at each SAN site.
- Two (2) Dynamic Software Simulators (DSS), one located at each of the satellite control centers.
- Two (2) In-Orbit Test (IOT) systems, one primary and one back-up spare, located at two of the TT&C/SAN sites. One in Brewster, Washington USA, the other in Chhattarpur, India.

To facilitate operator training, one satellite control center and it's associated DSS shall be installed and operational four months prior to overall GCE acceptance.

The Customer shall provide:

- Facilities for installation at the primary center as well as at the backup center in Japan or at another comparable location determined by Customer
- SAN site availability at six (6) designated sites to allow installation of TT&C out-station equipment
- Communications links
- Six (6) SAN sites suitably located to support near continuous TC, ranging and TM control of at least 12 satellites during early launch operations of F1 onwards through to in-service operations of the complete constellation

The Contractor shall ensure that the hardware and software deliverables are adequate to cover in-orbit operations, for example, normal in-service operations concurrent with a dual launch operations mission and intensive monitoring of at least one "anomalous" satellite.

The Customer shall provide communication links between all facilities. The Contractor's equipment shall interface with these links for all necessary site to site communications. Interfaces with these links and with all other customer furnished equipment shall be defined in interface control specifications called up in the CDRL. Responsibility for control of these specifications (Items G1, G2, and G3 of the CDRL) was transferred to the Customer on 1 July 1996.

In addition to the software required to control satellites, the Contractor shall supply a SAN antenna control facility (as part of an Automatic Planning and Control System) which, based on satellite measured ephemeris data, will manage and control SAN antenna/satellite link acquisitions at the six (6) TT&C SAN sites equipped with 5 antennas per site. (Note, this will take account of antennas removed from service for maintenance and will also assume that autonomous SAN antenna satellite autotracking will occur after satellite acquisition). Recovery algorithms for reacquisition if loss of levels occurs is also required. Coupled with this SAN antenna management, selection of TT&C sites for continuous real time telemetry collection and TC routing will be included.

In-Orbit Test (IOT) hardware and software shall be delivered to two (2) of the TT&C SAN sites. This equipment shall be installed, commissioned and acceptance tested at the SAN site following facility pre-acceptance at the factory. The IOT equipment shall offer local and remote (from SCC and BCC) control capabilities and shall be capable of verifying correct satellite performance of all major communications, TT&C rf and SRMS rf unit parameters in accordance with Contract Exhibit F (GCE Technical Specifications).

Two sets of DSS hardware and software shall be delivered, installed and acceptance tested, one at each SCC site in accordance with the specification. The DSS shall be interfaced with the SCC such that flight operations procedures and training can be performed at the SCC using the DSS to emulate the satellite. Correct operations of real time safety related procedures (e.g.: ACS normal and anomalous operations) is a paramount requirement. The spacecraft bus operation should be fully simulated. Payload redundancy management and processor configuration through the TT&C subsystem should be emulated. The simulator does not have to emulate Resource Management Operations.

The Customer shall provide prepared facilities for the installation of the GCE at the satellite control centers and TT&C SAN sites. This includes all reasonable services necessary for installation, test and commissioning of the GCE. It shall include all interfaces to customer furnished equipment and suitable facilities for physical installation such as power, air conditioning, cable trays, and appropriate security provisions for encryption hardware. Specific details shall be defined in CDRL interface control and facility documents to be jointly agreed.

Details of the GCE system implementation and test are defined in Exhibit E of the Contract. Specific test plans for DSS and IOT equipment subsystems shall be jointly agreed.

During spacecraft upgrade for the Tropo/Radar modification, the BCC, located at the Contractor's facility in El Segundo, California shall be maintained. Periodic maintenance by Contractor's system administrators shall be conducted to insure equipment health.

2.3 ENGINEERING MODEL PAYLOAD

The Engineering Model Communications Payload (EM Payload) shall be a deliverable item. Contractor will act as custodian of the EM Payload for Customer and will maintain the EM Payload to ensure that it is at all times in "operational condition" at Contractor's facilities in El Segundo, CA until one year after delivery of the F12 spacecraft (at which time Customer will either take custody of the EM Payload subject to US Government approval, or will mutually agree with Contractor on such other disposition of the EM Payload). "Operational condition" is defined as ready for use by Customer or its designee within two weeks notification. Only one configuration of the EM Payload will be maintained by Contractor, and such configuration will be updated to reflect any changes from tropo/radar or other satellite modifications. The Contractor is permitted to store the EM Payload in appropriate facilities provided the EM Payload can be assembled and ready for use within two weeks.

Basic control and support equipment for the EM Payload shall be provided by the Contractor. Interface and test equipment for the EM Payload to be used in "Ground System Trials" with development SAN and User Terminal (UT) equipment shall be the responsibility of the Customer. The precise definition of interfaces shall be mutually agreed and documented in an interface control document. The Contractor, upon Customer request, shall also provide options for these "Ground Systems Trials" to be conducted at the Contractor's facilities and to provide appropriate Contractor support.

The Customer plans to use the EM Payload for network and traffic development trials including development of the Resource Management and HPSMS operations.

The EM Payload shall incorporate at least the following hardware:

- Full S-band forward and return antennas including all radiating elements and filters
- S-band and IF electronics for 32 forward and return chains
- One forward (internally complete) payload processor, (processing half the antenna elements) and one equivalent return processor
- Two chains (one for each polarization) of C-band feeder electronics using commercial equivalent construction
- Brassboard payload control processor (not built to EQM standards)
- Non-flight mounting and support

- Frequency reference generator/distribution
- Test emulators, which shall be delivered with the payload, will be used for the following:
 - Spacecraft telemetry and command interfaces
 - Spacecraft control processors interface with payload control processor
 - Power supplies

The EM Payload shall provide a fully functional path, forward and return, between C-band feeder test couplers and S-band antenna aperture. Low gain commercial construction C-band antennas (e.g.: C-band horn) shall be provided for radiated coupling to SAN antennas.

All equipment on the EM Payload shall be built to an Engineering Qualification Model standard (EQM), unless otherwise stated. EQM unit equipment shall be designed and fabricated with the objective of being identical in electrical and mechanical design, physical layout and construction to a flight model unit, including any functional redundancy within the unit, but generic equivalents to flight standard parts may be used and, where applicable, non-flight materials.

An exception to this is the C-band feeder equipment which may be commercial equivalent construction.

EQM equipment shall be tested to full qualification levels in the case of first article units, and to flight acceptance procedures for later units in the EM program. In the case of new equipment produced in relatively large quantities, testing on later units shall be performed with the objective of verifying the flight production test equipment hardware, procedures, and software.

Where possible, the subsystem panel level testing shall be performed with the intended flight procedures, but with additional performance testing to verify the payload design.

The EM Payload shall undergo a complete set of performance tests as described in Exhibit D, Acceptance Test Plan

As well as verifying the basic proof of design of the payload, the EM Payload shall also verify the proof of concept of the S-band antenna calibration and diagnostic facility.

The EM Payload shall be upgraded to verify proof of design of the Tropo/Radar modification. The Tropo/Radar upgrade shall incorporate at least:

- S-band return path, 8 element chains, configured for the Tropo/Radar modification.
- One return processor configured for the Tropo/Radar modification.

- One return BCA element slice configured for the Tropo/Radar modification.
- Frequency reference generator/distribution configured for the Tropo/Radar modification.
- All remaining, non-redundant hardware incorporated on the payload as a consequence of the Tropo/Radar modification.

All new EM Payload equipment shall be EQM or flight quality to satisfy payload development objectives. If mutually agreed to by the Customer and Contractor, the use of brass-board equipment may be authorized.

2.4 DELIVERABLE DOCUMENTATION

2.4.1 GENERAL

All deliverable documentation shall be written in the English language, and all deliverable top level and operational documentation and drawings dealing with interfaces shall use the international system of units (SI). Drawings for fabrication of equipment except for interfaces are exempt from using SI units.

Documentation shall be delivered to the office or the Customer's resident manager unless specified otherwise.

2.4.2 CONTRACT DOCUMENTATION REQUIREMENTS LIST (CDRL)

The documents which require submittal to the Customer are listed in the CDRL in Appendix A. Items G1, G2, and G3 are no longer the Contractor's responsibility but the Contractor will review changes to those documents as required. As required, the Contractor shall update relevant documents to reflect changes to engineering design and analyses due to the Tropo/Radar modification.

2.4.3 CDRL "INFORMATION", "REVIEW" AND "APPROVAL" DEFINITIONS

Documents supplied for "Information" require no responding action by the Customer.

Documents supplied for "Review" require a Customer response on their acceptability in a timely manner as required to permit continuous program progress. Lack of Customer response shall be deemed as acceptance.

Documents supplied for "Approval" must be explicitly approved by the Customer. This shall normally take the form of a Customer signature on the document approval page. This approval shall be determined by the Customer as required to permit continuous program progress.

2.5 ADDITIONAL DELIVERABLE SERVICES AND EQUIPMENT

The Contractor shall supply the following additional services and equipment:

2.5.1 LAUNCH VEHICLE INTERFACES AND LAUNCH SUPPORT ACTIVITIES

The Contractor shall perform all the launch vehicle technical interface design and interface activities required by the launch service agencies and all other activities required to ensure compatibility with the launch vehicles in this Contract. The Contractor shall also be responsible for transportation of the spacecraft to the launch sites. The Contractor shall perform all launch site operations required for post shipment checkout and launch preparations. The integration and test activities at the launch site shall be as described in Exhibit D Acceptance Test Plan.

2.5.2 TT&C COMPATIBILITY TESTS

During the system level test program, the Contractor shall link the PF1 spacecraft to the BCC and a suitable set of TT&C commands and telemetry parameters agreed to by the Customer shall be exercised to verify compatibility. If significant design changes occur after F1 spacecraft launch, the next spacecraft implementing the changes shall undergo a "delta" compatibility test. The Tropo/Radar modification does not involve any changes to the TT&C subsystem or GCE and, consequently, a "delta" compatibility test shall not be required for the Tropo/Radar test program.

2.5.3 ON-ORBIT COMMISSIONING AND TESTING

The Contractor shall perform the on-orbit post launch operations, through the completion of in-orbit test activities for each spacecraft on behalf of the Customer. The commissioning and test activities are described in the Acceptance Test Plan (Exhibit D).

The IOT program shall enable spacecraft to be tested ready for service within 6 weeks after arrival on station in the case of the first two successful launches, and within 1 month after arrival on station for the remainder of the spacecraft.

2.5.4 MISSION OPERATIONS AND SUPPORT

The Contractor shall perform the following mission and support activities for the Customer:

- Preparation of the Operations and Mission Manuals.
- Satellite Recommended Operating Procedures (ROPs). This document shall contain detailed recommended operating procedures, operating constraints, a mission description, and satellite operating configurations for prelaunch,

launch, deployments and on-station operations. Command callouts and expected telemetry responses shall be included.

- Preparation, including validation, of Flight Operating Procedures and appropriate GCE automated procedures.
- Preparation and performance of mission operations during launch, early orbit operations, initial commissioning and all activities leading up to and including in-orbit acceptance testing of each spacecraft.

As needed, manuals and procedures regarding mission operations and support will be updated or developed to support operations of spacecraft configured with the Tropo/Radar modifications. Hand-over of the spacecraft to Customer operations staff shall occur after successful completion of the in-orbit test program.

2.5.5 TRAINING

The Contractor shall develop and conduct a training program that shall provide customer personnel the knowledge and skills necessary to operate the spacecraft independently throughout its on-station lifetime. The training program shall include classroom and structured on-the-job (OJT) training, and training will be conducted at the BCC located at the Contractor's facility. If updated training is required due to changes in satellite operations, the Contractor shall provide such training at the Customer's SCC. A complete training program, appropriate for initial training, training of replacement staff, and on-going replacement training, shall be provided, including student guides, transparencies, instructor notes and training video tapes (of the Spacecraft Subsystem course). The Dynamic Satellite Simulator (DSS) shall be used extensively throughout the training program to provide realistic experience in routine and contingency spacecraft operations. The training shall utilize appropriate spacecraft and GCE operating instructions (OIs) and procedures (PROCs) to be provided by the Contractor. The training program, combined with the Contractor's initial operations support program, shall ensure that the Customer staff achieve a safe, efficient transition to independent operations.

Individualized training program tracks shall be provided for satellite engineers; orbital analysts; satellite controllers; and ground equipment and software specialists and technicians.

The Contractor shall prepare and deliver, at the time of the PDR, a detailed training plan for Customer approval. This plan shall describe the specific content of courses and other training activities, as well as the schedule, the facilities required for each activity, and other details of the training program. The training program shall cover the spacecraft and all Contractor furnished equipment and software including the DSS, IOT equipment system, SCC and SAN GCE.

The Contractor shall also supply appropriate training and associated operations and maintenance procedures for the EM Payload upon delivery.

The Contractor shall supply appropriate training for the PCS at the Hughes Facilities in El Segundo, California and/or other Subcontractor facilities as needed. The training will be limited to two classes with up to 10 students for each class. Each class will not exceed 15 days.

2.5.6 INITIAL OPERATIONAL AND MAINTENANCE SUPPORT

For a twelve (12) month period after the first successful launch, the Contractor shall supply 24 hour operational support with Contractor staff present at the SCC, and/or on immediate local on-call support. The local support shall be supported by 24 hour telephone on-call detailed operational support from the Contractor's satellite manufacturer's facility.

The Contractor shall also supply:

- On-call technical support to the spacecraft control center for satellite operations through the entire life of the spacecraft constellation.
- On-call technical support and maintenance of the GCE through the entire life of the spacecraft constellation, per section 2.5.9.
- On-call technical support and maintenance of the PCS through the entire life of the spacecraft constellation, per section 2.5.14.
- The contractor shall supply operational support plans or these activities.

2.5.7 COMMUNICATIONS NETWORK SUPPORT

The Contractor shall support development and validation of the overall communications system. This support shall be provided by attending appropriate technical interface meetings and by working with SANs and handset providers under the Customer's guidance and direction, to help assure the integrity and satisfactory operation of the integrated system.

2.5.8 SPACECRAFT SHIPMENT AND STORAGE

The Contractor shall be responsible for shipping the spacecraft to the launch sites.

The Contractor shall provide short and long term storage as stipulated in the basic Contract.

The Contractor shall provide detailed shipment and storage plans for customer approval.

The Contractor shall provide storage for partially integrated spacecraft during the period of the Tropo/Radar modifications.

2.5.9 GCE POST DELIVERY SUPPORT AND SPARES

In accordance with a ground control operating philosophy approved by the Customer, the Contractor shall recommend GCE system sparing ground rules and a specific recommended spares list. Spares will be procured separately. Post warranty maintenance support shall be provided on a time and materials cost basis.

2.5.10 RADAR EMITTER STUDY

The Contractor shall perform a radar emitter study consisting of the following tasks:

Date	Task	Description	Due
-----	-----	-----	-----
12/20/96	1.	<ul style="list-style-type: none"> a. Update prior environmental analysis over 1900 to 2100 MHz using template of S-band receive payload characteristics. b. Evaluate data bases and incorporate all potential radar down to the equivalent of 1 W at passband for all frequencies (peacetime scenario). c. Create cumulative vs. orbit time graph. d. Identify other hot spots. e. Identify which part of frequency band (lower or higher) has worse interference 	
	2.	Re-evaluate S-band utilization factors for non-peacetime scenario and incorporate into simulation model.	2/15/97
	3.	Assuming the availability of appropriate data: <ul style="list-style-type: none"> a. Redo Task 1 adding communications systems for EIRPs greater than 10 dBW (equivalent at passband). b. Find maximum aggregate levels for each 5 MHz segment of 1965-2035 MHz. c. Identify troposcatter fixed station locations, power, directivity in the 100 MHz passband. 	5/15/97

2.5.11 ADDITIONAL RACKS FOR CFE EQUIPMENT

The Contractor shall provide a spare rack for CFE equipment at the SCC, BCC, and the six (6) TT&C SAN sites (a total of eight spare racks).

2.5.12 REMOTE IOT OPERATIONS

The Contractor shall provide for the dedicated capability for remote IOT operations at both the BCC and the SCC.

2.5.13 PCS MODEM COMPATIBILITY TEST

The Contractor shall perform a PCS modem to payload modem check via system test equipment. The Contractor is not required to include the PCS L-band IF up and down converters or Customer equipment from the SANS. Successful completion of PCS modem compatibility test will be limited to what is required to confirm the compatibility of the modems and the correctness of the command and TM structure.

2.5.14 PCS POST DELIVERY SUPPORT AND SPARES

In accordance with a ground control operating philosophy approved by the Customer, the Contractor shall recommend PCS system sparing ground rules and a specific recommended spares list. Spares will be procured separately. Post warranty maintenance support shall be provided on a time and materials cost basis.

The Contractor shall provide one PCS engineer to participate in the ICQNET system integration activity for a six (6) month period to be completed no later than 1 December 2002.

2.6 PAYLOAD CONTROL SYSTEM (PCS)

The PCS equipment will consist of the following:

- Six (6) sets of Remote PCS elements, one (1) element installed at the following six (6) ICO PCS SANS:
 - Brewster, Washington, USA
 - Chhattarpur, India
 - Brisbane, Australia
 - Longovillo, Chile
 - Usingen, Germany
 - Hartebeesthoek, South Africa
- One (1) redundant Central PCS element installed at the Backup SCC in El Segundo, CA.
- One (1) redundant Central PCS element installed at the Primary SCC in London, England.
- One (1) non-redundant Display PCS element installed at the Primary SCC in London, England.
- One (1) non-redundant Display PCS element installed at the Backup SCC in El Segundo, CA.

The Customer shall provide:

- Facilities for installation at the two SCCs
- SAN site availability at six (6) designated sites to allow installation of PCS equipment
- Communication links

- Six (6) SAN sites suitably located to support near continuous telemetry and command of 12 satellites during early launch operations of F1 onwards through to in-service operations of the complete constellation.

The Customer shall provide communications links between all facilities. The Contractor's equipment shall interface with these links for all necessary site to site communications. Interfaces with these links and with all other Customer furnished equipment shall be defined in the interface control document described in the Contract's General Provisions, Article 29.1 paragraph D.

The Customer shall provide prepared facilities for the installation of the PCS at the satellite control centers, and the PCS SAN sites (the same sites used for the TT&C GCE equipment). This includes all reasonable services necessary for installation, test and commissioning of the PCS. It shall include all interfaces to Customer furnished equipment and suitable facilities for physical installation such as power, air conditioning, and cable trays. ICO shall make available integration support personnel to the Contractor for the purpose of PCS installation and test. Post installation, proper maintenance, security, and operation will be provided by the Customer. Specific details shall be defined in the interface control document described in the Contract's General Provisions, Article 29.1 paragraph D.

The PCS shall support traffic related configurations of the ICO payload. The PCS will be comprised of an integrated suite of hardware, software, and operations products that collectively will be used to support normal, on-station, ICO payload traffic control operations. The PCS will provide data to assist in operations relating to satellite diagnostics, calibration, payload trending, and short-term storage. PCS will also assist IOT and satellite failure investigation efforts as required. It is assumed that the PCS system will not interface to the GCE system except for a network connection. It is also assumed that the PCS system will not perform HPN commanding or interface to the HPN system.

Relocation services for the PCS elements shall be provided by Contractor on a time and materials cost basis, except that costs associated with the transportation of the Backup SCC PCS equipment from El Segundo, CA. to Japan or to another comparable location selected by Customer shall be borne by Contractor.

3. PROGRAM MANAGEMENT

This section defines the program management and reporting activities to be performed by the Contractor in execution of the Contract.

Central to definition of these activities is the assumption that the Customer will have an on-site resident team co-located with the Contractor program office. This team should be given full program visibility and accessibility; and have a highly interactive and largely informal real time interface with the Contractor.

3.1 PROGRAM MANAGEMENT PLAN

The Contractor's management of the program shall comply with the requirements defined in the Program Management Plan to be agreed with the Customer as required by the CDRL in Appendix A.

3.2 DOCUMENTATION AND DATA MANAGEMENT

The Contractor shall establish and maintain a centralized documentation system to facilitate reduction in delivered paperwork, and implement a method of configuration management and control which provides ready access of documentation to the resident Customer team. The Contractor shall implement, on the Program, automated processes wherever available as part of the Hughes IT systems subject to the Corporate security guidelines.

The system shall provide to the Customer the same access and up-to-date Program information provided to the Contractor's program staff subject to the Corporate security guidelines.

Full documentation access shall be provided to the Customer resident team up to and including in-orbit commissioning of the last delivered satellite.

After departure of the Customer resident team, the Contractor shall continue to provide reasonable access to all documentation and data which may be needed for in-orbit operations of the spacecraft, including detailed anomaly investigation and recovery.

3.3 PROGRESS AND TECHNICAL MEETINGS

3.3.1 WEEKLY PROGRESS MEETINGS

The resident team shall be invited to the project's regular (weekly) progress and technical meetings. These meetings should follow normal Contractor practices, but allow Customer participation. This shall include subcontractor meetings where applicable, and shall include subcontractor progress or technical status

reviews requested by the Customer. The frequency of progress meetings shall be adjusted as necessary.

3.3.2 QUARTERLY PROGRESS MEETINGS

Progress meetings shall be held by Customer request at approximately quarterly intervals and will consist of plenary sessions, which will afford Customer non- resident staff a periodic review of the complete status of the program. The Quarterly Progress Meeting can be in lieu of any weekly progress meeting and can be combined with major design reviews.

3.4 ACTION ITEM CONTROL

To facilitate closure of action items raised at major design reviews or similar meetings, an action item status list shall be maintained and reviewed at regular intervals in weekly meetings with the objective of ensuring closure dates are achieved.

3.5 PROGRESS REPORTS

A weekly progress report (one or two pages suitable for transmission to the Customer's offices in London) shall be provided to the Customer resident office. This summary shall highlight schedule status and significant issues or achievements in the past week. The frequency of this report will be reviewed and adjusted, as appropriate, through the course of the program.

A detailed monthly progress report shall also be provided to the Customer resident office. The format of the report shall be jointly agreed between the Contractor and Customer and shall be adjusted over the life of the program to appropriately emphasize the evolution of the program from design through manufacture, test, delivery and commissioning.

In preparing these reports, it is intended that maximum use be made of the Contractor's format for internal status reporting to senior management.

3.6 MILESTONE AND INVOICE PAYMENT STATUS AND FORECAST

- The Contractor shall present one copy of the monthly status of invoices and payments relating to the Contract. The status of invoices and payments may be combined in one report, but should contain:
 - milestone identification number and description;
 - nominal milestone due date;
 - milestone amount in US dollars;
 - invoice date and invoice number;
 - amount of approved payment;
 - cumulative payment up to the month of issue of the report;

- a monthly forecast of anticipated milestone accomplishments for a period of one year from the month of issue of the report; and
- the forecast shall include the anticipated completion dates of future milestones, as well as of late milestones, if applicable.

3.7 CUSTOMER RESIDENTS

3.7.1 OFFICE ACCOMMODATIONS AND FACILITIES

The Contractor will provide office space for up to ten Customer residents at the spacecraft contractors facility. This includes furnished walled offices for three senior managers and up to seven individual furnished module offices for other Customer residents. These offices will be co-located in the same facility with the Contractor Program team. On-site open parking will also be provided. The Customer residents will have available a turnaround office for visiting team members, a conference room, fax, reproduction machine, refrigerator, microwave, coffee and documentation storage facilities. The Contractor shall provide access to bulk printing facilities if required. All offices and modules will be wired for PC (personal computer) hookup, connected to the on-site local server and able to transmit over the international network. The on-site senior staff will be connected to the phone intercom system. All phones shall have direct dial long distance calling capability. All facility security services, cleaning and maintenance will be provided by the Contractor. All Customer residents will be covered by the Contractor liability insurance policy. The Customer will provide its own on-site secretarial support.

The Contractor offers to the Customer's residents the same information systems service used by the Contractor, assessed on a pro rata cost basis. This service includes all necessary client (PC) hardware, software, maintenance; and all information system infrastructure capabilities, including communications, server disc storage and back-up and network printing. The information system services provided by the Contractor shall be compliant with the International Traffic in Arms Regulations (ITAR).

If the Customer chooses to purchase their own PCs, the Contractor will connect the PC to the network as long as the purchased hardware and software is compatible with the existing information system infrastructure. The required compatibility will be defined by the Contractor. The Customer will then be responsible for their own PC maintenance, and will be required to upgrade their hardware and software as necessary to maintain compatibility with the Contractor information system infrastructure. The Customer will also be charged for their pro rata costs of the information systems infrastructure.

The Contractor will invoice the Customer monthly for their prior month's long distance calls and information systems and data processing service costs. Payments will be due and payable to the Contractor within 30 days of the invoice date.

The Contractor shall, upon customer request, also provide options for suitable office accommodation and facilities for Customer residents at Major Subcontractors, and at the Contractors GCE facility.

The Contractor shall arrange and provide access passes for the Customer resident team, for the program duration, which enables free access to all relevant areas.

3.7.2 ATTENDANCE AT TECHNICAL REVIEWS AND TESTS

Customer resident representatives shall be afforded the opportunity to participate in regular progress meetings between the Contractor and his subcontractors, as well as other meetings on technical and schedule matters. Customer resident staff or visiting representatives may witness development, qualification and acceptance tests at unit, panel or subsystem level and at system level at the Contractor's and subcontractors' premises; they shall have access to all test results and shall be free to participate in the preparations for tests and the test evaluation. The tests which are of interest to the Customer are essentially those which verify performance requirement and those development tests which are used to demonstrate qualification validity at equipment, panel, subsystem and system level.

3.8 SPACECRAFT SCROLL

A hardware matrix shall be prepared for all spacecraft control items showing designation, quantities, and utilization.

3.9 PROGRAM PLANNING NETWORKS AND SCHEDULE CHARTS

The Contractor shall provide appropriate planning networks, summary and detailed schedule charts to assist in the planning and preparation of critical program events and for progress evaluation.

4. PRODUCT ASSURANCE ACTIVITIES

4.1 GENERAL

The Contractor shall establish and implement a Product Assurance (PA) program in accordance with the requirements defined in Exhibit C for Spacecraft related work and Exhibit G for GCE related work. The Product Assurance Plans describe the tasks, policies, controls and procedures which will be implemented at Contractor, subcontractor and supplier levels to ensure that program objectives are successfully met. These Plans, together with the Statement of Work, identify the principal areas of Customer involvement in the product assurance program.

4.2 QUALIFICATION MATRIX

The Contractor shall prepare a document that summarizes, for each control item, the test requirements, and the manner by which a qualified status compliant with the program requirements is achieved. The report shall provide references to the appropriate build specifications and test data packages. It shall also include information for all equipment already qualified on other programs including evidence of heritage, qualification tests performed, summary test results and a summary comparison with the Contract requirements. The report will be maintained current until the completion of all unit, and subsystem qualification tests. The report shall be updated to reflect the qualification status of hardware designed or upgraded for the Tropo/Radar modification.

4.3 SYSTEMS SAFETY

The Contractor shall demonstrate compliance with the safety requirements of the agencies responsible for the designated launch vehicles by implementing the required design controls and test programs which will be followed throughout the Contract. System safety and hazard analyses and compliance data which demonstrate compliance with the requirements of the applicable launch agency shall be provided in support of each spacecraft. System safety activities, analyses and reviews shall comply with the requirements of Exhibit C Section 7 of the Product Assurance Plan. A specific Launch Site Safety Plan and associated documentation shall be prepared to meet Launch site and range safety requirements and constraints of the launch agency. As needed, system safety plans and documentation shall be updated to reflect design changes due to the Tropo/Radar modification.

4.4 REQUESTS FOR DEVIATION/WAIVER

Requests for Deviation/Waiver shall be promptly submitted to the Customer for approval whenever a departure from requirements is preplanned or whenever a non-conformance to Customer controlled requirements is recommended for acceptance without rectification.

4.5 PRODUCT ASSURANCE DOCUMENTATION

The Contractor shall prepare the Product Assurance documents and analyses which are identified in the Contract Data Requirements List, Appendix-A of this SOW, and detailed in the Product Assurance Plan.

5. DESIGN, MANUFACTURING AND TEST REVIEWS

5.1 GENERAL

The Contractor shall conduct or support a series of reviews to be performed during the program concerning the status of the development of the spacecraft hardware, software, ground support equipment and services; the reviews are occasions where the responsible parties for each item under review formally concur about its status.

The following reviews shall be conducted by the Contractor.

Launch			Manufacturing Test				
Test Review Board (TRB)	Pre Ship Review (PSR)	Readiness Review (LRR)	Preliminary Design Review (PDR)	Critical Design Review (CDR)	Final Design Review (FDR)	Manufacturing Readiness Review (MRR)	Readiness Review (TRR)

SPACECRAFT

[X]2	- Equipment (Unit) Level	[X]	[X]			[X] 1,2	[X] 2
[X]2	- Bus Subsystem level	[X]	[X]				[X] 2
[X]3	- Flight Software	[X]	[X]				[X] 3
[X]	- Communications Payload	[X]	[X]				
[X]	- Spacecraft System	[X]	[X]		[X]		

TROPO/RADAR MODIFICATION

[X]2	- Equipment (Unit) Level	[X]4	[X]4			[X] 1,2	[X] 2
[X]	- Communications Payload	[X]4	[X]4				[X] 2
[X]	- Spacecraft System	[X]4	[X]4				[X] 2

GCE SYSTEM

[X]	- Equipment	[X]	[X]				
[X]	- Subsystem	[X]	[X]				
[X]	- System	[X]	[X]				

PCS SYSTEM

[X]2	- System	[X]	[X]				
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- 1 First article only
- 2 Informal review except for key equipment
- 3 Based on Software Qualification Test (SQT)
- 4 Delta review only for tropo/radar impacts

5.1.1 CONDUCT OF REVIEWS

Equipment and subsystem level design reviews may be "informal" using working documentation in place of presentation documentation or other material

specifically prepared for the review. Equipment reviews may be merged with subsystem reviews, particularly for "heritage" equipment. Similarly, bus subsystem reviews may be merged with the spacecraft system reviews.

In general, the Preliminary Design Reviews are reviews to determine the flow-down of specification requirements, hence, the System Review should precede the Subsystem and Equipment Reviews. The Critical Design Reviews are intended to verify designs meet requirements, hence, the Equipment and Subsystem Reviews should precede the Communications Payload and Spacecraft System Reviews.

The Communications Payload and Spacecraft System Reviews represent major program milestones and hence, require a more formal presentation approach. These reviews will be arranged by the Contractor, co-chaired by the Contractor and Customer representatives and the outcome of the review will be in the form of a summary report prepared by the Customer and agreed by the Contractor.

5.1.2 REVIEW DATA PACKAGES

The typical documentation required to support design reviews is listed in the CDRL in Appendix-A. A specific list of analyses and supporting documentation shall be jointly agreed 1 month in advance of each review. For equipment and subsystem and software reviews, data packages shall be delivered two (2) weeks prior to the review. For the Communications Payload, Spacecraft System and GCE Reviews, data packages shall be delivered four (4) weeks prior to the review. The Customer and his consultants will review the data packages and prepare action items to be presented prior to or at the review.

5.1.3 COMPLETION OF A REVIEW

A review shall be considered complete when an Action Item Closure Plan is agreed between the Contractor and the Customer. In very exceptional circumstances, a review may be sufficiently incomplete to warrant, in the opinion of the Customer, a reconvening of the review at a later date. The review shall only be considered complete after the follow up review is successfully held and completed with an Action Item Closure Plan.

At the completion of each critical design review, the appropriate design shall be frozen and placed under formal change control.

5.2 SPACECRAFT SYSTEM, COMMUNICATIONS PAYLOAD, PCS, AND GCE DESIGN REVIEWS

5.2.1 GENERAL

The Contractor shall be responsible for arranging and conducting preliminary and critical design reviews at these levels.

Except for the System Preliminary Design Review, the Contractor shall not hold a system design review until the corresponding design reviews for all subsystems have been completed.

5.2.2 PRELIMINARY DESIGN REVIEWS

The purpose of Preliminary Design Reviews (PDR) is to allow the Contractor to satisfy the Customer formally on the baseline concept, configuration and design of the spacecraft. They shall include a Specification Requirements Review where the Contractor's system level specifications shall be reviewed by the Customer; subsequent changes to these specifications shall be subject to Customer approval, in those cases where Contract requirements are affected.

PDRs shall establish the compatibility of external and internal interfaces and the compliance of the design with Contract requirements. The Spacecraft System PDR shall establish the compatibility of the spacecraft with the launch vehicles, as specified in Exhibit B, and with the GCE System.

All system level budgets shall be reviewed at PDRs. The selected design concept and its feasibility shall be presented, together with the trade-off analyses performed in the design selection process. Partitioning of system requirements into subsystem and equipment requirements must be provided at the reviews. Completion of these PDRs shall establish the initial design baseline and permits the detailed design to proceed with minimum risk of major changes being required later.

5.2.3 CRITICAL DESIGN REVIEWS

At Critical Design Reviews (CDR), the Contractor shall formally satisfy the Customer on the final design of the spacecraft when the detail design is complete. These CDRs shall verify the compatibility of subsystem/system interfaces and the compliance of the final spacecraft design with the design and performance established at the equivalent PDRs, based on available engineering model tests, design studies and analyses. The reviews further establish the adequacy of plans and preparations for integration, test and operation of the system.

5.2.4 SYSTEM FINAL DESIGN REVIEW

At the System Final Design Review (FDR), the Contractor shall formally satisfy the Customer on the readiness of the Protoflight Model Spacecraft for system level testing. The System FDR shall verify conformance of the spacecraft system to Contract requirements, based on design studies and analyses, and based on the results of all qualification or protoflight tests at equipment and subsystem levels, including failure reports and their analyses. The System FDR shall establish the completeness and adequacy of the flight model acceptance test plan, procedures and operations documentation. Any differences between the "as-built" status of the spacecraft at FDR and the "as-designed" status

declared at the CDR shall be explained and justified. All analyses shall be updated to reflect the "as-built" design. The system FDR shall precede protoflight testing of the first spacecraft.

5.2.5 PCS SYSTEM REQUIREMENT REVIEW

The purpose of the PCS System Requirement Review (SRR) is to review the final requirements for the Payload Control System with the Customer. The SRR will address the technical specifications, architecture, and external interfaces for the PCS. The focus of the SRR will be to review the functional requirements and interfaces and not the detailed design of the PCS. At the conclusion of the SRR, the PCS requirements and functional requirements for external interfaces shall be considered final. The SRR shall be conducted at the Hughes Facilities in El Segundo, California.

5.3 SUBSYSTEM LEVEL DESIGN REVIEWS

5.3.1 GENERAL

The Contractor shall be responsible for arranging and conducting Preliminary and Critical Design Reviews at subsystem level. Each design review held for a particular subsystem shall represent the completion of a stage in the overall development and qualification process of that subsystem and shall act as decision milestone before proceeding to the next phase. The Contractor shall not hold a critical design review for a subsystem until its preliminary design review has been completed and all actions have been closed.

With the exception of the PDR, subsystem design review shall not be considered completed until all equipment in that subsystem have completed their corresponding design review. This exception shall also apply to equipment level reviews of subcontractor "plug compatible" designs to be used in later flight spacecraft.

5.3.2 SUBSYSTEM PRELIMINARY DESIGN REVIEWS

At Subsystem Preliminary Design Reviews (PDR), the Contractor shall satisfy the Customer on the baseline concept, configuration, specification and design of that item. At the PDR, all subsystem level specifications shall be reviewed by the Customer and placed under formal configuration control. The credibility of the proposed design concept and its ability to satisfy the requirements placed on it shall also be formally reviewed. Completion of the PDR shall permit the detailed design to proceed with a minimum risk of major changes being required later.

5.3.3 SUBSYSTEM CRITICAL DESIGN REVIEWS

At Subsystem Critical Design Reviews (CDR), the Contractor shall satisfy the Customer on the adequacy of the subsystem design and performance based on

available engineering model tests, design studies and analyses, and on the adequacy of the subsystems qualification and acceptance test plans. Unless otherwise agreed by the Customer, the qualification tests of any subsystem shall not start before completion of the corresponding CDR.

5.4 EQUIPMENT LEVEL DESIGN REVIEWS

5.4.1 GENERAL

The Contractor shall be responsible for arranging and conducting preliminary and critical design reviews at equipment level. Design reviews at equipment level may be conducted as working reviews in which the Contractor's staff and Customer's representatives together with the equipment manufacturer's staff work jointly on the review material until it is in a satisfactory state and it becomes the formally accepted review package.

5.4.2 EQUIPMENT PRELIMINARY DESIGN REVIEWS

The purpose of an Equipment Preliminary Design Reviews (PDR) shall be to allow the supplier responsible for the item under review formally to satisfy the Customer on the baseline concept, configuration, specification and design of that item. The PDR shall include a Specifications Requirement Review, at which specifications for the equipment and in particular the "flow-down" of higher level requirements shall be reviewed. The credibility of the proposed design concept and its ability to satisfy the requirements placed on it shall also be reviewed. Equipment PDR's shall not be held until the corresponding Subsystem PDR has been completed. Completion of the PDR shall permit the detailed design to proceed with a minimum risk of major changes being required later.

5.4.3 EQUIPMENT CRITICAL DESIGN REVIEWS

At Equipment Critical Design Reviews (CDR) the supplier shall satisfy the Customer on the adequacy of the item's design and performance based on engineering model tests, design studies and analyses and on the item's qualification and acceptance test plans. The Contractor shall not hold a Critical Design Review for equipment until its Preliminary Design Review has been completed, and all actions have been closed. Unless otherwise agreed by the Customer, the assembly of flight equipment shall not start before completion of the corresponding CDR.

5.5 FLIGHT SOFTWARE REVIEWS

5.5.1 GENERAL

The Flight Software Reviews shall conform with the requirements of the Software Development Plan (SDP) and shall be agreed with the Customer.

The overall review criteria which apply to any subsystem as defined in this document shall apply to all software reviews, in addition to the specific requirements defined in the MIL-STD documents.

At the Flight Software Reviews, the Contractor shall demonstrate that all requirements, including development, testing and documentation requirements, have been met for all parts of the software, including third party software (e.g., operating systems) and software already developed by the Contractor on other programs.

5.5.2 FLIGHT SOFTWARE PRELIMINARY DESIGN REVIEW

The purpose of the Flight Software Preliminary Design Reviews (PDR) shall be to allow the Contractor to satisfy the Customer on the baseline concept, configuration, specification and design of the flight software

The PDR shall include a Specifications Requirement Review, at which specifications for the Flight Software and in particular the "flow-down" of higher level requirements shall be reviewed in detail.

The credibility of the proposed design concept and its ability to satisfy the requirements placed on it shall also be formally reviewed.

Completion of the PDR shall permit the detailed design of the Flight Software to proceed with a minimum risk of major changes being required later.

5.5.3 FLIGHT SOFTWARE CRITICAL DESIGN REVIEW

At the Flight Software Critical Design Reviews (CDR) the Contractor shall satisfy the Customer on the adequacy of the software design and performance based on development tests, design studies and analyses.

At the Flight Software CDR the Contractor shall formally satisfy the Prime Contractor and Customer on the adequacy of the item's qualification and acceptance test plans.

The Contractor shall not hold a Critical Design Review for the Flight Software until its Preliminary Design Review has been completed and all actions have been closed. The CDR shall precede release of requirements for code generation.

At the completion of the Flight Software CDR, the baseline design shall be frozen and the data package updated to reflect all agreed changes; subsequent changes to the design and/or documents included in the CDR data package shall be subject to the Customer approval.

For the purpose of configuration management flight software design reviews may be held on a computer software unit (CSU) basis.

5.5.4 SOFTWARE CODE REVIEWS

At the Software Code Reviews, the Contractor shall "walk through" the code in order to allow the Customer to ascertain that the code as designed will meet all the specified requirements.

5.5.5 FLIGHT PROM BURN-IN

Burn-in of software into flight PROM's shall not proceed without Customer approval. Sufficient flight software qualification testing (FQT), shall be completed prior to burn-in to minimize the risk of flight RAM patches being required.

5.6 MANUFACTURING READINESS REVIEWS

A working level Manufacturing Readiness Review (MRR) shall be held for units to be mutually agreed with the Customer. These shall normally only be held for first article builds.

The MRR shall address the following:

- confirmation that all development work has been completed;
- confirmation that all parts, materials and processes have been approved;
- readiness of formally released drawing sets including workmanship standards and procedures;
- confirmation that all manufacturing facilities have been identified and approved; and
- acceptibility of manufacturing flow documentation, which shall show all activities in their proper call-up procedures and processes as required and shall identify critical operations and all mandatory and key inspection points in which the customer may elect to participate, on a non interference basis.
- The Contractor shall ensure that all subsequent changes to the manufacturing documentation are reviewed and controlled in compliance with the Contractor's documentation control procedure described in the Program Management Plan.

5.7 TEST REVIEWS

5.7.1 GENERAL

In general, working level test reviews shall be organized by the Contractor before and after each test. Exceptions may be agreed with the Customer for large volume equipments, where alternative review approaches may be substituted.

It is intended that these reviews be conducted in the normal course of work, making use of the Contractor's standard processes, procedures, and data display to the maximum extent practicable.

5.7.2 TEST READINESS REVIEWS

The purpose of the Test Readiness Reviews is to assess the readiness of the spacecraft panel, subsystem or equipment to be tested, as well as the readiness of the test environment to support the testing. This applies to acceptance, protoflight or qualification tests. For the protoflight spacecraft, the TRR shall not be held before the system Final Design Review.

5.7.3 TEST REVIEW BOARD

A more formal Test Review Board (TRB) shall convene following major test phases of key equipment, panel, subsystem and system level testing for the purpose of examining the adequacy of the test results, and to define the actions required in response to any discrepancies encountered during the test.

5.8 PRE-SHIPMENT REVIEW

Each spacecraft shall undergo a pre-shipment review (PSR) in accordance with Article 8 of the Contract. A pre-shipment review shall also be held for the GCE following FAT.

An End Item Data Package (EIDP) consisting of the following data shall be provided for the review:

- "As-built" configuration
- Reconciliation of "as-built" vs "as designed" configuration
- Summary of "open items"
- Copies of Non-conformance Reports, Failure Reports, Waivers and deviations available on request
- Mate/Demate logs and Installation/Removal logs available for review
- Test data compliance matrix

5.9 LAUNCH READINESS REVIEW

Prior to integration of the spacecraft to the Launch Vehicle, a Launch Readiness Review (LRR) shall be held in accordance with Article 8 of the Contract. The LRR shall also address the readiness of the GCE system to support launch and subsequent operations.

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
 MANAGEMENT DOCUMENTS

NO OF NO. COPIES	ITEM COMMENTS	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA
M1 10	Program Management Plan Including organizational charts (PMP)	At EDC, and whenever updated	Approved at EDC
and IPT structure			
M2 10	Spares Plan Update to PMP	System PDR	Approval
M3 10	Shipping, Transportation Included in PMP and Storage Plan	System PDR	Approval
M4 10	Review Action Item	Within one week of review	Approval
M5 10	Closure Plan Action Item Responses	meeting In accordance with action	Review or approval, as
M6 10	Weekly Progress Report	due date Weekly	applicable Information
M7 15	Monthly Program Progress Including: Reports	Monthly, each progress report, or on request	Information
	Action Item Status List		
	Summary Program Schedule		
	Critical Equipment Schedule		
	Analysis		
	Milestone and Invoice Payment		
	Status		
	Milestone Payment Forecast		
M8 3	Contract Change Notice (CCN)	As required, or within 30 days of receipt of a Change Request (CR)	Approval
M9 10	Spacecraft Scroll Included in PMP	At EDC	Approved at EDC
M10	Training Plan	PDR and whenever updated	Approval
M11 25	Mission Operations Plan	Preliminary at EDC and whenever updated	Approved at CDR
M12 --	Detailed Program Schedules	Upon request	Information
M13 --	System Interface Schedules Includes Customer/Contractor key	Upon request	Information

interface schedule milestone

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
MANAGEMENT DOCUMENTS (CONTD.)

NO OF NO. COPIES	ITEM COMMENTS	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA
M14 10	Communication Network Support Plan	At PDR	Approval
M15 10	Life Time Support Plan	At EDC, and whenever updated	Review

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
ENGINEERING DOCUMENTS

NO. COMMENTS	ITEM REFERENCE	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO OF COPIES
E1	Subsystem Specifications	Appropriate design review data packages and whenever updated	Review	10
E2	Equipment Specifications	Appropriate design review data packages and whenever updated	Review	10
E3	Design Review Data Package	Appropriate design review data packages and whenever updated	Review	10
E4	Stress, Fracture and Dynamic Analysis	Appropriate design review data packages and whenever updated	Review	10
E5	Antenna Pointing Error Analysis	Appropriate design review data packages and whenever updated	Review	10
E6	Antenna Pointing Error Budget Summary in MPR	Appropriate design review data packages and whenever updated	Review	10
E7	Propellant Budget Analysis Summary in MPR	Appropriate design review data packages and whenever updated	Review	10
E8	Mass Properties Analysis Summary in MPR	Appropriate design review data packages and whenever updated	Review	10
E9	DC Power Budget Analysis Summary in MPR	Appropriate design review data packages and whenever updated	Review	10
E10	Mission Analysis	Appropriate design review data packages and whenever updated	Review	10

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
ENGINEERING DOCUMENTS (CONTD.)

NO. COMMENTS	ITEM REFERENCE	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO OF COPIES
E11	Electromagnetic Compatibility (EMC) Analyses	Appropriate design review data packages and whenever updated	Review	10
E12	Radiation Effect Analyses	Appropriate design review data packages and whenever updated	Review	10
E13	Spacecraft Charging Analysis	Appropriate design review data packages and whenever updated	Review	10
E14	Spacecraft Contamination Analysis	Appropriate design review data packages and whenever updated	Review	10
E15	Spacecraft Venting Analysis	Appropriate design review data packages and whenever updated	Review	10
E16	Communications Subsystem Analyses	Appropriate design review data packages and whenever updated	Review	10
E17	Telemetry, Telecommand and Ranging Subsystem Analyses	Appropriate design review data packages and whenever updated	Review	10
E18	Thermal Control Subsystem Analyses	Appropriate design review data packages and whenever updated	Review	10
E19	Structure Subsystem Analysis	Appropriate design review data packages and whenever updated	Review	10
E20	Electrical Power Subsystem Analysis	Appropriate design review data packages and whenever updated	Review	10

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
ENGINEERING DOCUMENTS (CONTD.)

NO. COMMENTS	ITEM REFERENCE	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO OF COPIES
E21	Attitude Determination & Control Subsystem Analysis	Appropriate design review data packages and whenever updated	Review	10
E22	Propulsion Subsystem Analysis	Appropriate design review data packages and whenever updated	Review	10
E23	Mechanisms Analysis	Appropriate design review data packages and whenever updated	Review	10
E24	EGSE and MGSE Analyses	Appropriate design review data packages and whenever updated	Review	10
E25	Worst Case Analysis	Appropriate design review data packages and whenever updated	Review	10
E26	System Summary Spacecraft including GCE interfaces	Preliminary at EDC, System Review design reviews and whenever updated	Review	25
E27	Recommended Operating Including mission and Procedures on-station operations	Outline at PDR, first issue at CDR, final at FDR	Review	25
E28a	Spacecraft-Ground Interface Control Document: TT&C Interfaces	Appropriate design review data packages and whenever updated	Draft at EDC + 2 mos Preliminary at PDR Final at CDR	25
E28b	Spacecraft-Ground Interface Control Document: Payload Control Interfaces	Appropriate design review data packages and whenever updated	Draft at EDC + 2 mos Preliminary at PDR Final at CDR	25

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
ENGINEERING DOCUMENTS (CONTD.)

NO. COMMENTS	ITEM REFERENCE	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO OF COPIES
E29	Fracture Control Plan	Appropriate design review data packages and whenever updated	Review	5
E30	Spacecraft Interface Parfitt type diagrams Schematics	Appropriate design review data packages and whenever updated	Review	25
E31	Detailed unit level design description	Appropriate design review data packages and whenever updated	Review	10
E32	Training Course for Spacecraft Operations Personnel	1 month before course	Review	25
E33	EM Payload O&M Manual	At EM payload delivery	Review	3
E34	EM Payload ICD	At spacecraft PDR	Approval	10
E35	Spacecraft On-station Including associated and Mission Procedures automated GCE based	Draft at FDR First issue at PSR Final at LRR	Review	15
E36	Operating Instructions Including nominal and contingency (OIs)	First issue at SAT Final at S/C handover	Review	15
E37	Operating Procedures Including nominal and contingency (PROCs)	First issue at SAT Final at S/C handover	Review	15
E38	Satellite Data Book for each spacecraft	First issue at PSR Final at S/C handover	Review	15
E39	Satellite Telemetry, Command Lists	Draft at PDR First issue at CDR Updates as needed	Review	15
E40	Design Verification Matrix	Draft at System PDR First issue at System CDR	Review	10

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
SPACECRAFT TEST DOCUMENTS

NO. COMMENTS	ITEM REFERENCE	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO OF COPIES
T1	Equipment and Subsystem Test Procedures	2 weeks before start of testing	Review	2
T2	Equipment Test Customer will have Data/Reports access to all testing progress and real time test results	At working reviews	Review	2
T3	Panel and Subsystem Test Customer will have Data/Reports access to all testing progress and real time test results	At test review boards	Review	5
T4	Spacecraft Test Procedures	Preliminary 30 days before CDR Final 30 days before FDR	Review	
T5	Spacecraft Test Data/Reports	At test review boards	Review	5
T6	EGSE/MGSE Design Descriptions	Appropriate design review data packages and whenever updated	Review	5
T7	Launch Operation and Deployment and IOT Report	Detailed report, within 1 month Summary report within 1 week	Review	5
T8	System/Bus IOT Test Procedures	First issue, 1 month before rehearsals Final, 1 month before launch	Review Review	5
T9	Spacecraft Payload IOT Procedures Including associated applications software	Initial at IOT system installation Update at launch - 1 month Final at completion of IOT	Review	--

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
- GCE SYSTEM SPECIFIC DOCUMENTS

NO. NO OF COPIES	ITEM COMMENTS	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA
G1 10	Facilities Requirements Document*	N/A	N/A
G2 10	TT&C Ground to NMC	N/A	N/A
G3 10	Interface Control Document (ICD)* TT&C Ground to SAN	N/A	N/A
G4 10	Interface Control Document* Ground System Design Final at CDR Specification	PDR, CDR	Approval
G5 10	In-Orbit Test Subsystem Design Specification	PDR, CDR	Approval
G6 10	PDR and CDR Data Packages	PDR, CDR	Review
G7 10	PDR and CDR Minutes	PDR, CDR	Review
G8 10	FAT and SAT Test Procedures	1 month before test	Review
G9 10	FAT and SAT Test Reports	Summary report, 1 week after test	Review
G10 10	Site Installation Plan	Detailed report, 1 month after test 2 months before installation	Approval
G11 10	Interconnect Drawings	PDR, CDR, FAT	Review
G12 10	As-Built Drawings	FAT	Review
G13 10	Ground Software Manuals Outline at CDR	CDR, SAT	Review
G14 10	COTS Software Vendor	CDR, FAT	Review
G15 10	Supplied Manuals Ground Equipment Vendor	CDR, FAT	Review
G16 10	Supplied Manuals Hughes Ground Equipment Outline at CDR O&M Manuals	CDR, SAT	Review

* No longer a Contract Deliverable Document (Customer has assumed responsibility for these Documents)

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
GCE SYSTEM SPECIFIC DOCUMENTS (CONTD.)

OF NO. COPIES	ITEM COMMENTS	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO
G17 10	System O&M Manuals Outline at CDR	CDR, SAT	Review	
G18 25	Ground System Training Includes all equipment Course	1 month before course	Review	
	hardware and software			
G19 10	Recommend GCE Spares List	PDR	Review	
G20 10	Operations Concept	PDR	Information	
G21 5	DSS Test Plan Final at CDR	Draft PDR	Approval	
G22 5	IOT Subsystem Test Plan Final at CDR	Draft PDR	Approval	

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
PRODUCT ASSURANCE

NO. COMMENTS	ITEM REFERENCE	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO OF COPIES
P1	Product Assurance Plan Basic document approved	By CCN, as required	Approval	10
	at EDC			
P2	Audit Results Available on request	Upon request	Information	1
P3	Subcontractor Resubmit as revised	30 days EDC	Review	2
	Requirements Matrix			
P4	Subtier PA Plans Provide to on-site	As received	Review	1
	Customer Office			
P5	Failure Status Included in progress	Monthly	Information	--
	reports			
P6	PA Status Reports Included in progress	Monthly	Information	--
	reports			
P7	Key Inspection Points Provide to on-site	At MRR	Review	1
	Customer Office			
P8	Non-conformance Reports Provide to on-site	As issued	Review	1
	Customer Office			
P9	Software Quality Plan	60 days EDC	Approval	10
P10	Reliability Analysis Include in design review	30 days before design review	Review	10
	Package			
P11	Failure Rate Data Customer concurrence	30 days prior to design review	Review	1
P12	Parts Derating Analysis Include in design review	30 days before CDR/FDR	Review	10
	Package			
P13	Parts Derating Exceptions Provide to on-site	As issued to PMPCB	Approval	1
	Customer Office			
P14	Derating Exceptions List Include in design review	30 days prior to CDR/FDR	Review	10
	Package			
P15	FMECA Include in design review	30 days prior to design review	Review	10
	Package			

P16 Single Point Failure List 30 days prior to design
Include in design review

Approval

10

Package

review

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
PRODUCT ASSURANCE (CONTD.)

NO. COMMENTS	ITEM REFERENCE	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO OF COPIES
P17	Wearout Analysis Include in design review	30 days prior to design review	Review	10
Package				
P18	Critical Items List Include in design review	30 days prior to design review	Review	10
Package				
P19	Failure Notification E-Mail or hard copy to on-site Customer Office	Within 24 hours of reported failure	Information	1
P20	Failure Reports Provide to on-site Customer Office	As issued; within 7 days of notification	Review	1
P21	Failure Analysis Reports Provide to on-site Customer Office	As issued; within 7 days completion	Review	2
P22	Failure Review Board Provide to on-site Minutes Customer Office	As issued	Information	1
P23	Authorized Parts Lists Provide to on-site Customer Office	As issued	Review	5
P24	Summary Parts Lists Available for design review Customer Office	As issued	Information	1
P25	Authorized Materials & Provide to on-site Processes List Customer Office	As issued	Review	5
P26	Parts & Materials Concurrence at PMPCB Approval Requests Customer Office	As issued	Review	1
P27	System Safety Program Provide as revised Tasks Customer Office	30 days prior to PDR	Information	5
P28	System Safety Compliance Data and Hazard Analysis Customer Office	30 days prior to Safety Reviews	Review	5
P29	Launch Site Safety Plan Customer Office	6 months prior to launch	Review	5
P30	Qualification Status Resubmit as revised Reports Customer Office	Draft at PDR	Review	10
P31	Flight Hardware IT Contains hardware summary Delivery Notices data	As hardware is delivered	Information	10

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
PRODUCT ASSURANCE (CONTD.)

NO. COMMENTS	ITEM REFERENCE	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA	NO OF COPIES
P32	Requests for Deviation/Waiver	As issued	Approval	2
P33	Eng Change Notices Review at program level CRB	As issued	Information	1
P34	Specification Tree	As issued	Information	5

DRL Notes 1) The number of copies to be supplied may be reduced if electronic document transfers are used.

APPENDIX A: CONTRACT DOCUMENTATION REQUIREMENT LIST (CDRL)
PCS SYSTEM SPECIFIC DOCUMENTS

NO. NO OF COPIES	ITEM COMMENTS	SUBMISSION REQUIREMENT	SUBMISSION CRITERIA
PCS 1 10	PDR and CDR Data Packages	PDR, CDR	Review
PCS 2 10	PDR and CDR Minutes	PDR, CDR	Review
PCS 3 10	Detailed PCS Equipment Scroll	CDR	Review
PCS 4 10	Interconnect Drawings	Preliminary: CDR	Review
PCS 5 10	Recommend PCS Spares List	Final: FAT CDR	Information
PCS 6 10	PCS Test Plan	CDR	Review
PCS 7 10	FAT and SAT Test Procedures	1 month before test	Review
PCS 8 10	FAT and SAT Test Reports	Summary report, 1 week after test Detailed report, 1 month after test	Review
PCS 9 10	COTS Software Vendor Supplied Manuals	SAT	Information
PCS 10 10	Ground Equipment vendor and/or O&M Manuals	Preliminary: SAT	Information
PCS 11 10	PCS User Manual	Final: SAT + 40 WD Preliminary: SAT	Information
PCS 12 20	PCS Training Materials	Final: SAT + 40 WD At training class	Information

Without limiting the foregoing, the Parties recognize that no such rights as are owned or created by a customer for the navigation payload are intended to be included under this Article 20.