

***Defense Information Systems Network
(DISN)
Satellite Transmission Services
Global (DSTS-G)***

Performance Work Statement



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Revision 7

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PERFORMANCE WORK STATEMENT

DEFENSE INFORMATION SYSTEM NETWORK (DISN) SATELLITE TRANSMISSION SERVICES – GLOBAL (DSTS-G)

1.0 INTRODUCTION

The Commercial Satellite Communications Initiative (CSCI) was established in response to Congressional direction to provide sustainable, cost effective commercial satellite communications (SATCOM) services to Department of Defense (DoD) users and to augment military satellite communications (MILSATCOM) with responsive surge capacity. Contracts resulting from this solicitation will be part of the CSCI program.

1.1 SCOPE

This acquisition provides a contractual vehicle for the DoD, Federal Agencies, and other users authorized by DoD, to obtain global fixed satellite service (FSS) bandwidth and related business and enterprise satellite-based services and applications, including but not limited to satellite bandwidth, bandwidth and service management, leased earth terminal services, leased earth terminal operation and maintenance services, commercial teleport services, all necessary U.S. and foreign bandwidth and terminal licenses and approvals, optional terrestrial interconnection services, optional host nation agreement negotiating support and optional systems engineering support to complement the current CSCI managed transponder contract. In addition, this acquisition provides a contractual vehicle for the Government to optionally acquire terminals on an ownership basis. Services will support fixed, transportable and mobile user terminals. Attachment A (Initial Task Order) defines the initial services to be procured under this contract: commercial satellite services to meet the requirements of United States Special Operations Command (USSOCOM). Additional specific services to be procured under this contract will be defined in subsequent Task Orders.

1.2 OBJECTIVES

The objectives of this procurement are to obtain the following:

- a. Domestic and international commercial fixed satellite services (FSS), as defined by the International Telecommunications Union (ITU), on an Indefinite Delivery, Indefinite Quantity (IDIQ) basis;
- b. Services of all available commercial satellites for use with terminals acquired under this and other contracts from a single or multiple contractor(s) acting as a bandwidth broker in the following order of priority:

1. Satellites compliant with the National Telecommunications and Information Systems Security Policy No. 1 (NTISSP-1)¹;
 2. Other available satellites when NTISSP-1-compliant satellites are not available.
- c. Commercial terminal and teleport services, and when necessary associated commercial terrestrial services, for use with the bandwidth services procured under this and other Government contracts;
 - d. Commercial satellite-based business and enterprise services and applications, such as business video, telemedicine and payroll and logistics transactions, for use with services procured under this and other Government bandwidth contracts;
 - e. Specialized support services to plan, engineer, implement, manage, and report on satellite services obtained under this contract on a Task Order basis; and
 - f. Associated host nation approvals, including necessary landing rights, terminal operating and connection approvals and licenses.

2.0 APPLICABLE DOCUMENTS

2.1 GOVERNMENT DOCUMENTS

1. *National Telecommunications and Information Systems Security Policy No. 1 (NTISSP-1)*, 17 June 1985.
2. *Occupational Safety and Health Standards*, Title 29 Code of Federal Regulations, part 1910, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.
3. *DoD Joint Technical Architecture*, Version 3.0, 15 November 1999.
4. DoD Instruction 5200.40, *Defense Information Technology Security Certification and Accreditation Process (DITSCAP)*, 30 December 1997.
5. DII COE, *Integration and Runtime Specification (I&RTS)*, Version 4.0, 25 October 1999
6. DII COE, *User Interface Specifications*, Version 4.0, October 1999.
7. *DISN Long Haul Block Security Classification Guide*, Interim Guidance until Coordination Process Completed, 11 January 2000.
8. *DISN Long Haul Block SSAA*, current draft, 4 December 1999.
9. DISA Circular 310-55-1, Status Reporting for the Defense Information Infrastructure (DII), 3 October 1989
10. DISA Circular 310-70-1, Defense Information Infrastructure (DII) Technical Control, 25 June 1998
11. DISA Circular 310-130-4, Defense Users Guide to the Telecommunications Service Priority (TSP) System, September 1997.

¹ The *National Telecommunications and Information Systems Security Policy No. 1* (NTISSP-1) defines the requirements for U.S. Government use of satellite resources; most U.S. Domestic satellites (Galaxy, GE Americom, Loral/Telstar) and most international satellites provided by Columbia Communications (now part of GE Americom), INMARSAT, INTELSAT, New Skies, Loral/Orion (now part of Loral/Telstar), and PanAmSat comply with the requirements of NTISSP-1.

12. National Communication System (NCS), Natural and Technological Disaster Threats to National Security and Emergency Preparedness (NS/EP) Telecommunications, August 1996.
13. NIPRNET Customer Connection Process, current draft, 01 June 2000.

2.2 NON-GOVERNMENT DOCUMENTS

1. ANSI C95.1: *Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.*
2. EIA RS-422B, *Electrical Characteristics of Balanced Voltage Digital Interface Circuits*, May 1994.
3. IESS No. 207: *Standards A, B, F and H – Antenna and Wideband RF Performance Characteristics of Earth Stations Operating in the 6 and 4 GHz Frequency Bands*, INTELSAT, 30 November 1998.
4. IESS No. 208: *Standards C, E and K – Antenna and Wideband RF Performance Characteristics of Earth Stations Operating in the 14/11 and/or 14/12 GHz Frequency Bands*, INTELSAT, 30 November 1998.
5. IESS No. 308: *Performance Characteristics for Intermediate Data Rates Digital Carriers Using Convolutional Encoding/Viterbi Decoding and QPSK Modulation (QPSK/IDR)*, INTELSAT, 30 November 1998.
6. IESS No. 309: *Performance Characteristics for INTELSAT Business Services (IBS)*, INTELSAT, 30 November 1998.
7. IESS No. 401: *Performance Requirements for Intermodulation Products Transmitted from INTELSAT Earth Stations (6 and 14 GHz Frequency Bands)*, INTELSAT, 30 November 1998.
8. IESS No. 411: *Requirements for Earth Stations Accessing INTELSAT V and VA Satellites Having Higher than Nominal Orbital Inclination (Operating in a Contingency Mode or with Satellites at Designated Inclined Orbit Locations)*, INTELSAT, 30 November 1998.
9. IESS No. 601: *Standard G – Performance Characteristics for Earth Stations Accessing the INTELSAT Space Segment for International and Domestic Services not Covered by Other Earth Station Standards*, INTELSAT, 30 November 1998.
10. ITU-T G.703, *Physical/Electrical Characteristics of Hierarchical Digital Interfaces*, October 1998.
11. ITU-T G.823, *The Control of Jitter and Wander within Digital Networks which are based on the 2048 kbit/s Hierarchy*, March 1993.
12. ITU-T G.824, *The Control of Jitter and Wander within Digital Networks which are based on the 1544 kbit/s Hierarchy*, March 1993.
13. ITU-T V.10, *Electrical Characteristics for Unbalanced Double-Current Interchange Circuits Operating at Data Signaling Rates Nominally up to 100 kbit/s*, March 1993.
14. ITU-T V.11, *Electrical Characteristics of Balanced Double Current Interchange Circuits Operating at Signaling Rates up to 10 Mbps*, October 1996.
15. NFPA 70B: *Recommended Practice for Electrical Equipment Maintenance*, National Fire Protection Association (NFPA), 1998 edition.

16. SSOG No. 200: *INTELSAT Satellite System Operations Guide Earth Station Registration*, INTELSAT, 6 October 1998.
17. SSOG No. 600: *Transmission Plan Approval*, INTELSAT, 6 October 1998.

3.0 REQUIREMENTS

Unless otherwise stated, the Contractor is solely responsible for all requirements stated herein. This contract is subject to the Communications Act of 1934 as amended.

3.1 PREREQUISITES

The Contractor shall provide documentation demonstrating their contractual capability to provide the services of all NTISSP-1-compliant satellites.

3.2 TRANSPONDED BANDWIDTH SATELLITE SERVICES

The Contractor shall provide transponded satellite bandwidth services as specified below. Transponded satellite service is defined as satellite-based reception, frequency translation and re-transmission of a user signal.

3.2.1 Command Link Protection

The first priority is that transponded satellite services shall meet the NTISSP-1 requirement to use only satellites with National Security Agency (NSA)-approved protected satellite command uplinks. The Contractor shall verify compliance in its response to each Task Order. Where the Contractor certifies that NTISSP-1-compliant service satellite capacity is not available or appropriate for the Task Order, the Contractor shall propose the provision of services, subject to the Government's approval, of non-compliant satellites in the following order:

1. Other satellites owned and operated by companies subject to the Communications Act of 1934, as amended;
2. Satellites owned and operated by U.S. Allies (members of NATO, Australia, New Zealand, Japan, Taiwan, and South Korea) or a consortium of U.S. Allies (such as EUTELSAT);
3. Satellites owned and operated by other countries.

Services provided on non-NTISPP-1 compliant satellites shall be re-evaluated at each service renewal by the Contractor to determine the availability and cost of a NTISSP-1 compliant solution and by the Government to determine if a shift to NTISSP-1 service is warranted.

3.2.2 Coverage

The Contractor shall provide coverage that in aggregate covers the earth's surface between 65° North and 65° South, over ocean as well as land, within the general service regions specified Section B of the solicitation. Additional service regions may be proposed to meet specific Task Orders. U.S. Domestic service includes all 50 states, the District of Columbia, Puerto Rico and the U.S. Virgin Islands. Guam is considered U.S. territory for pricing. U.S. ships and aircraft shall be considered U.S. domestic locations

when in or over international waters. Specific satellites and footprints shall be specified in individual Task Orders. If not specified or if the specified satellites are not available, the Contractor shall propose specific satellites and footprints appropriate to the mission, subject to Government approval.

3.2.3 Bandwidth Capacity

3.2.3.1 The Contractor shall offer both full and partial transponder services.

- a. Full transponder service is defined as the Government's use of an entire transponder under the following conditions:
 1. The Government has the authority to specify the transponder gain setting from the full range of those available.
 2. The Government has the authority to allocate the entire transponder bandwidth and power exclusively to Government users.
- b. Partial transponder service is defined as the Government's use of bandwidth within a transponder where the satellite operator sets the transponder operating point, and exercises sole control over the allocation of the transponder's bandwidth and power.

3.2.3.2 The Contractor shall offer full and partial transponder services on renewable leases with durations of one hour, one day, one week, one month, three months, six months, 12 months, and greater than one year.

3.2.3.3 The Contractor shall offer partial transponders in increments of 100 kHz, 1, 3, 6, 9, and 18 MHz, and, when appropriate in relation to the full transponder bandwidth, 24, 36, 48, 54, 64, 72 and 150 MHz. Bandwidth may be used in simplex or full duplex service as specified in individual Task Orders. The Contractor shall define the effective isotropic radiated power (EIRP) useable by the Government throughout the footprint of the satellite coverage for each bandwidth increment.

3.2.3.4 Unless otherwise specified in individual Task Orders, the Contractor shall offer transponded satellite bandwidth on a non-preemptible basis; that is, the bandwidth shall not be preempted for any reason and shall be replaced in the event of failure. Individual Task Orders may specify system-preemptible bandwidth (i.e., bandwidth that may be preempted in the event of a transponder or satellite failure elsewhere in the satellite provider's system), or service-preemptible bandwidth (i.e., bandwidth that may be preempted to establish another user, such as cable restoration service). Pricing for system-preemptible and service-preemptible bandwidth services shall be negotiated at the time of order.

3.2.3.5 Unless otherwise specified in individual Task Orders, the Contractor shall offer transponded satellite bandwidth on geosynchronous satellites, station-kept to within ± 0.1 degree in both orbital longitude and inclination. Individual Task Orders may specify transponded satellite bandwidth on non-geosynchronous and / or non-station-kept satellites. Pricing for service on non-geosynchronous satellites and on non-station-kept satellites shall be negotiated at the time of order.

3.2.3.6 The Contractor shall provide satellite transponded bandwidth that has an operational availability of 0.99999 or better over each 30-day period, calculated daily for the previous 30 days, and is free of co-channel and cross-polarization interference which degrades the intended DSTS-G use and which is not

caused by other DSTS-G users. The operational availability is inclusive of delay time to repair or replace unavailable bandwidth.

3.2.4 Minimum Transponded Satellite Performance

3.2.4.1 The Contractor shall provide transponded bandwidth services on satellites that meet the minimum rated transponder EIRP and receive saturation flux density (SFD) indicated in Table 3-1.

3.2.4.2 The Contractor shall operate transponded bandwidth in accordance with a Contractor submitted and satellite operator approved transmission plan that meets the requirements of INTELSAT SSOG-600 or similar requirements for non-INTELSAT satellites. A copy of all such plans shall be provided to the Contracting Officer’s Representative (COR) or Task Monitor (TM) concurrent with submission to the satellite system operator.

Table 3-1: Minimum Transponded Satellite Performance Parameters

Type of Service	EIRP (Note 1)	SFD (Note 1)
US Domestic C-Band	28.0 dBW	-84 dBW/m ² or lower
US Domestic Ku-Band	40.0 dBW	-84 dBW/m ² or lower
US Domestic Ka-Band (Note 2)	Note 2	Note 2
International C-Band		
INTELSAT Global Beam	26.0 dBW	-84 dBW/m ² or lower
All other satellites	28.0 dBW	-84 dBW/m ² or lower
International Ku-Band	40.0 dBW	-84 dBW/m ² or lower
International Ka-Band (Note 2)	Note 2	Note 2
Notes:		
1. As measured at the beam edge for the specific satellites offered.		
2. To be provided when the service becomes commercially available.		

3.2.5 First Right of Refusal

3.2.5.1 The Contractor shall establish procedures for the Government to obtain first right of refusal (FRR) for transponders or fractional transponders on satellite systems that the Contractor intends to offer to the Government in response to Task Orders under this contract. The FRR Task Order will identify the capacity desired and the Government will pay a deposit based on a schedule negotiated with the Contractor. Acquisition of a bandwidth FRR shall not obligate the Government to exercise this right or to actually lease the specified bandwidth capacity, except to the extent that the FRR is forfeit if service is not leased. FRR costs shall be credited towards the cost of service when the lease is actually activated.

3.2.5.2 The Contractor shall obtain FRRs for particular transponders, or fractions thereof, for lease terms of one year or more, up to six months in advance of the requested service start date specified in the applicable Task Order.

3.2.5.3 For international services, the Contractor shall obtain foreign concurrence as part of an FRR.

3.2.6 Guaranteed Reservation

3.2.6.1 The Contractor shall establish procedures to obtain guaranteed reservations for transponders on satellite systems that the Contractor intends to offer to the Government under this contract. Acquisition of bandwidth Confirmed Reservations shall obligate the Government for the specified lease period up to one year, except to the extent the Contractor or the satellite bandwidth provider is able to obtain other users for all or part of the specified bandwidth and specified lease period.

3.2.6.2 Guaranteed reservations will be for a specific transponder (or fraction thereof) up to six months, 12 months if applicable, in advance of the service start date specified in the applicable Task Order.

3.2.6.3 When placing the Guaranteed Reservation for use by the U.S. Government, the Contractor shall provide the satellite vendor a copy of the Task Order signed by the Contracting Officer as proof of the legal lease commitment by the Government in lieu of a deposit.

3.2.7 Service Renewal

The Contractor shall establish procedures to ensure that the Government has sufficient notice for the Government to effect service renewals to avoid service interruption or challenge by other commercial satellite users.

3.3 OTHER SATELLITE SERVICES

The Contractor shall offer processed Ka-band satellite service and other specialized satellite services as specified below. Processed satellite service is defined as satellite-based reception, demodulation, re-modulation and re-transmission of a user signal in lieu of, or in addition to, satellite-based frequency translation.

3.3.1 Processed Ka-Band Satellite Services

3.3.1.1 As a required future enhancement, the Contractor shall offer at least two competing processed Ka-band satellite services when commercially available. Services shall be offered “end-to-end” (from Contractor-provisioned user terminal to Contractor-provisioned gateway or other user terminals). The Contractor shall offer the full range of commercial processed Ka-band services as available, from small- and medium-size user terminals to gateway terminals supporting multiple user terminals and from the lowest to the highest data rates commercially available. The Contractor shall amend its offering, as new commercial processed Ka-band services become available.

3.3.1.2 Where competing processed Ka-band satellite services are available, the Contractor shall offer solutions based on the prioritization for transponded satellite services established in Section 3.2.1 above.

3.3.1.3 When offered, processed Ka-band services shall meet the DISN network SCPC and, where appropriate, DISN ATM service requirements of Section 3.5 below.

3.3.2 Other Specialized Satellite Services

The Contractor shall offer the following specialized satellite services. The Contractor shall offer solutions based on the prioritization for transponded satellite services established in Section 3.2.1 above.

3.3.2.1 DAMA VSAT Services

The Contractor shall offer at least two competing Demand Assigned Multiple Access (DAMA) Very Small Aperture Terminal (VSAT) transaction-oriented services.

3.3.2.1.1 One of these services shall be based on Hughes Network Systems, Inc. Personal Earth Station technology and protocols. The Contractor shall also offer a competing VSAT DAMA service, such as provided by Scientific Atlanta and Gilat Satellite Networks.

3.3.2.1.2 The Contractor shall offer “end-to-end” service, including user terminals, host nation approvals and licenses, and public commercial hub terminals where applicable. Individual Task Orders may specify service on less than a full end-to-end basis where a user has existing transaction-oriented VSAT systems. Pricing for service on less than a full end-to-end basis shall be negotiated at the time of order.

3.3.2.1.3 The Contractor shall offer both U.S. domestic and worldwide DAMA VSAT service coverage.

3.3.2.1.4 The Contractor shall engineer VSAT DAMA networks to support not more than a 7-second network response time. Network response time is defined as the elapsed time between transmission of the last character of a message input at the remote user device and the receipt of the first character of the return message at the same remote user device. Host/queuing times are not included in this calculation. Unless otherwise specified in individual delivery orders, VSAT DAMA service shall be single-hop.

3.3.2.1.5 The Contractor’s VSAT DAMA Network design process shall consider the customer's specific data needs at each site as specified in individual Task Orders and then determine the number and/or size of each standard component for optimal performance and cost-effectiveness.

3.3.2.1.6 VSAT DAMA Network designs shall support both synchronous and asynchronous digital services.

3.3.2.1.7 VSAT DAMA user terminals shall support EIA RS-422, ITU-T G.703, ITU-T V.10, and ITU-T V.11 interfaces for digital circuits.

3.3.2.1.8 VSAT DAMA Services shall provide National Institute of Standards and Technology (NIST) validated Digital Encryption Standard (DES) protection for all transaction data transmitted on the satellite transmission path. (See <http://csrc.nist.gov/cryptval/> for lists of validated systems.)

3.3.2.1.9 The Contractor shall offer, and propose terms, conditions and performance standards for, additional VSAT-oriented business and enterprise applications as needed to meet requirements specified in individual Task Orders.

3.3.2.2 Cooperative Unit Tracking Services

The Contractor shall offer Global Positioning System (GPS)-based Cooperative Unit Tracking and two-way message services, such as OmniTRACS and ORBCOMM.

3.3.2.2.1 The Contractor shall offer “end-to-end” Cooperative Unit Tracking Services, including user terminals, host nation approval and licenses, public commercial hub terminals, user management center systems and COTS hardware and software. Individual Task Orders may specify service on less than a full end-to-end basis where a user has cooperative unit tracking terminals. Pricing for service on less than a full end-to-end basis shall be negotiated at the time of order.

3.3.2.2.2 The Contractor shall offer both U.S. domestic and worldwide Cooperative Unit Tracking Service.

3.3.2.2.3 Cooperative Unit Tracking Services shall support fleet management for vehicles, trailers and containers, including load and manifest management and other applications as needed to meet the requirements specified in individual Task Orders.

3.3.2.2.4 The Contractor shall offer, and propose terms, conditions and performance standards for, additional Cooperative Unit Tracking Services as needed to meet requirements specified in individual Task Orders.

3.3.2.2.5 Cooperative Unit Tracking Services shall provide NIST-validated DES protection for all tracking data transmitted on the satellite transmission path.

3.3.2.3 Bandwidth-On-Demand Services

The Contractor shall offer competing Bandwidth-On-Demand services, such as Hughes DemandNet™ and COMSAT’s Linkway 2000™/Link One™ systems. At least two such competing services shall be offered.

3.3.2.3.1 The Contractor shall offer “end-to-end” Bandwidth-On-Demand services, including user terminals, host nation approval and licenses, and where specified in individual Task Orders, public commercial teleport terminals. Individual Task Orders may specify service on less than a full end-to-end basis where a user has terminals capable of, or terminals modifiable to be capable of, supporting Bandwidth-On-Demand service. Pricing for service on less than a full end-to-end basis shall be negotiated at the time of order.

3.3.2.3.2 The Contractor shall offer both U.S. domestic and worldwide Bandwidth-On-Demand Service.

3.3.2.3.3 Bandwidth-On-Demand Services shall permit user terminals to share a bandwidth pool, increase the number of user terminals, relocate terminals, redistribute user bandwidth, and adjust data rates within the bandwidth pool and service coverage area(s) ordered in individual Task Orders.

3.3.2.3.4 Bandwidth-On-Demand Services shall be engineered to meet DISN Single Channel per Carrier (SCPC) and Asynchronous Transfer Mode (ATM) service performance specified in Section 3.5 unless otherwise specified in individual Task Orders.

3.3.2.3.5 Bandwidth-On-Demand Services shall support point-to-point, point-to-multi-point, and point-to-teleport connectivity.

3.3.2.3.6 Bandwidth-On-Demand user terminals shall support digital voice, data, video, imagery, e-mail, Internet communications and other business and enterprise satellite-oriented applications as required in individual Task Orders. Bandwidth-On-Demand systems shall be compatible with U.S. Government encryption devices. Bandwidth-On-Demand user terminals shall support EIA RS-422, ITU-T G.703, ITU-T V.10, and ITU-T V.11 interfaces for digital circuits.

3.3.2.3.7 Bandwidth-On-Demand bandwidth pools shall be permanently provisioned within the service coverage area(s) specified in individual Task Orders. That is, an order for 3 MHz bandwidth in a worldwide coverage service area shall be permanently provisioned in as many satellite footprints as needed to provide such coverage.

3.3.2.4 Business and Enterprise Applications

The Contractor shall propose, and specify pricing, terms and conditions and performance standards, for, additional COTS satellite-based business and enterprise applications and services, such as business video, telemedicine, payroll, personnel and logistics transaction services, as needed to meet requirements specified in individual Task Orders.

3.3.3 Leased Commercial Teleport Services

The Contractor shall provide commercial Teleport services for use with Contractor- or Government-provisioned bandwidth. Such services shall meet all the requirements of this section.

3.3.3.1 DISN Standard Teleport Services

The Contractor shall provide commercial teleport services that meet the following general requirements unless waived by the Government.

3.3.3.1.1 The Contractor shall provide domestic and international teleport services in accordance with the data rates shown in Table 3-2 and the DISN SCPC and, where appropriate, ATM service performance specifications shown in Table 3-5.

3.3.3.1.2 The Contractor shall provide commercial uplink and downlink transmission services, including turnaround service and format-conversion services.

Table 3-2: Standard Teleport Digital Information Rates

Information Rate	Service Compatibility		
	IESS-308	IESS-309	EF DATA SDM 8650
Fractional T1@ N x 64 Kbps	X	X	X
1.544 Mbps (T1)	X	X	X
2.048 Mbps (E1)	X	X	X
3.088 Mbps (2 T1)			X
4.096 Mbps (2 E1)			X
4.632 Mbps (3 T1)			X
6.144 Mbps (3 E1)			X
6.312 Mbps (T2)	X		X
8.448 Mbps (E2)	X	X	X
10.271 Mbps (Common Data Link – CDL)			
32.064 Mbps	X		
34.368 Mbps (E3)	X		
44.736 Mbps (T3)	X		

3.3.3.1.3 Contractor-provisioned teleport services shall provide space, power and heating, ventilation and air conditioning for a Government-furnished Service Delivery Point (SDP) (to interface with the DISN terrestrial transmission network) to be installed by a Government-designated DISN Access Provider. Only Government circuits provisioned under this and other Government contracts shall traverse this SDP.

3.3.3.1.4 The Contractor shall provide the following specific services between the SDP and the satellite: 1) uplink-only services (defined as SDP to the satellite bandwidth); 2) downlink-only services (satellite bandwidth to the SDP); 3) uplink and downlink services on a full-duplex basis; and 4) turnaround services (defined as demodulation of a downlink signal, re-modulation in the same or different modulation and coding format, and uplinking to the same or different satellite in the same or different frequency band).

3.3.3.1.5 At the Government’s option, the Contractor shall provision terrestrial fiber optic based N x 64 Kbps, T1/E1, E3/T3, OC-1, OC-3, OC-12, or OC-48 connectivity between commercial teleports and distant service delivery points to be designated in individual Task Orders. Only Government circuits authorized under this and other Government contracts shall traverses any terrestrial fiber optic circuits provisioned under this contract.

3.3.3.1.6 The Contractor shall provide, install, configure, test, operate, and maintain all required equipment to connect and maintain the ordered service between the SDP and the Government-designated satellite service. Satellite service may either be provisioned by the Contractor under this contract or by the Government under separate contracts.

3.3.3.1.7 The Contractor shall provide commercial teleport services using earth station antenna systems certified to be compatible with the satellite bandwidth specified in each Task Order.

3.3.3.1.8 The Contractor shall provide all commercial teleport terminal hardware, software, firmware, RF and IF equipment, including antenna systems, high power amplifiers, low noise amplifiers, up- and down-converters, combiners and splitters, modems, and patch and test points to support the services specified in each Task Order.

3.3.3.1.9 The Contractor shall provide, operate, maintain, and administer commercial satellite communications uplink and downlink transmission services as specified in Task Orders.

3.3.3.1.10 The Contractor shall assure the technical sufficiency of the teleport services provided. Technical sufficiency is defined as the condition where the Contractor engineers, configures, installs, conditions, tests, and maintains the service to meet the service performance requirements specified herein and called out in Task Orders.

3.3.3.1.11 The Contractor shall provide protection against any action or series of actions that may cause the prevention or denial of authorized use of the Contractor's commercial teleport facilities, including actions that cause destruction, modification, blockage, or delay of authorized services. The Contractor shall protect against service degradation due to hardware or software failures of Contractor-provided systems, and shall provide the same level of protection for Government-furnished equipment installed in Contractor-provided facilities as for its own equipment.

3.3.3.1.12 The Contractor-provisioned common-user teleports shall provide standard 19-inch rack space for Government-furnished equipment as specified in individual Task Orders.

3.3.3.1.13 The Contractor-provisioned teleport facilities shall be staffed 24 hours per day, 7 days per week with sufficient operations and maintenance personnel to ensure the operational availability of each ordered service.

3.3.3.1.14 The Contractor shall use C-Band earth stations to provide tele port services under this contract that are the equivalent of INTELSAT Standard A or B unless otherwise specified in individual Task Orders.

3.3.3.1.15 The Contractor shall use Ku-Band earth stations to provide teleport services under this contract that are the equivalent of INTELSAT Standard C or E3 unless otherwise specified in individual Task Orders.

3.3.3.1.16 The Contractor-provided teleports shall use antenna systems equipped with de-icing systems and other environmental control systems as needed to maintain services in adverse weather conditions.

3.3.3.1.17 The Contractor-provided teleports shall use fully redundant RF and IF systems with automatic switchover to redundant systems in the event of failure in the primary service chains. These systems shall be monitored and controlled on a full-time basis by the teleport technical operations staff.

3.3.3.1.18 The Contractor-provided teleport service shall be protected by the use of uninterruptible power supplies (UPS) that ensure uninterrupted service in the event of a commercial power outage for up to 30 minutes.

3.3.3.1.19 The Contractor-provided teleport service shall have an availability of 0.9995 over each 30-day period, calculated daily for the previous 30 days and mean-time-between-critical-mission-failure of 8760 hours. A mission critical failure is defined as one in which an assigned communications channel is disrupted due to failures of the teleport equipment. Successful switchover to redundant components within 250 msec shall not be considered a critical failure.

3.3.3.1.20 The Contractor-provided teleport service shall include a timing system that will meet the transmission quality and performance requirements. The Contractor-provided teleport services shall include a Stratum 1 or Stratum 1 traceable timing source, necessary frequency and clock generation equipment, and clock distribution system for the RF equipment, modem and other terminal subsystems. Each teleport shall provide sufficient spare frequency reference signals to support all converters and modems provisioned for Government use. Additionally, each teleport shall be capable of deriving timing from the Government-provided signal stream and of accepting frequency and time from a Government-provided source.

3.3.3.2 DISN Common User Hub Services

3.3.3.2.1 The Contractor shall provide C-, Ku- and, when available, Ka-band domestic and international common user hub services for DISN Single Channel Per Carrier, Asynchronous Transfer Mode and Bandwidth-On-Demand circuit services as specified in individual Task Orders.

3.3.3.2.2 The Contractor shall propose common user hub service whenever the Government orders commercial teleport services, unless unique or dedicated hub services are specified in a Task Order. Common user hub services shall be between the Contractor-provided teleport facilities and correspondent Government-designated earth stations. Correspondent earth stations may be: 1) other public earth terminals licensed and certified for both the satellite system and the required mode of operations, or 2) Government-owned or -leased private earth terminals, licensed and certified for both the satellite system and the mode of operations. Most Government-owned or -leased private earth terminals will be equivalent to INTELSAT Standard E, F, or G terminals. Most Government-owned or -leased private earth terminals will be equipped with EF Data SDM 8650 or fully interoperable modems, such as the Radyne DMD-15G, meeting IESS-308, or IESS-309 standards.

3.3.3.2.3 For IESS-308-compatible operations, the Contractor shall use convolutional encoding at Rate 1/2 or Rate 3/4 for Forward Error Correction (FEC) with or without supplemental Reed-Solomon coding as specified in each Task Order.

3.3.3.2.4 For IESS-309-compatible operations, the Contractor shall provide service: 1) in the "Closed" or "Open" Network mode; and 2) that uses FEC Rate 1/2 or Rate 3/4 convolutional encoding/Viterbi decoding as specified in the Task Order.

3.3.3.2.5 For services other than IESS-compatible services, the Contractor shall provide EF Data SDM 8650 modems and EF DATA SDM 9000 modems as appropriate, or fully interoperable and functionally equivalent modems that are capable of supporting BPSK, QPSK, OQPSK, 8PSK and 16QAM modulation and both convolutional encoding/Viterbi decoding and Reed-Solomon coding options. These modems

shall be used to support information exchange rates from 64 kbps to 8.448 Mbps in one-bit increments. Most ordered services will require the use of these modems.

3.3.3.2.6 The Government will provide specialized modems, such as TDMA modems and unique data rate modems, if required in the Task Order, in time to meet the service start date.

3.3.3.3 Common-User VSAT Hub Services

3.3.3.3.1 The Contractor shall provide C-, Ku- and, when available, Ka-band domestic and international common-user hub services for DISN transaction-oriented Hub-Spoke VSAT services as specified in individual Task Orders.

3.3.3.3.2 The Contractor shall provide commercial VSAT DAMA service hubs for domestic and international services as specified in individual Task Orders. The VSAT DAMA hubs shall be capable of supporting multiple separate DAMA networks on the same or separate satellites within their field of view. Unless specifically excluded in the Task Order, the Contractor shall provide new services using existing hubs whenever possible.

3.3.3.4 Other Common User Hub Services

The Contractor shall offer, and propose terms, conditions and performance standards for, other Common User Hub services needed to support new business and enterprise satellite-based applications and services as required in individual Task Orders.

3.4 EARTH TERMINAL SERVICES

The Contractor shall provide Contractor-operated and –maintained leased earth terminal (ET) services as specified in individual Task Orders. ETs to be provided by the Contractor shall be certifiable for INTELSAT operations according to INTELSAT Earth Station Standards (IESS) for use over C-band and Ku-band transponders. In addition, ETs provided by the Contractor shall be certified by the satellite system operator of the specific system on which the ET is to be used as acceptable for service on that system. Contractor-provided ETs may be used on Contractor-provisioned or Government-furnished satellite bandwidth. Other services, such as processed Ka-band services, shall be supported by ETs that are certified for those operations according to the satellite operator used. The Contractor’s selection of the appropriate ET will be based upon the customer requirements for site location, traffic volume, and channel performance, as specified in individual Task Orders.

3.4.1 DISN Terminal Performance Characteristics

The Contractor shall offer shelter-mounted C- and Ku-band DISN-capable earth terminals that meet the requirements below.

3.4.1.1 DISN C-band Terminals

The Contractor shall provide ETs with C-band characteristics shown in Table 3-3 for the applicable IESS Standard size designations. C-band transmit frequencies shall cover 5850-6425 MHz inclusive, and

receive frequencies shall cover 3625-4200 MHz inclusive. If extended C-band operations are required by individual Task Order, then transmit frequencies shall cover range 5850-6650 MHz inclusive and receive frequencies shall cover 3400-4200 MHz inclusive. The ET shall meet the minimum single carrier effective isotropic radiated power (EIRP) requirements measured at 6400 MHz continuous wave. The ET shall have a modulated multi-carrier EIRP, totaled for all carriers, of not more than 7.0 dB less than the EIRP requirements in Table 3-2 measured using ½ rate coded QPSK T1 carriers. The ET shall have a multi-carrier High Power Amplifier (HPA) complying with the intermodulation performance described in IESS 401. The minimum G/T requirements listed in Table 3-2 shall be based on measured values under clear skies at 10 degrees elevation. The Contractor shall use “Type Approved” antennas appropriate to the satellite operator specified in the Task Order and Contractor’s approved Service Plan. The antenna sizes shown are based on engineering estimates.

Table 3-3: Required DISN C-Band ET Characteristics

IESS Std (IESS-207)	Estimated Antenna Size (m)	EIRP (dBW) (Min)	Min G/T (dB/K)	T1 Carriers (min/max)
B	11	81.7	31.7+ 20 log f/4	8/24
F-3	7.0- 9.0	79.0	29.0+ 20 log f/4	8/16
F-2	6.1-7.6	77.0	27.0+ 20 log f/4	4/16
F-1	3.6-4.6	75.0	22.7+ 20 log f/4	4/8
G (IESS-601)	2.4	53.6	Not specified	1/4

3.4.1.2 DISN Ku-band Terminals

The Contractor shall provide ETs with Ku-band characteristics shown in Table 3-4 for the applicable IESS Standard size designations. Ku-band transmit frequencies shall cover 14.0-14.5 GHz inclusive, and receive frequencies shall cover 10.95-12.75 GHz inclusive. The ET shall meet the minimum single carrier EIRP requirements measured at 14.25 GHz continuous wave. The ET shall have a modulated multi-carrier EIRP, totaled for all carriers, of not more than 7.0 dB less than the EIRP requirements in Table 3-3 measured using ½ rate coded QPSK T1 carriers. The ET shall have a multi-carrier HPA complying with the intermodulation performance described in IESS 401. The minimum G/T requirements listed in Table 33 shall be based on measured values under clear skies at 10 degrees elevation. The Contractor shall use “Type Approved” antennas appropriate to the satellite operator specified in the Task Order and Contractor’s approved Service Plan. The antenna sizes shown are based on engineering estimates.

Table 3-4: Required DISN Ku-Band ET Characteristics

IESS Std (IESS-208)	Estimated Antenna Size (m)	EIRP (dBW) (Min)	Min G/T (dB/K)	T1 Carriers (min/max)
C	11	82.1	37.0+ 20 log f/11	8/24
E-3	6.1-7.6	74.2	34.0+ 20 log f/11	8/16
E-2	3.6-4.6	70.4	29.0+ 20 log f/11	4/8
E-1	2.4	64.9	25.0+ 20 log f/11	1/8
G (IESS-601)	1.8-2.4	57.5	Not specified	1/4

3.4.1.3 DISN Terminal Satellite Tracking Subsystem

Contractor-provided DISN earth terminals shall be equipped with automatic satellite beacon tracking in accordance with paragraphs 2 and 3 of IESS-411 or its equivalent for terminals used with other satellite systems.

3.4.1.4 DISN Terminal Monitor and Control Subsystem

Contractor-provided DISN earth terminals shall be fully remote controllable and shall be able to operate totally unmanned. Each terminal shall have a remote monitor and control capability that reports the status of all key terminal systems and subsystems, including shelter security status, to the local Government Patch and Test Facility (PTF) or Technical Control Facility (TCF) as well as over-the-air to a single remote earth terminal location. This capability shall permit remote control of the earth terminal including command switchover between redundant systems. Any single earth terminal in a network comprised exclusively of Contractor-provided earth terminals shall be able to control all of the other Contractor-provided earth terminals in that network. However, no more than one earth terminal at a time shall have network control. The Contractor shall provide a remote terminal monitor and control system that minimizes the satellite resources used for this purpose. A Contractor-provided NIST-validated DES shall be used to protect the remote terminal monitor and control transmission circuits.

3.4.1.5 DISN Terminal Station Reference Frequency (RF) and Timing Subsystem

The Contractor shall provide and configure a timing system for each ET that will meet the transmission quality and performance requirements. The Contractor-provided DISN earth terminals shall include a Stratum 1 or Stratum 1 traceable timing source, necessary frequency and clock generation equipment, and clock distribution system for the RF equipment, modem and other terminal subsystems. Each terminal shall provide sufficient timing output ports to support all optional converters, modems, and other equipment identified. Additionally, each terminal shall be capable of deriving timing from the Government-provided signal stream and of accepting frequency and time from a Government-provided source.

3.4.1.6 DISN Terminal Availability

3.4.1.6.1 All DISN earth terminals provided by the Contractor shall meet an operational availability of 0.9995 over each 30-day period, calculated daily for the previous 30 days. The operational availability is inclusive of maintenance response time and logistics delay time. The ET shall meet a mean-time-between-mission-critical-failure (MTBMCF) of 8760 hours. A mission-critical-failure is defined as one in which an assigned communications channel is disrupted due to failures of the terminal equipment. Successful switchover to redundant components within 250 msec shall not be considered a critical failure.

3.4.1.6.2 The DISN earth terminals shall operate continuously 24-hours daily, including weekends and holidays, and shall be configured with equipment, such as an uninterruptible power supply (UPS), lightning protection, adequate heating, ventilation and air conditioning (HVAC), and de-icing equipment, in required areas and weather conditions, to meet these operational availability requirements. The UPS shall have power line conditioning for voltage and frequency variations and shall support uninterrupted terminal operations for at least 30 minutes. The Contractor shall define the terminal voltage, current, power factor, phase and grounding requirements based on the locations and requirements specified in individual Task Orders. The Contractor shall connect the ET to the Government-provided power source through a Contractor-provided power cable of not less than 100 feet in length. The Contractor shall provide options for power cable extension in increments of 100 feet up to a total of 500 feet.

3.4.1.6.3 The Contractor-provided DISN earth terminals shall allow for maintenance to be performed on a failed redundant element (backup equipment) during operations without service interruption. The ET shall also allow for the backup equipment to be returned to operational redundant status without interruption to ongoing service operations.

3.4.1.6.4 The maximum mean time to restore 95 percent of all mission critical failures shall be two hours. The maximum continuous communications service outage for any failure of Contractor-provided ET services shall not exceed 4.38 hours.

3.4.1.7 DISN Terminal Surge Capability

Unless additional carriers are needed to meet the minimum requirements specified in individual Task Orders, the Contractor shall provide DISN earth terminals capable of activating the minimum number of carriers specified in Sections 3.4.1.1 and 3.4.1.2. When required by the Government, the Contractor shall deploy additional modems, up-converters, and down-converters to support growth up to the maximum number of carriers shown in Sections 3.4.1.1 and 3.4.1.2. Such growth shall not require re-wiring of the baseline terminal.

3.4.1.8 DISN Terminal Interconnect Subsystems and Connectivity Requirements

The Contractor shall equip each DISN earth terminal with a fiber optic interface system to connect the ET with the local PTF or TCF. This system shall include Contractor-provided fiber optic cable, multiplexers, and fiber optic modems, as needed, at both the terminal and the PTF or TCF ends. In the PTF or TCF, the Contractor shall provide connections to existing Government cryptographic devices (one line per modem). The connections shall be able to pass clock and data for transmit and receive circuits as well as

reference frequency and timing information and a local remote for the Monitor and Control system. The Contractor shall provide both voice and data orderwire subsystems between the ET and the PTF or TCF. The fiber optic cable shall be not less than 100 feet in length, with options to extend it in 100-foot increments up to 500 feet. Unless otherwise specified in individual task orders, the fiber optic system shall be capable of supporting not less than 20 Mbps full duplex service per installed modem.

3.4.1.9 DISN Terminal Setup and Teardown

Except for Standard B and C, or equivalent DISN earth terminals, the ET shall be set up for operation or torn down for redeployment in a maximum of 48 hours. The ET shall be redeployable via ground transport or a single C-141 aircraft. The ET shall be shelter-mounted and either equipped with wheels to allow towing by a Government vehicle with the pintle hook connection available on Government 2 1/2-ton and 5-ton tactical vehicles *or* equipped with sling hooks to allow the terminal to be lifted by helicopter or crane and carried on a flatbed trailer. Government airlift certification is required for transport by helicopter. The Contractor shall equip each ET with required tie down chains and (if necessary) lifting hardware rated for three times the terminal dynamic load. Maximum dimensions for transportation on a C-141 are 96 inches high, 100 inches wide and 1090 inches long. Maximum weight is 51,840 lbs.

3.4.2 Specialized Terminals

3.4.2.1 The Contractor shall offer the specialized commercial off-the-shelf VSAT, Cooperative Tracking and Bandwidth-on-Demand terminals, and when commercially available, specialized Ka-band terminals, needed to implement the specialized satellite services required in section 3.3 above. Terminal availability shall be 0.9995 or better over each 30-day period, calculated daily for the previous 30 days. The operational availability is inclusive of maintenance response time and logistics delay time.

3.4.2.2 The Contractor shall offer, and propose terms, conditions and performance standards for, other terminals and modifications to both DISN terminal and specialized terminals as needed to support new satellite-based business and enterprise applications and services as required in individual Task Orders.

3.4.3 Delivery and Installation

3.4.3.1 The Contractor shall be responsible for terminal delivery and transportation cost within the contiguous 48 United States (CONUS). Pricing for service where OCONUS Government transportation is not provided shall be negotiated at the time of the order. The Contractor shall be responsible for terminal installation, checkout, commissioning for satellite service, and service acceptance testing at all service locations, including locations outside CONUS.

3.4.3.2 The Contractor shall perform physical, and if needed an EMI, site surveys at locations specified in individual Task Orders, when requested by the Government. The Contractor shall determine ET site requirements, including civil works requirements and the need for an EMI survey. EMI surveys shall be approved by the Contracting Officer prior to the contractor initiating the surveys. The Contractor shall be responsible for ET installation efforts, including all power and signal distribution system interconnections. Civil works will normally be provided by the site Public Works office based on the

Contractor's specifications and requirements. The Contractor shall prepare and submit a Site Installation Plan, in Contractor format, for each site in accordance with CDRL A002 and DI-MGMT-81118. The plan shall include appropriate interface control documents needed to specify all interfaces between the ET system to be installed and the site's existing facilities, power distribution system and telecommunications signal distribution system, including metered power if required by the local base commander. The plan shall define all civil works requirements, *including fencing if needed to ensure safety and security*, to be provided by the Government. The Installation Plan shall be submitted within 15 days of completion of the site survey. The Contractor shall obtain all licenses and approvals, including the local station commander's approval for the installation. Upon completion of the ET installation, the Contractor shall update the Installation Plan to reflect its "as-built" condition.

3.4.3.3 At the Government's option, the Contractor shall provide all necessary civil works identified in its installation plan, including preparing the ground and surrounding area for the terminal installation, power and signal distribution extensions and interconnects, shelter pads and antenna foundations.

3.4.3.4 Upon completion of the terminal lease period including any lease extensions, the contractor shall either de-install and remove the terminal or abandon it in place. Contractor efforts to de-install, remove, or abandon the terminal shall not effect terminal performance during the contracted performance period, and any teardown activities that effects performance must be done after the performance period and cost must be negotiated at the time of the task order. Terminal return transportation from CONUS and OCONUS locations shall be the responsibility of the Contractor. If the Contractor chooses to abandon it in place; the complete terminal becomes the property of the Government at no cost.

3.4.4 Terminal Acceptance Testing

3.4.4.1 The Contractor shall prepare a Terminal Acceptance Test Plan in accordance with CDRL A003 and DI-QCIC-80553. The Contractor shall provide personnel, test equipment, and other test resources (e.g., cooperating earth stations, and satellite bandwidth) needed to implement the test plan and to conduct tests detailed below.

3.4.4.2 The Contractor shall certify that the terminal complies with all requirements of this PWS. This statement shall be provided as part of the terminal acceptance report.

3.4.4.3 The Contractor shall conduct field tests consisting of INTELSAT certification tests in accordance with INTELSAT SSOG-200 (Earth Station Registration, 6 October 1998) or similar procedure for non-INTELSAT satellites. The Contractor shall schedule and coordinate these test and demonstration efforts with the responsible Government agency or governing organization providing certifications. The Contractor shall provide terminal operators, test personnel, test equipment, and other test resources required to conduct tests.

3.4.4.4 The Contractor shall notify the COR / TM not less than ten days in advance of any tests to be performed. The Government may witness any or all acceptance testing.

3.4.4.5 The Contractor shall provide a Terminal Acceptance Report, including the required certifications, to the Contracting Officer and the host commander in accordance with CDRL A004 and

DI-NDTI-80809B within 10 days after satisfactory completion of testing. A copy of the terminal test report and satellite system certification shall be retained with the terminal

3.4.5 Contractor Terminal Operations and Maintenance

3.4.5.1 The Contractor shall operate and maintain (O&M) the ET. At the Government's option, the Contractor shall staff the terminal for operation. When this option is exercised, staff shall be onsite during normal local military duty hours (nominally 0800-1600), eight hours per day, five days per week, with on-call support available at the site within two hours at all other times. The ET shall be securely locked when not attended. The Contractor shall contact the host TCF and provide emergency access provisions for Government personnel.

3.4.5.2 Contractor ET operations and maintenance personnel shall operate and maintain the terminal to meet the operational objectives of the assigned TCF. During normal duty hours, the Contractor shall report any major systems outage to the host TCF within ten minutes of the outage. Verbal reports shall indicate the nature of the problem and provide an estimated time of restoration, if possible. Restoration of service shall be reported within five minutes of restoration. The Contractor shall maintain a written Daily Master Station Log (MSL). The log shall be available to on-site Government personnel upon request.

3.4.5.3 The Contractor shall provide the supply support required to operate and maintain the ET within the prescribed operational availability requirements. This includes the provisioning of spares, repair parts, and consumable items, as well as all required packaging, shipping, transportation, stock, storage, and issue of items to support the operations and maintenance of the ET. The Contractor shall be fully responsible for any and all support items required to support the operation and maintenance of the ET at the site location. The Contractor shall be responsible for transporting all spares and support items not shipped as part of the original terminal delivery.

3.4.5.4 The ET maintenance concept shall be implemented as a two level maintenance structure: Unit-Level on-site Contractor operations and maintenance; and Depot-Level off-site Contractor maintenance. Any onsite test measurement and diagnostic equipment (TMDE) required over and above the built-in test (BIT) capability of the ET, shall be provided and maintained by the Contractor. Contractor depot-level shall be provided for the terminal lease duration, including any extensions. The Contractor may provide a regional support center and/or CONUS based Contractor depot facility, as required, to maintain and support the fielded system within the prescribed operational availability requirements.

3.4.5.5 The Contractor shall perform all preventive and corrective maintenance needed to provide the required level of availability. Preventive maintenance is classified as scheduled maintenance. Service restoration and equipment repairs are classified as unscheduled maintenance. Scheduled downtime will be allowed for preventive maintenance. Downtime requirements shall be submitted for schedule consideration no less than 21 calendar days prior to the requested downtime. Downtime requests shall be submitted as specified in the individual Task Orders requiring the Contractor to provision the terminal or service. The Contractor shall obtain Government approval for all scheduled downtime prior to service interruption. Confirmation cannot be guaranteed for any requested downtime that conflicts with operational requirements.

3.4.6 Security

All deployed Contractor personnel shall have as a minimum SECRET level security clearances based on Defense Security Service (DSS) checks. Unless otherwise specified in individual Task Orders, interim clearances based on the initial DSS Agency check will be accepted until full clearance is received. Failure to receive full clearance by DSS shall cause the Contractor to replace the individual concerned. Where local regulations require use of foreign personnel for terminal operations and maintenance, then the Contractor shall ensure and document to the Government's satisfaction that such individuals have equivalent clearances granted by the local host nation. All deployed Contractor terminal operations and maintenance personnel shall have CRYPTO access clearances if the Government places crypto equipment in the terminal shelter. The Contractor shall provide security clearance, passport and visa information to the COR/TM for verification prior to deployment of any personnel. The Government will provide security information to the deployed commands.

3.4.7 Safety

3.4.7.1 The Contractor shall provide ET systems that meet the following safety requirements and recommended practices.

3.4.7.2 Equipment shall be designed so that maintenance can be conducted safely by Contractor personnel in accordance with NFPA 70B (*Recommended Practice for Electrical Equipment Maintenance*), and Title 29 Code of Federal Regulations, part 1910. Personnel exposure to RF radiation shall be limited to values listed in ANSI C95.1, *Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*. Potential health hazards (e.g., noise, vibration, heat, and air quality) shall be controlled in accordance with applicable industry standards.

3.4.7.3 Battery enclosures shall prevent electrolyte from being expelled in the event of battery leakage or venting. Battery box venting shall be provided to minimize gas build-up. Explosive gases shall be vented away from ignition sources. Enclosures for any batteries used on the ET shall be designed to preclude major system damage or personnel injury in the event of violent gas venting or rupture of battery cells causing high pressure within the box.

3.4.8 Purchased Terminal Options

The Contractor shall offer, and propose performance standards for, direct purchase all terminals offered to the Government under this Contract. The Contractor shall ensure that all software provided in purchased terminals is compliant with the Joint Technical Architecture requirements for SHF earth terminals and with the DII Common Operating Environment requirements for runtime operation and for user interfaces *to the maximum extent possible*.

3.4.8.1 The Contractor shall offer, and propose performance standards for, Contractor-provisioned initial and refresher factory training and on-the-job training to enable Government and third party Government sponsored, operation and maintenance personnel to effectively, and efficiently operate and maintain all terminals purchased under this contract. Class sizes for DISN terminal operations and maintenance personnel shall not exceed 10 students.

3.4.8.2 The contractor shall offer, and propose performance standards for, Contractor-provisioned Depot support, including but not limited to warranty operation, direct exchange operation, repair and return, and repair and restock operations for terminals purchased by the Government under this contract.

3.4.8.3 The Contractor shall offer, and propose performance standards for, Contractor-provisioned site maintenance of Government-owned terminals purchased under this contract.

3.4.8.4 The Contractor shall offer, and propose performance standards for, Contractor-provisioned site operation and maintenance of Government-owned terminals purchased under this contract.

3.4.8.5 The Contractor shall offer Contractor preparation and submission for Government approval of an Integrated Support Plan tailored to each terminal type purchased by the Government under this contract. The ISP shall contain a detailed description of the full range of support requirements to be developed and the full range of material, documentation, and level of effort needed to support a 60 month terminal life cycle beginning at completion of hand-off of the terminal to the Government Activity. The ISP shall address all elements of supportability related to the terminal and, as a minimum, shall address the following in regards to maintaining Operational Availability:

- a. Personnel, facilities, transportation, handling, support equipment, test equipment, spares and repair parts
- b. Third party or other organizations to be utilized for support resources
- c. Providing routine on-site and off-site level maintenance
- d. Supply support of initial and replenishment spares and repair parts
- e. Providing supplies and maintenance in a hostile environment or other environment not conducive to the normal flow of goods and services.
- f. Providing On-call resident Operations and Support, when not actively staffing the terminal site.
- g. Providing on-site Technical Assistance to supplement resident on-site Operations and Support capability.
- h. Training Plan for providing optional training course and training documentation when required.
- i. Plan for updating technical documentation/manuals, as required.

3.4.8.6 The Contractor shall offer Contractor-provisioned initial spares to accompany each terminal purchased by the Government under this contract.

3.4.8.7 The Contractor shall offer Contractor-provisioned commercial component item manuals and a Contractor-prepared system level manual to accompany each terminal purchased by the Government under this contract.

3.4.8.8 In providing terminals for purchase by the Government, the Contractor shall comply with paragraphs 3.4.3 through 3.4.7 for all terminals supplied.

3.4.8.9 In providing DISN terminals for purchase by the Government, the Contractor shall also comply with paragraph 3.4.1 for all DISN terminals supplied.

3.4.8.10 In providing terminals for purchase by the Government, the Contractor shall also comply with paragraph 3.4.2 for all specialized terminals supplied.

3.4.9 Support Under Conditions of Hostile Fire or Imminent Danger

3.4.9.1 The contractor shall continue to provide on-site support to all sites during all periods of hostile fire/imminent danger circumstances. Hostile fire/imminent danger circumstances shall be defined as circumstances under which Department of Defense (DoD) personnel are entitled to “Special Pay – Duty Subject to Hostile Fire or imminent Danger” under Chapter 10, DoD Military Pay and Allowances Entitlements Manual and/or Department of State authorization.

3.4.9.2 The contractor will be advised during wartime related contingencies through involvement in the contingency planning process. The contractor shall designate a quantity of maintainers sufficient to provide support under hostile fire/imminent danger circumstances at a negotiated rate. At all times that DoD personnel are not entitled to additional pay under Chapter 10, DoD Military Pay and Allowances Entitlements Manual, the contractor shall be entitled to the “Standard” rates.

3.5 SERVICE MANAGEMENT

The Contractor shall perform configuration, performance, fault, accounting, security, and operations service management functions for all services provisioned under this contract as part of the priced service. The Contractor shall ensure such functions support and respond to the operational needs of the DISA the Global Network Operations Security Center (GNOSC) and Regional Network Operations Security Centers (RNOSCs) and, when specified in individual Task Orders, other Government Network Control Centers.

The Contractor shall develop a Service Plan for each Task Order in accordance with CDRL A001 and DI-MISC-80919. In this plan, the Contractor shall:

1. Assess the stated requirements, requesting clarification where needed.
2. Develop and document an engineered solution that:
 - a. Provides all pertinent data needed by the Government to validate all aspects of the Contractor’s proposed solution.
 - b. Identifies all satellite, earth terminal, link budget, network topology, and associated interface resources proposed to satisfy the Task Order.
 - c. Provides the Contractor’s plans to replace resources in case of failure.
 - d. Provides satellite operational data, including satellite system, type, flight number, orbital position, planned satellite movements and relocation or replacement, date of launch, estimated and guaranteed end-of operational life, primary and alternate (if any) tracking,

telemetry and control site, and satellite beacon frequency, modulation, polarization and any other data needed to identify the satellite and to assist in earth terminal point and automated power control measurements.

- e. Provides satellite footprints showing nominal Effective Isotropic Radiated Power (EIRP) contours and Saturation Flux Density (SFD) or Gain/Temperature (G/T) contours with land mass boundaries and geographical latitude and longitude clearly marked and annotated with the relationship between SFD and G/T.
- f. Provides transponder operational data including operating center frequency and bandwidth, transmit and receive polarization, transponder actual EIRP, SFD, G/T, current gain state setting and settable range and step size, phase noise curves, and AM/PM transfer coefficients and range of operation.
- g. Provides sufficient additional details of the proposed satellite(s), transponder(s), earth terminals and services required to support discussions with foreign nations for Host Nation Approval.
- h. Addresses the use of Government furnished materials as specified in the Task Order.
- i. Identifies the applicable performance standards, specifies the set of performance metrics for the services the Contractor proposes to use, and describes in detail the methods and measurements with which the Contractor proposes to establish compliance with the performance standards.

The Service Plan shall be updated to reflect all Task Order modifications.

For each service provided, the Contractor shall report network configuration, performance, fault, accounting, security, and operations management trend and performance incentive information in the Monthly Status Report and shall report critical operational, configuration, performance, fault and security information electronically in real time to the GNOSC and CONUS-RNOSC as required below.

3.5.1 Configuration Management

The Contractor shall provide configuration management that meets the requirements specified below.

3.5.1.1 The Contractor shall provide Standard Service Delivery, as well as Emergency Service Delivery in accordance with National Security/Emergency Preparedness (NS/EP) policy and with DISA Circular 310-130-4.

- a. **Standard service delivery** is defined as the time required under normal conditions to implement a Task Order after the Government has accepted the Contractor's service plan.
- b. **Accelerated service delivery** is defined as the time required using overtime or additional staff to implement a Task Order after the Government has accepted the Contractor's service plan. Under Accelerated Service Task Orders, service acceptance testing unless otherwise required by the satellite provider or host nation shall be deferred until operations permit.

3.5.1.1.1 Unless otherwise specified in individual Task Orders, the Standard Service Delivery time for satellite bandwidth shall be 30 calendar days or less and the Accelerated Service Delivery time shall be five calendar days or less.

3.5.1.1.2 Unless otherwise specified in individual Task Orders, the Standard and Accelerated Service Delivery time for DISN earth terminals or larger, shall be in accordance with Table 3-5A.

Table 3-5A: DISN Terminal Delivery Times

Terminal	Delivery (Days)	
	Standard	Accelerated
C-Band		
STD B	180	150
STD F3	165	135
STD F2	150	120
STD F1	120	90
STD G	90	60
Ku-Band		
STD C	180	150
STD E3	165	135
STD E2	150	120
STD E1	90	60
STD G	90	60

3.5.1.1.3 Unless otherwise specified in individual Task Orders, the Standard Service Delivery time for specialized VSAT networks of 100 terminals or less shall be 150 calendar days or less, and the Accelerated Service Delivery time shall be 120 days or less. Delivery times shall include delivery of private dedicated hub terminals when so ordered. The Standard Service Delivery time for additional individual specialized VSAT terminals shall be 45 calendar days or less, and the Accelerated Service Delivery time shall be 30 days or less. Delivery times for larger networks shall be as negotiated at the time of order.

3.5.1.1.4 Delivery times for Cooperative Unit Tracking networks and additional individual terminals shall be as negotiated at the time of order.

3.5.1.1.5 Delivery times for Bandwidth-on-Demand terminals shall be the same as for DISN earth terminal of equivalent size.

3.5.1.1.6 Unless otherwise specified in individual Task Orders, the Standard Service Delivery time for commercial Teleport services shall be 30 calendar days or less, and the Accelerated Service Delivery time shall be five calendar days or less.

3.5.1.2 The Contractor shall plan, monitor and dynamically maintain positive control over the day-to-day physical and logical configuration of leased bandwidth, earth terminal, and associated terrestrial interconnection resources provided under this contract. JCS requires that SATCOM services, including leased commercial SATCOM services, "...be capable of dynamic reconfiguration to meet changing needs as the situation demands." To this end, DSTS-G contractor(s) shall provide "positive control" over the services leased under this contract. In this context, positive control means near real-time proactive monitoring of the services to ensure: 1) users are accessing the service properly; 2) there is no unauthorized use of the leased bandwidth; 3) minor problems are corrected before they become major problems, and 4) DISA is provided visibility into the services provided, their status and performance.

3.5.1.3 The Contractor shall track: 1) the services required to be delivered; 2) when the required services are to be delivered; and 3) the resources assigned to the required services.

3.5.1.4 The Contractor shall be capable of implementing pre-planned network configuration changes within 30 minutes and new pre-planned networks within four hours of receipt of written Government Contracting Officer direction.

3.5.1.5 The Contractor shall validate service requests against Task Orders and resource allocation plans.

3.5.1.6 The Contractor shall develop and provide to the Government a quarterly forecast of available NTISSP-1-compliant bandwidth in accordance with CDRL A005 and DI-MISC-80508.

3.5.1.7 For each service being provided, the Contractor shall report network configuration information to the Government's network management centers specified in the applicable Task Order. The Contractor shall electronically report network configuration information, associated with the associated signal parameters, for out-of-tolerance alarms, and carrier-related alarms specified in Section 3.5.7 and shall provide a summary of configuration changes and planned changes in its Monthly Status Report.

3.5.2 Performance Management

Performance specifications shall apply to the entire communications path between the modem of the transmitting ET and the modem of the receiving ET as shown in Figure 3-1.

3.5.2.1 Service Performance Definitions

3.5.2.1.1 **Availability** is defined as the ratio of the time, $T_{\text{available}}$ that the communications path is capable of fully and reliably performing all of its functions without exceeding acceptable levels of impairment or delay to the total time, T_{total} . Bandwidth availability shall be calculated as the time interference free Contractor-provisioned bandwidth is capable of receiving and transmitting user signals at the satellite. Link Availability includes atmospheric effects, Contractor-provisioned bandwidth and Contractor-provisioned terminals and shall be calculated as:

$$\text{Availability} = T_{\text{available}} / T_{\text{total}} = 1 - (T_{\text{unavailable}} / T_{\text{total}})$$

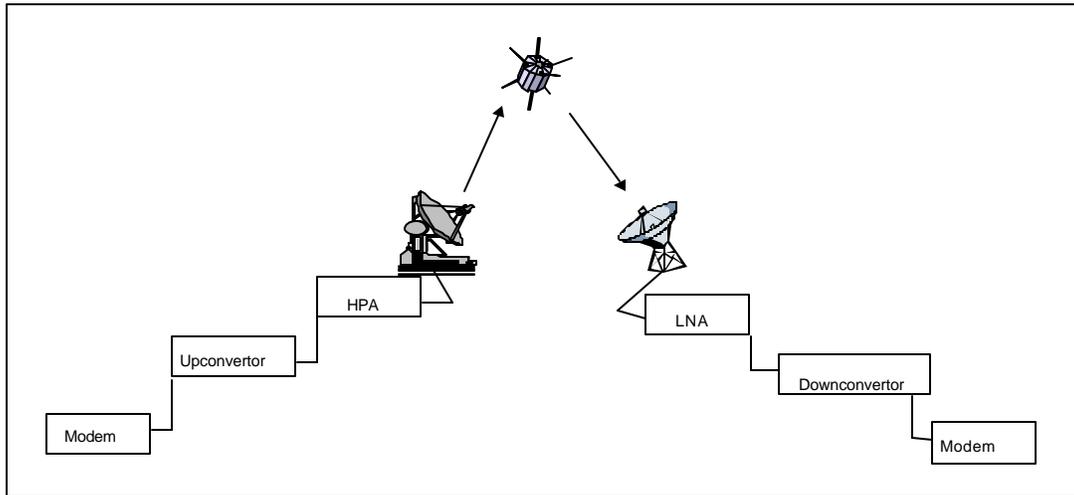


Figure 3-1: Communications Path between Transmitting and Receiving ET Modems

$T_{\text{unavailable}}$ is the sum of the time that the communications path is experiencing a failure plus the time to restore the path back to an available state. As shown in Figure 3-1, the communications path consists of several ET subsystems in series. Consequently, the total path availability shall be expressed as the product of the individual subsystem availabilities. If the Contractor provides redundant ET subsystems with switchover capability to ensure availability, then multiple communications path availabilities in parallel shall be calculated accordingly. Bandwidth and terminal availability shall be calculated as specified in Sections 3.2 and 3.4.

3.5.2.1.2 **Bit Error Rate (BER)** shall be defined as the ratio of incorrect bits received to the total number of bits received over a given interval of time. With all BER measurements, a confidence level shall be provided, which defines the probability that the measured BER is within the stated accuracy factor of the true average BER.

3.5.2.1.3 **Error-Free Second (EFS)** is an available one-second interval in which no bit errors are received. Measurement is over available time, and it shall be stated as the probability of available one-second error measurements in which no bit errors are received.

3.5.2.1.4 **Severely Errored Second (SES)** is the probability of an available one-second interval in which the BER exceeds 10^{-3} .

3.5.2.1.5 **Delay** shall be defined as the one-way time interval to send a signal from the input of the transmitting ET modem to the output of the receiving ET modem.

3.5.2.1.6 **Mean Time to Loss of Bit Count Integrity (BCI)** is the mean time between losses of bit count integrity that cause loss of synchronization over the communications path. Bit count integrity is the preservation of the exact number of bits that are transmitted and received over the communications path.

3.5.2.1.7 **One's Density** is a restriction associated with some communication protocols, which limits the number of consecutive zeroes that may occur in a data stream. The Government cannot guarantee any data pattern or pulse density. Consequently, the Contractor's transmission service shall be insensitive to any data pattern, and the Contractor shall demonstrate that a string of zero-bits will successfully be transmitted over the communications path. For an end-to-end service allocation, the Contractor shall be responsible for providing any conversion equipment required to interface with local exchange carriers.

3.5.2.1.8 **Jitter and Wander** are the short-term and long-term difference between the expected and the actual arrival times of a digital bit at the receiver of an end-to-end service connection. Jitter is cumulative over the length of an end-to-end connection unless buffering or other techniques are used to reshape communications traffic over each segment of the connection. Jitter and Wander performance shall comply with ITU-T G.824 for 1544 kbps hierarchy, except in E1/E3 networks where performance shall conform to ITU-T G.823.

3.5.2.2 Service Performance Monitoring

The Contractor shall monitor the availability of satellite services in near-real time to maintain positive control of all services provisioned and to ensure service availability is in accordance with the specifications in Table 3-5B. Near real time is defined as a time interval between monitoring a specific link or service of 30-minutes or less. The Contractor shall report these service performances in monthly service status reports to the Government.

Table 3-5B: DSTS-G Service Performance Specifications

Performance Parameter	Specification ¹	
Availability	Transponded Bandwidth:	0.99999
	Terminal Availability:	0.9995
	VSAT DAMA Network Service:	0.995
	DISN SCPC Service:	0.997
	DISN ATM Service:	0.999
	Ka-Band Service	TBD
	Terrestrial Service	0.9995
Note 1: Based on performance specifications in DISA EP 1-92, Basic Guidelines for Application of Performance Standards to Commissioning of DCS Digital Circuits, June 1992. End-to-end availability attributable to the contractor depends on the service path he provisions.		

3.5.2.3 Service Performance Testing

3.5.2.3.1 The Contractor shall provide end-to-end commissioning, testing and operational troubleshooting efforts to isolate performance problems with services provided under this contract. For end-to-end service commissioning, the Contractor shall perform a 72 hour continuous service acceptance test using a 2²³-1 test pattern to demonstrate that the BER, ES, SES, MTLBCI, jitter and delay performance specifications in Table 3-6 have been met prior to certifying the initial availability of the service. The Contractor shall develop a Service Acceptance Test Plan (SATP) in accordance with CDRL A006 and DI-QCIC-80553. Acceptance testing shall demonstrate that the services implemented by the

Contractor actually meet the requirements of the Task Order, and the performance specifications in Section 3.5.2 of this document. The Contractor shall provide the results of service acceptance tests and shall certify that these specifications have been met in the Service Acceptance Test Report (SATR) in accordance with CDRL A007 and DI-NDTI-80809B. At the option of the Government, the Contractor shall, at no cost to the Government, retest services that persistently perform below the applicable service performance standards.

Table 3-6: DSTS-G Service Acceptance Performance Specifications

Performance Parameter	Specification ¹
Average Bit Error Rate (BER) 0.95 Confidence Level	VSAT DAMA Network Service: 10^{-7} DISN SCPC Service: 10^{-7} DISN ATM Service: 10^{-9} Terrestrial Service: 10^{-10}
Error Free Seconds (EFS)	0.965 for data rates \leq 6.312 Mbps 0.9 for data rates $>$ 6.312 Mbps
Severely Errored Seconds (SES)	0.0003
One-Way Delay	\leq 300 msec
Mean Time to Loss of BCI	24 hours end-to-end 78 hours for satellite link allocations \leq 6.312 Mbps 97.6 hours for satellite link allocations $>$ 6.312 Mbps
One's Density	22 consecutive zeroes
Jitter	Output: 5.0 UI peak-to-peak over 10 Hz-40 kHz Output: 0.10 UI peak-to-peak over 8 kHz-40 kHz
Wander	Output: $(10^{-2} S + 10,000)$ nanoseconds for sample size of $S=10^4$ seconds
Note 1: Based on performance specifications in DISA EP 192, Basic Guidelines for Application of Performance Standards to Commissioning of DCS Digital Circuits, June 1992.	

3.5.2.3.2 BER shall not exceed the values in Table 3-6 averaged over each 24-hour period in which the circuit is available. The Contractor shall demonstrate that the BER performance meets this requirement in accordance with the Government-approved SATP.

3.5.2.3.3 EFS shall not be less than the percentages specified in Table 3-6 for the given data rates during any 24-hour period in which the circuit is available. Errored seconds shall include all seconds with one or more bit errors. The Contractor shall demonstrate that the EFS performance meets this requirement in accordance with the Government-approved SATP.

3.5.2.3.4 SES shall not be greater than the percentage specified during any 24-hour period in which the circuit is available. The Contractor shall demonstrate that the SES performance meets this requirement in accordance with the Government-approved SATP.

3.5.2.3.5 One-way delay shall not exceed the specified value in Table 3-6 between transmitting and receiving ET modems during any 24-hour period in which the circuit is available. The Contractor shall demonstrate that the delay performance meets this requirement in accordance with the Government-approved SATP.

3.5.2.3.6 Loss of BCI on the circuit shall not occur more than once during any 24 hours of operation for end-to-end service allocations, and not more than once in the specified time allocations for satellite links and data rates in Table 3-6. A loss of BCI occurs when the number of bits transmitted does not match the number of bits received. This requirement shall be measured using appropriate settings on test equipment. Examples of loss of BCI are the detection of a pattern slip, data loss (as measured on the FIREBERD 6000), or a test set synchronization loss exceeding a full second in duration. The Contractor shall demonstrate that the BCI performance meets this requirement in accordance with the Government-approved SATP.

3.5.2.3.7 The Contractor shall demonstrate that the One's Density performance meets the requirement stated in Table 36 in accordance with the Government-approved SATP. During circuit acceptance testing, the Contractor shall use a test pattern that contains at least 22 consecutive zeroes to demonstrate compliance with the One's Density requirement. Test patterns with strings of zeroes shorter than 22, or that suppress consecutive zero strings, are not acceptable for this test. The method used to solve any One's Density problem is the responsibility of the Contractor. The Contractor shall be responsible for providing any conversion equipment required to interface with local exchange carriers.

3.5.2.3.8 During the service acceptance tests, the Contractor shall induce jitter into the circuit under test. This injected jitter shall not exceed a peak-to-peak amplitude of 0.1 unit intervals (UI, defined as the reciprocal of the data rate) over the frequency range 10 Hz through 40 kHz. The installed service shall meet all performance requirements shown in Table 3-6 while accepting this jittered input. The Contractor shall demonstrate that the input/output signal jitter performance meets these requirements in accordance with the Government-approved SATP. The Contractor shall demonstrate wander performance over a period of 10,000 seconds meets the requirements in Table 36 in accordance with the Government-approved SATP.

3.5.2.3.9 The Contractor shall monitor the receive signal at each service point and where appropriate, remove any Doppler distortion.

3.5.2.3.10 The Contractor's timing architecture shall allow each circuit to perform in the same manner during loop-back tests as during normal operations. The Contractor shall demonstrate loop-back-testing as part of the service acceptance tests.

3.5.2.4 Service Performance Reporting

3.5.2.4.1 The Contractor shall collect performance data for all services provided to the Government under this contract to support: (a) the analysis of measured vs. planned performance; (b) detection and analysis of performance trends; and (c) performance reporting.

3.5.2.4.2 For each service being provided, the Contractor shall report performance information to the Government's network management centers specified in the applicable Task Order. The Contractor shall electronically report performance information, associated with the associated signal parameters, for out-of-tolerance alarms, and carrier-related alarms specified in Section 3.5.7 and shall provide a summary of performance trends and detailed availability statistics in its Monthly Status Report.

3.5.3 Fault Management

The Contractor shall monitor and test transponder, earth terminal, and associated terrestrial interconnection resources provided under this contract to maintain positive control of the services provided.

3.5.3.1 Fault Reporting

3.5.3.1.1 The Contractor shall collect operational data for all services provided to the Government under this contract to support: 1) detection, identification, and isolation of faults; 2) initiation, tracking, and completion of corrective actions; and 3) fault reporting.

3.5.3.1.2 For each service being provided, the Contractor shall report fault information to the Government's network management centers specified in the applicable Task Order. The Contractor shall electronically report fault information, associated with the associated signal parameters, for out-of-tolerance alarms, and carrier-related alarms specified in Section 3.5.7, and shall provide a summary of fault trends and detailed statistics in its Monthly Status Report.

3.5.3.2 Service Interruption and Restoration

3.5.3.2.1 For service outages, the Contractor shall provide verbal status reports to the CONUS-RNOSC specified in the applicable Task Order. These reports are in addition to all electronic reports and monthly reports. These reports shall identify the circuits involved, the cause of outage if known and the actions already taken and planned to correct the outage. Initial reports shall be provided within 10 minutes. Updated reports shall be provided every 30 minutes. For outages known to be due to failures in Contractor-provisioned elements, the Contractor shall initiate conference calls between the Contractor's operation center, the CONUS-RNOSC, and for satellite related issues, the applicable satellite operations center supporting the Contractor's service.

3.5.3.2.2 For outages lasting 120 minutes or more, the Contractor's Program Manager shall participate in the conference calls.

3.5.3.2.3 For outages lasting 240 minutes or more the Contractor's senior management shall participate in the conference calls.

3.5.3.3 Scheduled Service Outages

The Contractor is responsible for maintenance of all Contractor provided services and equipment. The Contractor shall coordinate with the CONUS-RNOSC when preventive or planned maintenance has the

potential to impact Contractor-provisioned services. In accordance with DISA Circular 310-70-1 the contractor shall notify the CONUS-RNOSC of planned maintenance services 21 calendar days in advance to permit coordination with on-going operations. The 21-day time factor may be waived by the CONUS-RNOSC to correct hazardous conditions (HAZCONs), or degradations, when the capability exists at the facility to accomplish the required repair action. The Contractor shall get final authorization from the CONUS-RNOSC immediately prior to implementing any approved outage.

3.5.4 Accounting Management

The Contractor shall collect, sort by Task Order and Task Order Program Designator Code, and report usage data on transponder, earth terminal, and associated terrestrial interconnection resources provided under this contract in its Monthly Status Report.

3.5.5 Security Management

The Contractor shall maintain security in accordance with the *DISN Long Haul Block Security Classification Guide* and shall perform the following services to support security certification and accreditation in accordance with the Defense Information Technology Security Certification and Accreditation Process (DITSCAP).

3.5.5.1 System Security Authorization Agreement (SSAA). The Contractor shall prepare and submit a SSAA for Government approval in accordance with CDRL A008, System Security Authorization Agreement (SSAA). The Contractor's submission will be based upon the *DISN Long Haul Block SSAA* developed by the DISN Program Management Office. The Contractor shall ensure that the SSAA reflects the physical and logical configuration and security status of the network at all times as a 'living' document. The SSAA shall provide the DISN Program Management Office, Project Control Branch, which is the Designated Approval Authority (DAA), with a "snap-shot" view of the current DSTS-G infrastructure components provisioned by the Contractor. The Contractor shall maintain the SSAA throughout the period of performance of the contract and shall periodically provide a record copy to the government quarterly.

3.5.5.2 Security Problem Resolution. The Contractor shall assist in resolving any problems resulting from the security certification and accreditation process including vulnerability assessments and red team activities. This shall address security problem reports, technical investigations, and any testing performed to accomplish certification.

3.5.5.3 Security Operation. The Contractor shall provide for the secure operation of all aspects of the transmission services. This applies to the day-to-day operations of the Contractor's service management facilities, and interconnected devices and associated cables and signaling devices.

3.5.5.4 Network Information Security. The Contractor shall treat Government network information, not specifically identified as classified, as Unclassified but Sensitive Information. The Contractor shall disclose such information only to: 1) intended recipients; 2) Contractor employees who have a job-related requirement to see such information; or 3) other Contractors designated by the Government. Network information may consist of two information sets: information about the network elements and their status

and information about the users of the network. If the later information type is obtained and retained by the Contractor in performance of this contract, the government will be advised and offered an opportunity to review the information and level of detail in support of an evaluation whether classification criteria need to be applied.

3.5.5.5 Security Monitoring. The Contractor shall monitor system and network vulnerabilities and provide for the prompt reporting and correction of any vulnerability that directly or indirectly affects the infrastructure services. The vulnerability awareness, detection, and reporting mechanisms shall be documented in the SSAA. The Contractor shall monitor transponder, earth terminal, and associated terrestrial interconnection resources provided under this contract to: a) maintain positive control of DSTS-G resources and service management provisioned; b) verify user authorization; c) perform intrusion detection; d) protect against unauthorized access; e) maintain audit trails of user access requests; and f) analyze the security of network operations. The Contractor shall maintain records concerning all network activities that could affect operation, management, and control of the backbone transmission component infrastructure for a period of at least 90 calendar days.

3.5.5.6 Security Incident Reporting. The Contractor shall provide *on-line* reports to the CONUS-RNOSC and GNOSC in accordance with section 3.5.7 below and *monthly summaries* as part of the Monthly Status Reports in accordance with section 3.6.1 below.

3.5.5.6.1 On-line reports shall contain information on transmission services security-related events and shall specifically address:

- a. Incident type
- b. Incident severity
- c. Date and time of incident
- d. Components affected
- e. Location/s
- f. Containment and restoral procedures employed
- g. Proposal to ensure no re-occurrence
- h. Other relevant information.

3.5.5.6.2 Monthly Status Reports shall include information on transmission security management and shall specifically include:

- a. A Monthly summary of attempted break-ins.
- b. A Daily review, sorted by hour, of attempted system break-ins which affect (or could affect) the operation and management of backbone transmission services;
- c. A log of all security-related events (to include the detection of attempted system break-ins) which affect (or could affect) the operation and management of transmission services and could therefore affect services provided to the DSTS-G customer through this contract.

3.5.5.7 Contingency Planning and Disaster Recovery. The Contractor shall develop appropriate contingency plans, including an emergency response team, back-up operations plans and post-disaster recovery plans to ensure continuity and security of operations for all services provided under this contract. The Contractor shall exert "best effort" to provide continuity of services (best industry practices) in the event of natural or man-made disasters. At the direction of the Government, the Contractor shall mark/implement Telecommunications Service Priority (TSP) procedures on all DSTS-G circuits. The TSP System was designed for leased telecommunication services under U.S. jurisdiction and offered as a "fee for service" option, and is not binding on commercial activities providing telecommunication services outside of U.S. jurisdiction. However, DoD is using TSP to identify Government owned and leased services and circuits for priority restoration treatment, both CONUS and OCONUS. The acting service providers for Government owned DISN circuits are the DISA Allocation and Engineering (A&E) activities. The operation and maintenance (O&M) organizations are the service providers for non-DISN Government owned CONUS and OCONUS circuits. Various U.S. providers have filed tariffs, which require users to pay an initial one-time charge and a monthly recurring fee for restoration. It is assumed that a customer is willing and able to pay additional charges (e.g., overtime) when requesting priority provisioning. The Contractor shall adhere to the guidance on disasters contained in National Communications Systems (NCS), Natural and Technological Disaster Threats to National Security and Emergency Preparedness (NS/EP) Telecommunications, August 1996.

3.5.5.8 Security Audit Logs. The Contractor shall maintain audit records for usage of transmission management resources. The audit records shall be protected against unauthorized modification and deletion. The audit records shall log all security-related access events including unauthorized access attempts. This shall include monitoring user profiles, usage of security related resources, and maintaining security audit reports. The Contractor shall maintain the audit records on-line for 90 calendar days and on-line or off-line for an additional 9 months (for a total of one year).

3.5.5.9 Service Access. The Contractor shall limit access to services provided under this contract to users authorized by the Government.

3.5.5.10 Information Assurance Vulnerability Alerts. Information Assurance Vulnerability Alerts (IAVAs) are issued for hardware, operating systems, and application foundations (e.g., data base management systems, programming languages). If the Contractor does not maintain an association with a recognized Computer Emergency Response organization and respond to IAVAs issued by that organization, then the systems subject to this contract will be entered into the DISA-maintained system that responds to alerts issued by the DoD Computer Emergency Response Team (DODCERT). The required information elements and notification chain will be provided to the Contractor following award.

3.5.6 Operations Management

The Contractor shall maintain positive control of the services and service management provided under this contract. The Contractor shall operate a Customer Service Desk 24 hours daily, including weekends and holidays, to assist users in maintaining network performance standards for services provided under this contract. The customer service facility shall be equipped with a secure telephone and secure

facsimile and shall be approved for storage and processing of classified material up to and including SECRET material. The Contractor's operations facility shall be approved for SECRET level operations and ready to connect to the SIPRNET, in accordance with the *SIPRNET Security Classification Guide*, not more than 60 days after contract award.

3.5.6.1 Contractor personnel providing operations support and oversight shall have a SECRET security clearance based on Defense Security Service background checks.

3.5.6.2 The Contractor shall cooperate with, and shall coordinate all aspects of DSTS-G network operations with the Government's network management centers as required in individual Task Orders and in this document. At the Government's option, the Contractor shall provide on-the-job data interpretation and analysis training to Government, and Government sponsored third party, Network Management personnel in Government Network Management Centers to allow proper Government monitoring of the Contractor-provisioned services. Class sizes shall not exceed 10 students.

3.5.6.3 For each service being provided, the Contractor shall report operations management information to the Government's network management centers specified in the applicable Task Order. The Contractor shall electronically report operations management information, associated with the associated signal parameters, for out-of-tolerance alarms, and carrier-related alarms specified in Section 3.5.7 and shall provide a summary of fault trends and detailed statistics in its Monthly Status Report.

3.5.7 Electronic Service Reporting

The goal for the CONUS DSTS-G network management is to provide seamless integration for all Defense Information Systems Network (DISN) network Element Management Systems (EMS) and define roles and responsibilities of the principle organizations involved in the management and operations of the CONUS backbone.

3.5.7.1 The Regional Network Operations and Security Center (RNOSC) is responsible for integrated fault management of the DISN networks and systems and is located at Scott AFB, IL (CONUS-RNOSC). CONUS-RNOSC currently uses an Integrated Network Management System (INMS) to perform integrated fault management and correlation of alarms and events for the DISN. The DISA INMS version 2 (v2) gives RNOSC operators an end-to-end global view and status of DISN and its systems.

3.5.7.2 DSTS-G Management will be performed by the contractor with a data feed to be provided to CONUS-RNOSC. This data feed should be 128 Kbps originating from the contractors Element Management System (EMS) and be sent via SNMP traps or DISA provided "message hoppers" over the SIPRNET. The data feed should provide support for configuration and alarm queries via SNMP, ASCII (e.g., telnet), SQL, or another protocol that is mutually agreeable.

3.5.7.3 The contractor (s) shall perform all maintenance, and initial configuration of the EMSs. The initial configuration (to include Internet Protocol (IP) address, Network Service Access Points (NSAPs),

etc.) will be provided to the contractor (s) by the CONUS-RNOSC in order to set up and perform initial test and acceptance of the data feed. The CONUS-RNOSC will develop Standard Operating Procedures (SOP) to delineate Government and contractor network operations center (NOC) roles and responsibilities.

3.5.7.4 The Contractor shall report, on an as-changed basis, the following planned and actual signal parameter values for each provisioned service:

- a. Carrier C/kT
- b. Transponder Power (EIRP) per carrier
- c. Carrier Center Frequency
- d. Carrier Bandwidth
- e. Carrier Spectral Shape
- f. Total Transponder Power
- g. New Carrier Detection/Spurious Signal Power

3.5.7.5 The Contractor shall report out-of-tolerance alarm conditions to the CONUS-RNOSC when spectral measurements, listed in Section 3.5.7.4 above, no longer fall within the nominal range assigned to predicted signal values and shall report when each out-of-tolerance alarm has been cleared. Network status and network configuration data will be used to establish an integrated view of the DISN via the DISA INMS v2. Telemetry data will be forwarded to the INMS v2 where it will be processed and correlated with other DISN network element alarms and events. Interface Control Documents (ICD) will define interfaces between Contractor to Contractor, Contractor to Government, and Government to Government Network Operations Center (NOCs).

The report shall include the following data elements:

- a. The satellite carrying the service with the alarm
- b. The transponder on the satellite with alarm
- c. The count of the alarms on the transponder
- d. The type of alarm parameter (frequency, Carrier EIRP, Carrier bandwidth, transponder EIRP, Unauthorized Carrier)
- e. The link identifier of the alarm
- f. The expected value of the link (frequency, Carrier EIRP, Carrier bandwidth, transponder EIRP)
- g. Measured value of the link parameter (frequency, Carrier EIRP, Carrier bandwidth, transponder EIRP, Unauthorized Carrier)
- h. Time the alarm occurred.

- 3.5.7.6 For every authorized carrier-related alarm, the Contractor shall report:
- a. The carrier name and Command Communications Service Designator (CCSD)
 - b. The transmit earth station, its name, system identifier, latitude and longitude
 - c. The receive earth station, its name, system identifier, latitude and longitude.

3.5.7.7. The contractor (s) shall be responsible for DSTS-G Network Configuration Management (CM). The CONUS-RNOSC requires configuration management data to perform integrated fault management and alarm correlation with backbone outages. Additionally, CM is required to provide efficient analysis of data for backbone design and capacity planning. Interface Control Documents (ICD) will define the identification and electronic exchange of CM data between Contractor to Contractor, Contractor to Government; Governments to Government CM databases. Configuration data includes static data, (i.e., earth terminal locations and equipment configurations (rack elevations), settings, fixed connectivity, and connections to DISN Points of Presence). Configuration data also includes dynamic data; such as, site multiplexing or switching, link characteristics like data rate, modulation, coding rate, CCSD number (when applicable) or other link ID that can be correlated with DISN circuits.

3.5.7.8 The DSTS-G trouble management system shall interface and support the DISN Trouble Management System (TMS), which is based on the Remedy Action Request System (ARS). The CONUS-RNOSC will provide the required Remedy schemas, configurations, and operations documents, which the DSTS-G contractor (s) shall incorporate into the DSTS-G trouble management systems. Contractor proposed additions to the DISN TMS schemas shall be submitted to the DISN TMS Program Manager. The interface between the DSTS-G central trouble management facility and the CONUS-RNOSC will be either as a Remedy client to the CONUS-RNOSC TMS server or as a Remedy server with the Multi-Processing Server Option (MPSO) connection to the CONUS-RNOSC. The DISN TMS program office will provide the MPSO license as necessary.

3.5.8 Contractor-Hosted World-Wide Web Site

Within 60 days after the effective date of the contract, the Contractor shall provide a Web site that shall be available on a 24-hour basis. The Web site shall be a restricted site, accessible only to military and DoD civilian employees with a .mil or .gov email address, and to other users specifically authorized by the Government TM. The Web site shall include, or provide hyperlinks to, the following downloadable information.

3.5.8.1 Monthly Status Report (delivered pursuant to Section 3.6.1 below). This information, and any updates to this information, shall be posted to the Web site within 48 hours of Government approval. The Contractor shall restrict access to the Monthly Status Report that is posted on the Web site to those individuals identified by the Government TM.

3.5.8.2 Ordering Catalog. The on-line catalog shall contain sufficient information to allow users to prepare a Task Order and to determine which contract line items (to include pertinent terms and conditions) best meet operational requirements. The ordering catalog or guidance shall be subject to Government approval prior to posting on the Web site. The approved ordering catalog shall be posted to the Web site within 48 hours of receiving approval from the Government TM. An updated version of the

catalog shall be posted to the Web site within 48 hours of receiving Government-approval for changes to the information contained in the catalog. No orders shall actually be placed through the Web site.

3.5.8.3 Satellite, Terminal, and Service Application Notes. The Contractor shall post satellite technical and coverage information, terminal technical data and drawings, and service specifications on the Web site. New or revised material shall be posted to the Web site within 48 hours of availability.

3.5.8.4 Other Information Normally Provided to Commercial Customers. The Contractor shall post to the Web site any other relevant information that is normally provided to commercial customers via a Web site and which the Contractor feels would be useful to DSTS-G users.

3.5.8.5 Document Formats. Downloadable electronic documents shall be readable and printable using Adobe Acrobat Portable Document Format, version 3.0 or later, or software applications that are compatible with MS Office Suite, version Office95 or later.

3.5.8.6 Electronic Query. The Web site shall accept queries about potential requirements and uses of the DSTS-G contract and shall automatically forward such queries to the Government TM together with the author's identity and return address.

3.5.9 Performance Incentives

3.5.9.1 Performance Incentive Accounts. The Government has established an incentive program in which payment will vary according to actual service availability. The Contractor shall maintain a Performance Incentive Account for each Task Order. The Contractor shall credit all penalties incurred in the performance of a Task Order to that Task Order's Performance Incentive Account. Incentives earned in the performance of a Task Order and authorized by the Government will be paid by that Task Order's Performance Incentive Account or by additional charge to that Task Order as discussed below.

3.5.9.2 Availability Incentive Definitions. The Contractor shall provide satellite transponded bandwidth, terminal and link services that meet the availability requirements in Section 3.5.2. For purposes of performance incentive measurement, these are defined as Standard Service Availability and equate to an allowable outage time. Threshold availability is defined as twice the outage time allowed under Standard Availability. Premium availability is defined as on-half the allowable outage time.

3.5.9.3 Service Availability Incentive Range. Table 3.7 establishes the service performance incentive range for bandwidth, terminal and link services. Performance incentives are based on availability. Allowable outages expressed in minutes are for information purposes only.

Table 3.7: DSTS-G Service Available Incentive Range

Standard Service Availability	Threshold Availability	Premium Availability	Standard Allowable Outage Per Month (Minutes)	Threshold Allowable Outage Per Month (Minutes)	Premium Allowable Outage Per Month (Minutes)
0.99999	0.99998	0.999995	0.43	0.86	0.21
0.9995	0.999	0.99975	21.60	43.20	10.80
0.999	0.998	0.9995	43.20	86.40	21.60
0.997	0.994	0.9985	129.60	259.20	64.80
0.995	0.990	0.9975	216.00	432.00	108.00

3.5.9.3.1 Bandwidth, terminal or link service availability falling below the threshold availability for that service shall not be charged, and the Contractor shall credit the Task Order incentive account one day’s service charge for each day or portion thereof that the availability threshold is not met.

3.5.9.3.2 Bandwidth availability that falls between the Threshold and Standard availability due to transponder or satellite failure, or to co-channel or cross-polarization interference not caused by other DSTS-G users, shall be charged at 50% of the approved bandwidth rate for each day or portion thereof that the availability standard is not met.

3.5.9.3.3 Terminal or link service availability falling between the threshold availability and the standard availability for that service shall be charged at 50% of the approved terminal or bandwidth rate for each day or portion thereof that the availability standard is not met.

3.5.9.3.4 For each calendar month that a link exceeds the availability premium, the Contractor shall be entitled to one additional calendar day bandwidth service charge related to that link.

3.5.9.3.5 For each calendar month that a contractor operated and maintained leased or purchased terminal exceeds the availability premium, the Contractor shall be entitled to one additional calendar day lease, operations and maintenance service charge related to that leased terminal or one additional calendar day operations and maintenance service charge for that purchased terminal.

3.5.9.4 Additional DISN Terminal Incentives. The Mean-Time-Between-Mission-Critical-Failures for Contractor provisioned DISN terminals is defined in Section 3.4.

3.5.9.4.1 For the first Mission Critical Failure in a DISN terminal in 12 calendar months, there is no penalty except when the duration of the failure exceeds 4.38 hours (263 minutes). If the first Mission Critical Failure outage exceeds 4.38 hours, the Contractor shall credit that Task Order’s Performance Incentive Account with 50% of one day’s terminal and related O&M service charge associated with that terminal for each day or portion thereof that the Mission Critical Failure is not restored.

3.5.9.4.2 For the second and all succeeding Mission Critical Failures in a DISN Terminal within 12 calendar months, the Contractor shall not charge for the terminal and related O&M service and shall credit that Task Order’s Performance Incentive Account with one day’s terminal and related O&M service charge associated with that terminal for each day or portion thereof that the Mission Critical Failure is not restored.

3.5.9.4.3 For each calendar month in excess of 12 consecutive calendar months that a DISN terminal operates without a Mission Critical Failure, the Contractor shall be entitled to one additional calendar day lease and operations and maintenance service charge related to that terminal.

3.5.10 Performance Surveillance

3.5.10.1 The Contractor shall report service performance incentive calculations in its Monthly Status Report.

3.5.10.2 The Contractor is responsible for incentive calculation. The Government may audit. If the Contractor fails to report accurately, the Government may avail itself of all remedies available at law, including (if appropriate) default termination and remedies available for false claims.

3.5.10.3 Quarterly, the Government will survey the sponsor of each Task Order to ascertain their satisfaction with the Contractor's service and the Contractor's reported performance. The survey will request the sponsor to quantitatively assess (scale: 1= poor, 5= best) the Contractor's reported bandwidth, terminal and link service performance and to qualitatively assess (scale 0 to 100) the Contractor's overall service quality for such factors as timeliness of service delivery and Contractor terminal personnel cooperation with the host command personnel.

3.5.10.4 If the sponsor assesses the Contractor's bandwidth, terminal and link service performance at 4 or better in the survey and the Contractor's overall service quality at 90% or better, the Contractor shall be entitled to debit that Task Order's Performance Incentive Account balance for all penalties incurred during that quarter.

3.6 PROGRAM MANAGEMENT

The Contractor shall perform all management tasks necessary to efficiently and effectively provide the services required. Such tasks shall be included as part of the basic service prices. At a minimum, the Contractor shall perform the following tasks:

3.6.1 Monthly Status Reports

The Contractor shall submit a monthly status report in accordance with CDRL A010 and DI-MGMT-80368. This report shall contain all the service management data required in Section 3.5 segregated by Task Order.

3.6.2 JCS Semi-Annual Status Reports

The Contractor shall, on a semi-annual basis, prepare and submit a report identifying all DoD requirements being satisfied by this contract in accordance with CDRL A009. This report shall contain the following information:

- a. Customer Identification
- b. Network Name

- c. Satellite(s) Used
- d. Transponder(s) Used
- e. Satellite Beam(s) Used
- f. Bandwidth Occupied (kHz/MHz)
- g. Power Used (dBW)
- h. Percent Of Available Power Used
- i. Terminal Types And Location
- j. Total Service Cost For The Reporting Period
- k. Period of Service Performance.

3.6.3 Meetings and Conferences

The Contractor shall plan for, conduct and report on all meetings and conferences between the Contractor and the Government. Conference agendas shall be submitted in accordance with CDRL A011 and DI-ADMN-81249A for each meeting scheduled or held. The Contractor shall prepare and submit a meeting report, including minutes and action item lists, in accordance with CDRL A012 and DI-ADMN-81250A for each meeting held.

3.6.3.1 Monthly Status Meeting. The Contractor shall meet with the Government each month to informally provide the current status of ordered services provided to authorized users.

3.6.3.2 Quarterly Review. The Contractor shall host a formal quarterly Government review of all current services. This review shall describe the status of all ordered services for authorized users and outstanding service inquiries.

3.6.3.3 Annual Planning Conference. The Contractor shall host an Annual Service Planning Conference to address new services and technical enhancements to existing services to be offered to the Government.

3.6.3.4 Additional Meetings. Additional meetings and conferences may be scheduled as mutually agreed between the Contractor and the Government.

3.6.3.5 Support Contractors. The Government, at its option, may be supported by other contractors at any meeting or conference.

3.6.4 Volume Discounts

3.6.4.1 Space Segment Discounts. The Contractor shall offer progressive volume discounts for transponded satellite bandwidth when the total aggregate bandwidth on lease exceeds the equivalent of 500 MHz in service and for processed satellite services when the total aggregate data exceeds the equivalent of 200 Mbps in service. Discounts shall be applied to all then in-effect and future leases so long as the aggregate thresholds continue to be met.

3.6.4.2 Terminal Segment Discounts. The Contractor shall offer progressive volume discounts for leased C-, Ku- and Ka-band terminals and their Operations and Maintenance service when the total

number of Contractor-operated and -maintained terminals leased to the Government exceeds 10. The Contractor shall offer progressive volume discounts when the total number of Contractor-provisioned Teleport T1 equivalent accesses exceeds 100. The Contractor shall offer progressive volume discounts for transaction-oriented VSAT services and VSAT maintenance services when the total number of VSATs supported exceeds 150. The Contractor shall offer progressive volume discounts for Cooperative Unit Tracking services and Tracking Unit maintenance services when the total number of Units supported exceeds 300. Discounts shall be applied to all then in-effect and future leases so long as the aggregate thresholds continue to be met.

3.7 OPTIONAL SPECIALIZED SUPPORT SERVICES

3.7.1 International Host Nation Agreement Negotiation Support Services

3.7.1.1 The Contractor shall obtain basic commercial licenses and approvals, including FCC approvals in the domestic U.S. and host nation approvals outside the U.S., for all services provisioned under this contract as part of the priced service. The Contractor shall provide a list of the countries with which it and its satellite service vendors have landing rights, operating agreements site licenses, frequency clearances, connection approvals or other type of host nation agreement. This list shall include a matrix, by satellite vendor and type of approvals obtained.

3.7.1.2 At the Government's option where basic commercial HNA is insufficient to ensure DoD use, the Contractor shall provide support services to the Government in obtaining international approvals for operations under this contract in foreign nations. The Contractor shall ensure that international services to be provided under Task Orders may be provided as scheduled with the full approval of each affected host nation. Typical services may include, but are not limited to, obtaining host nation approvals, landing rights, operating agreements, site licenses, frequency clearances, and connection approvals. The Contractor shall document the results of each support effort in accordance with CDRL A013 and DI-MISC-81384.

3.7.2 Systems Engineering Services

3.7.2.1 The Contractor shall provide all system engineering and related planning services needed to generate the Contractor's Task Order Service Plan as part of the basic priced service.

3.7.2.2 At the Government's option, the Contractor shall perform planning functions for the DSTS-G network of transponder, earth terminal, and associated terrestrial interconnection resources. Specific functions may include, but are not limited to: 1) assess Government link and network plans to advise the Government of the best choice of resources to meet the Government's evolving requirements; 2) assure the accuracy of satellite bandwidth loading analyses; and 3) propose suitable individual link designs.

3.7.2.3 At the Government's option, the Contractor shall perform systems engineering tasks to improve the efficiency of planned and ongoing network operations. Specific activities may include, but are not limited to: 1) performing co-site interference troubleshooting; 2) assessing the kinds of earth terminals needed to meet requirements; 3) configuring and maintaining Government-provided earth terminals to

optimize network performance; 4) assisting in earth terminal site commissioning, activation, operation, provisioning, and deactivation; and 5) provisioning civil works in conjunction with contractor-provisioned earth terminals.

3.7.2.4 The Contractor shall document the results of each separate systems engineering service effort in accordance with CDRL A014 and DI-MISC-81384.

ACRONYM LISTING

8PSK	8 phase-shift keying
16QAM	16 quadrature amplitude modulation
ANSI	American National Standards Institute
BCI	bit count integrity
BER	bit error ratio
BIT	built-in test
BMC	Bandwidth Management Center
BPSK	Binary phase-shift keying
C/kT	Carrier-to-receiver noise density, in dB
CCSD	Command Communications Service Designator
CDL	common data link
CDRL	Contract Data Requirements List
CM	Configuration Management
CO	Contracting Officer
CONUS	Contiguous 48 United States
COR	Contracting Officer's Representative
COTS	Commercial-off-the-Shelf
CSCI	Commercial Satellite Communications Initiative
DAMA	demand assigned multiple access
DAA	Designated Approving Authorities
dB	Decibel
dB/K	Decibels per degree Kelvin
dBW	Decibels of power referenced to one watt
DES	Digital Encryption Standard
DII	Defense Information Infrastructure
DISA	Defense Information systems Agency
DISN	Defense Information System Network
DITSCAP	DoD Information Technology Security Certification and Accreditation Process
DM	degraded minute
DoD	Department of Defense
DODCERT	DoD Computer Emergency Response Team
DSCS	Defense Satellite Communications System
DSS	Defense Security Service
DSTS-G	DISN Satellite Transmission Services – Global
EFS	error-free second
EIA	Electronics Industry Association
EIRP	effective isotropic radiated power
ET	earth terminal

FEC	forward error correction
FRR	first right of refusal
FSS	fixed satellite services
GHz	GigaHertz (10^9 Hertz)
GNOSC	Global Network Operations Security Center
GPS	Global Positioning System
G/T	Gain-to-noise-temperature
HNA	Host Nation Approval
HPA	High power amplifier
HVAC	heating, ventilation and air conditioning
<i>I&RTS</i>	<i>DII COE, Integration and Runtime Specification</i>
IAVAs	Information Assurance Vulnerability Alerts
ICD	Interface Control Documents
IDIQ	indefinite delivery, indefinite quantity
IESS	INTELSAT Earth Station Standard
IF	Intermediate frequency
INMARSAT	International Maritime Satellite organization
INMS	Integrated Network Management System
INTELSAT	International Telecommunications Satellite Organization
ISP	Integrated Support Plan
ITU-T	International telecommunications Union – Telecommunication Standards Bureau
Kbits/s	kilobits per second
kHz	kiloHertz (10^3 Hertz)
Mbps	Million bits per second
MHz	MegaHertz (10^6 Hertz)
MILSATCOM	military satellite communications
MPSO	Multi-Processing Server Option
MSL	Master Station Log
MTBCF	mean time between critical failures
MTBMCF	mean-time-between-mission-critical-failures
MTLBCI	mean-time-between-loss-of-bit-count-integrity
NIST	National Institute of Standards and Technology
NOC	Network Operations Center
NSA	National Security Agency
NSAP	Network Service Access Point
NTISSP	National Telecommunications and Information Systems Security Policy
OCONUS	Outside the contiguous 48 United States
OQPSK	Offset quadrature phase-shift keying
PTF	patch and test facility
QPSK	Quadrature phase-shift keying
RF	Radio frequency

RFP	Request for Proposal
RNOSC	Regional Network Operations Security Center
SATCOM	satellite communications
SATP	Service Acceptance Test Plan
SATR	Service Acceptance Test Report
SCPC	single channel per carrier
SDP	service delivery point
SES	severely errored second
SFD	saturated flux density
SIPRNET	Secure IP Router Network
SSAA	System Security Authorization Agreement
SSOG	(INTELSAT's) Satellite System Operations Guide
TCF	technical control facility
TM	Task Monitor
TMDE	test measurement and diagnostic equipment
UI	unit interval
UPS	uninterruptible power supply
USSOCOM	United States Special Operations Command
VSAT	very small aperture terminal