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INTERNATIONAL SPACE STATION ORBITAL VOL-I

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INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 1031 - INDEX

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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SECTION 1100 - PROGRAM DESCRIPTION

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[PRD] DATABASE RECORD: 534319
ITEM NUMBER: T1DEGHKX

The ISS on-orbit operations consists of the spacecraft system related activities will be performed by the ISS ground operations support at NASA field centers and the International Partners (IP) facilities. Efficient communication among ground facilities is vital to mission success. The program will require operational and administrative links as appropriate for facilities and functions including those outlined below:

Spacecraft systems support and mission planning and integration related activities will be performed by the ISS ground operations support at NASA field centers and the International Partners (IP) facilities. Efficient communication among ground facilities is vital to mission success. The Program will require operational and administrative links as appropriate for facilities and functions including those outlined below:

- o Space Station Control Center (SSCC): The SSCC is the ISS portion of the Mission Control Center - Houston (MCC-H) located at the Johnson Space Center (JSC). It will be host to the Mission Management Team (MMT) and the overall ISS Flight Director, and it will provide functionally for overall planning and command and control of vehicle operations and flight safety, integrated across all IP elements. The SSCC will also function as the facility for the U.S. Flight Control Team to perform more detailed command and control of the U.S. elements, including planning, maintenance, etc. The SSCC will require communications services to support these operations responsibilities. Real-time systems operations data will flow between the SSCC and the ISS. Vehicle systems data, planning data, voice, and video will flow between JSC and various U.S. and IP ground facilities.
- o Mission Control Center - Moscow (MCC-M): The MCC-M, at Korolev, Russia, under the oversight of the MMT and in coordination with the SSCC, is responsible for the launch, rendezvous, docking, and on orbit operations of Russian elements and vehicles. The MCC-M is responsible for control of selected core systems functions else where in the ISS, both in nominal and SSCC back-up scenarios. These functions will primarily use the Russian communications and tracking (C&T) resources, but may also be performed via the interface

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[PRD] DATABASE RECORD: 534319
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to the SSCC and it's space-to-ground communications systems. Interfaces are required between the SSCC and the MCC-M for data, voice, and video.

- o Huntsville Operations Support Center (HOSC) - The HOSC, located at Marshall Space Flight Center (MSFC), provides the operational environment for all MSFC-supported space programs. It incorporates all systems required to perform data acquisition and distribution, telemetry processing, command services, database services, mission support services, and system monitoring and control. The Payload Operations Integration Center (POIC), located in the HOSC, will require communications services to support all utilization flights and all other increments supporting payload installation and operations during assembly phase. The POIC will exchange real-time data with geographically distributed user facilities in the U.S. and at IP locations. Payload commands and other data will be routed from the user operations facilities to the POIC for integration into the forward link command stream at the SSCC. The Payload Data Services System (PDSS), located in the HOSC, will be responsible for payload data processing and distribution. The PDSS will require communications services to receive ISS telemetry data and distribute payload data to user facilities in the U.S. and at IP locations. Communications requirements contained in this document for the POIC, PDSS, Remote Area for Payload Support (RAPS), and other MSFC operational facilities are routed through the HOSC.
- o Telescience Support Center (TSC): The TSC is a NASA funded facility which provides the capability to plan and operate on-orbit facility class payloads and experiments, other payloads and experiments, and instruments.
- o International Partners (IP) Facilities: The IP facilities are responsible for the coordinated command and control of IP systems and payloads. Data relating to IP ISS systems and experiments will be transferred to and from the Italian Space Agency (ASI), CSA, ESA, and JAXA. The IP's will provide communications services from designated termination point to their facilities.
- o Training Facilities: Training facilities, including the Space

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Station Training Facility (SSTF) and the Payload Training Facility (PTF) at JSC, will provide ISS core systems and payload systems training for Program crews, ground support personnel, and users. This will require communications services to transfer Instructor Station data and simulated Space Station data, voice, and video.

o Automated Transfer Vehicle (ATV) Control Center (ATVCC): The ATV-CC, hosted by the Centre National d'Etudes Spatiales (CNES) in Toulouse, France, on behalf of the European Space Agency (ESA), contains the monitoring and control systems for operating the ATV from Launch to docking, during attached phases and from de-docking to destructive re-entry. During free-flight operations, from launch to ISS approach initiation, the ATV-CC and the launch authorities at Kourou spaceport, French Guiana, is the mission authority. During integrated operations, the ATV-CC is responsible for the mission execution control of the ATV operations under SSCC and MCC-M mission authority. The ATV-CC performs ATV monitoring and control throughout the mission, as well as ATV trajectory analysis and determination in both nominal and contingency scenarios. During the phases from launch/ascent to ATV-Ariane 5 separation until reaching the ISS vicinity and having established the direct ATV-ISS in-orbit (proximity) link, the ATV-CC will rely on TDRSS communications and tracking resources. During proximity, attached, and reboost operations, the Advanced Relay and Technology Mission Satellite (ARTEMIS) will be the prime communications resource; the ISS Russian On-Orbit Segment, ISS Russian ground stations, and TDRSS will be the secondary communications resources. In order to execute the ATV-CC mission control task, interfaces are required between the ATV-CC, SSCC and the MCC-M for data, voice, and video.

o H-II Transfer Vehicle (HTV) Control Center (HTVCC): The JAXA H-II Transfer Vehicle (HTV)Control Center (HTCC) will be located in the Space Station Integration and Promotion Center(SSIPC)in Tsukuba Space Center, Japan. The HTVCC will monitor and control the HTV from launch to ISS berthing, during attached phases of operations and from unberthing to destrustive re-entry. During all phases of operation, the HTVCC will control the HTV spacecraft while under the authority of SSCC during critical approach, berthing, attached, and unberthing phases. The main functions of the HTVCC are flight

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Ground Control Messages Request (GCMR) and scedule SN services.

- o Network Integration Center (NIC): The NIC is located at the Goddard Flight Center (GSFC), Maryland. The NIC will monitor ISS activities as required such as Soyuz launch/docking, ISS mission critical periods, and ISS VHF ground station support.
- o Flight Dynamics Facility (FDF): Located at GSFC in Greenbelt, Maryland, the FDF will provide state vector data and tracking data evaluation support for the ISS, ATV, and HTV missions. The FDF also has the ability to provide orbit determination support if required. Real-time support is also provided for Space Shuttle missions and Launch Vehicles (ELV). Additional support is provided for TDRSS performance assessment for the STDN/TDRSS System using tracking data from the ISS, Space Shuttle, scientific satellites, and special test. TDRSS support includes state vector generation, orbit determination, tracking data evaluation, spacecraft maneuver support and testing to verify and improve TDRSS pointing accuracy. The FDF also provides spacecraft planning products to the DSMC and other spacecraft and launch vehicle control centers.

SUPPLIER: DDMS AGENCY: DDMS/X (DEPARTMENT OF DEFENSE)
 SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 03/14/03

SUPPLIER: ER AGENCY: 45 RANS/DOS (E - 45TH SPACE WING)
 SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 01/30/03

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)
 SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 02/28/03

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)
 SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 02/11/03

SUPPLIER: KSC AGENCY: KSC/PH-B3B (K - KENNEDY SPACE CENTER)

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[PRD] DATABASE RECORD: 534319
ITEM NUMBER: T1DEGHKX

SUBSUPPLIER: BOEING P319 KA91-P346 P344
UB-E

SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 02/21/03

SUPPLIER: DFRC AGENCY: DFRC/XOS (X - DRYDEN FLIGHT RESEARCH CENTER)
SUBSUPPLIER: FR

SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 01/30/03

[PRD] DATABASE RECORD: 553436 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/25/01
INITIAL DATE: 10/07/99
ITEM NUMBER: T2DEGHKX DATE LAST CHANGED: 02/12/04
SECTION: 1100 TIME LAST CHANGED: 15:30:38

REQUESTER: JSC
TEST CODE: INFO
TRACKING NO. S008-1 S910-1

1. DESCRIPTION: SPACE VEHICLE DESCRIPTION

For the most current Space Vehicle Description, reference the International Space Station Program Baseline Configuration Document (SSP 50037, latest revision).

The Visiting Vehicles (VV's) currently included in the PRD are the Automated Transfer Vehicle supplied by the European Space Agency (ESA) and the H-II Transfer Vehicle (HTV) supplied by the Japan Aerospace Exploration Agency (JAXA) of Japan. The ATV description can be found in SSP 50335, ESA/NASA /RSA Trilateral ATV Demonstration and Nominal Operations Flight Plan and SSP 41160, Segment Specification for the European Space Agency Segment. The HTV description can be found in SSP 50272, Segment Specification for the H-II Transfer Vehicle (HTV).

SUPPLIER: DDMS AGENCY: DDMS/X (DEPARTMENT OF DEFENSE)

SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 01/09/03

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[PRD] DATABASE RECORD: 553436
ITEM NUMBER: T2DEGHKX

SUPPLIER: ER AGENCY: 45 RANS/DOU (45TH SPACE WING)

SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 04/24/01

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 01/26/01

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 03/27/02

SUPPLIER: KSC AGENCY: KSC/PZ-H-C (K - KENNEDY SPACE CENTER)
SUBSUPPLIER: KA91-P346 P344

SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 05/06/02

SUPPLIER: DFRC AGENCY: DFRC/OS (DRYDEN FLIGHT RESEARCH CENTER)
SUBSUPPLIER: FD

SUPPLIER COMMITMENT: INFO WILL COMMIT RESPONSE DATE: 02/25/02

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SECTION 1405 - TEST VEHICLE INSTRUMENTATION FREQUENCY SUMMARY

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553814 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 11/09/99
INITIAL DATE: 11/09/99
ITEM NUMBER: T1G DATE LAST CHANGED: 07/03/02
SECTION: 1405 TIME LAST CHANGED: 08:10:52

REQUESTER: JSC
TEST CODE: CORE
TRACKING NO. P911-1

1. DESCRIPTION: SPECTRUM MANAGEMENT

OSF shall provide frequency and spectrum management services for all
space-to-ground, ground-to-space, and space-to-space transmission links.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/22/00

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SECTION 2000 - TEST REQUIREMENTS/SUPPORT PLANS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD:      533532          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I      APPROVAL DATE:         01/30/03
                                           INITIAL DATE:         08/23/96
ITEM NUMBER:               T1G            DATE LAST CHANGED:    02/28/03
SECTION:                   2000          TIME LAST CHANGED:    14:33:40

REQUESTER:                 JSC
TEST CODE:                 CORE          FLT 2A
TRACKING NO.              S008-1      S01-02-2   S01-05-5   S012-1     S02-02-1
                          S03-01-1    S609-1     S804-1     S905-1     S910-1
    
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1. DESCRIPTION: TRACKING AND DATA RELAY SATELLITE SYSTEM

The Tracking and Data Relay Satellite System (TDRSS) shall support the International Space Station (ISS) Program by providing S-Band and Ku-Band communications. TDRSS S-Band Single Access (SSA), S-Band Multiple Access (MA), and Ku-Band Single Access (KSA) capabilities shall support the various ISS Program Communications and Tracking (C&T) Systems.

Service for three different ISS S-Band systems are required. These systems are the Assembly Contingency Subsystem (ACS) S-Band system, ATV S-Band system, and HTV S-Band system. One SA service is required to support S and K RF links with a second SA service required during critical ISS operations such as rendezvous, EVA, VV launch, and other critical activities.

The ISS ACS SSAF link data rate operates at 72 kbps (High Data Rate mode) or 6 kbps (Low Data Rate mode). ACS SSAR link data rate operates at 192kbps (High Data Rate mode) and 12kbps (Low Data Rate mode).

TDRSS support is required for one ISS Ku-band service (forward and return) starting with the Space to Ground System (SGS) activation on flight 5A.1. The ISS SGS Ku-band return link signal is 50 Mbps containing payload data, video, and on-board recorded telemetry. The Ku-band returned link data rate may be upgraded to 75 Mbps or 150 Mbps after flight 8A.

ISS requires a Ku-band Single Access Forward (KSAF) link service. The KSAF will be either a PN spread signal or a 3 Mbps data modulated signal. The PN spread signal will be used for ISS antenna autotrack operations only and may be any PN code. The Ku-band forward link data rate may be upgraded to approximately 12 Mbps in the future.

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[PRD] DATABASE RECORD: 533532
ITEM NUMBER: T1G

The ATV S-Band system operates in MA at 8 kbps return link and 1 kbps forward link. The ATV S-band system operates in SSA at 8 or 64 kbps return link and 1 kbps forward link. The ATV shall require continuous TDRSS forward and return link, including the Zone of Exclusion (ZOE) during critical phases of flight. In addition, ATV will utilize TDRSS covering the attached phase periodically for eight (8) minutes at 8 kbs MA.

The HTV S-band forward link system operates at 250 bps SSA only. No MA forward link is required. The HTV S-band return link system operates in SSA at 8Kbps normal, or 2.0Kbps contingency. The HTV MA return link operates at 2.0Kbps normal. The HTV shall require continuous TDRSS forward and return link, including the Zone of Exclusion (ZOE) during critical phases of flight.

The ISS Program requires one dedicated S-band and one KU-band single access service for prime, ISS support with continuous TDRSS coverage except for periods of interruption necessitated by ISS masking, the zone of exclusion (ZOE), or TDRS handover, with limited two SA support during critical events. Critical periods will be defined through negotiations between GSFC Network Director and the ISS Program. Coverage during ZOE transit via the GUAM Remote Ground Terminal (GRGT) is required for all ISS S-band elements, but KSA services are not required during ZOE.

OND: FLIGHT 2A -6 MONTHS FOR TDRSS S-BAND SUPPORT
FLIGHT 5A.1 -6 MONTHS FOR TDRSS Ku-BAND SUPPORT

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

[PRD] DATABASE RECORD: 534321 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/30/03
INITIAL DATE: 08/23/96
ITEM NUMBER: T2GT DATE LAST CHANGED: 02/28/03
SECTION: 2000 TIME LAST CHANGED: 14:34:12

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[PRD] DATABASE RECORD: 534321
ITEM NUMBER: T2GT

REQUESTER: JSC
TEST CODE: CORE FLT 2A
TRACKING NO. S008-1 S01-05-5 S03-01-1 S609-1 S804-1
S910-1

1. DESCRIPTION: TDRSS GROUND STATION CONFIGURATION

Ground Configuration Message Requests (GCMRs) and GCMR acknowledgements for the ISS shall share the same communications interface as the Shuttle messages of the same type. The SSCC shall provide conflict-free GCMRs and TDRSS link management for all ISS elements including ACS, ATV, and HTV. Refer to the 451 ICD-NCCDS-MOC Annex 10 for detailed interface requirements.

OND: FLIGHT 2A -6 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/30/03

[PRD] DATABASE RECORD: 534320 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/30/03
INITIAL DATE: 08/23/96
ITEM NUMBER: T3GT DATE LAST CHANGED: 02/28/03
SECTION: 2000 TIME LAST CHANGED: 14:34:43

REQUESTER: JSC
TEST CODE: CORE FLT 2A
TRACKING NO. S008-1 S01-04-2 S01-05-5 S03-01-1 S609-1
S804-1 S910-1

1. DESCRIPTION: SSCC and DSMC for TDRSS SCHEDULING MESSAGES

Scheduling messages for ISS shall simultaneously share the same communications interfaces as the Shuttle scheduling messages. The SSCC

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[PRD] DATABASE RECORD: 534320
ITEM NUMBER: T3GT

shall supply conflict-free TDRSS scheduling messages for all ISS elements including ACS, ATV and HTV. Refer to the 451-ICD-NCCDS-MOC Annex 10 for detailed interface requirements.

REF: ITEM T43GT ISO2734 DBR 556504

OND: FLIGHT 2A -6 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/30/03

[PRD] DATABASE RECORD: 534322 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/30/03
ITEM NUMBER: T4G INITIAL DATE: 08/23/96
SECTION: 2000 DATE LAST CHANGED: 02/28/03
TIME LAST CHANGED: 14:35:32

REQUESTER: JSC
TEST CODE: CORE FLT 2A
TRACKING NO. S008-1 S01-04-2 S03-01-1 S609-1 S804-1
S910-1

1. DESCRIPTION: USER PERFORMANCE DATA MESSAGES

User Performance Data (UPD) messages for all ISS simultaneously share the same communications interface as the Shuttle messages of the same type. Refer to the 451-ICD-NCCDS-MOC Annex 10 for detailed interface requirements.

OND: FLIGHT 2A -6 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

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[PRD] DATABASE RECORD: 534322
ITEM NUMBER: T4G

[PRD] DATABASE RECORD: 533534 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 04/08/99
INITIAL DATE: 08/23/96
ITEM NUMBER: T5G DATE LAST CHANGED: 07/03/02
SECTION: 2000 TIME LAST CHANGED: 08:05:12

REQUESTER: JSC
TEST CODE: CORE
TRACKING NO. S609-1 S804-1 S905-1

1. DESCRIPTION: SYSTEM VERIFICATION

GSFC will support a validation/verification process that demonstrates compatibility, technical performance, capabilities, and operational readiness between ISS elements and the TDRSS, GN and VHF communication systems.

The NASA Integrated Services Network (NISN) will support a validation/verification process that demonstrates technical performance, capabilities, and operational readiness of all NISN provided Ground to Ground communications services.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 05/21/99

[PRD] DATABASE RECORD: 533537 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/30/03
INITIAL DATE: 08/23/96
ITEM NUMBER: HT6G DATE LAST CHANGED: 02/28/03
SECTION: 2000 TIME LAST CHANGED: 14:36:21

REQUESTER: MSFC JSC
TEST CODE: CORE
TRACKING NO. S008-1 S03-01-1 S609-1 S804-1 S905-1

1. DESCRIPTION: SECURITY REQUIREMENTS

NISN provided communications services shall comply with NASA

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[PRD] DATABASE RECORD: 533537
ITEM NUMBER: HT6G

Procedures and Guidelines (NPG) 2810.1, NASA's Information Technology (IT) Security Program (latest revision). Mission Critical Systems/ Mission (MSN) information, refers to those mission services formerly known as AIS Level 3. Scientific, Engineering, and Research (SER) information, refers to those mission services formerly known as ASI Level 2. In addition, the users of NISN services shall comply with the NMI 8610.11 (latest revision which expired), "Control of Access to Operational Voice Communications Circuits" (and the replacement policy currently being drafted by JSC/MOD/DA8) to preclude unauthorized access and potential damage to operational systems and user security. Interfacility Interface Control Documents (ICD's) shall address security.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

[PRD] DATABASE RECORD: 544759 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 10/07/99
INITIAL DATE: 04/24/98
ITEM NUMBER: T7G DATE LAST CHANGED: 07/03/02
SECTION: 2000 TIME LAST CHANGED: 08:05:36

REQUESTER: JSC
TEST CODE: CORE
TRACKING NO. S804-1 S905-1 S910-1

1. DESCRIPTION: NETWORK MANAGEMENT

The Program requires the Mission Services Program to provide network management services for all communications networks. These services shall include, but not be limited to: scheduling, monitoring performance, providing status to the Program, and providing network configuration management.

The networks provided shall be managed and operated in such a way as to minimize the need for operational interaction between network operators and SSCC/POIC operators and/or payload users.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2000 - TEST REQUIREMENTS/SUPPORT PLANS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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CONTINUED

[PRD] DATABASE RECORD: 544759
ITEM NUMBER: T7G

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/26/01

[PRD] DATABASE RECORD: 558535 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/30/03
INITIAL DATE: 02/07/01
ITEM NUMBER: T11G DATE LAST CHANGED: 02/28/03
SECTION: 2000 TIME LAST CHANGED: 14:36:50

REQUESTER: JSC
TEST CODE: CORE
TRACKING NO. S01-02-2 S03-01-1

1. DESCRIPTION: WSC QUALITY OR SERVICE

The data systems at the White Sands Complex (WSC) shall monitor the systems supporting the forward and return data services for all ISS elements requiring TDRSS support. User Performance Data (UPD) shall be transmitted to the SSCC, GSFC NIC, and the HOSC.

SUPPLIER: GSFC AGENCY: GSFC/450 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2100 - METRIC DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD:      533540          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I      APPROVAL DATE:         06/23/00
                                           INITIAL DATE:         08/23/96
ITEM NUMBER:                EGT2GT        DATE LAST CHANGED:    02/12/04
SECTION:                    2100          TIME LAST CHANGED:    15:22:49

REQUESTER:                  ER                GSFC                JSC
TEST CODE:                  CORE                FLT 2A
TRACKING NO.                S008-1          S609-1          S804-1          S905-1          S910-1

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1. DESCRIPTION: TDRS STATE VECTORS

When required, the GSFC FDF shall provide the SSCC with Tracking and Data Relay Satellite (TDRS) state vectors for ISS-to-TDRS pointing computations and for Visiting Vehicles-to-TDRS pointing computations to the SSCC. TDRS state vectors for ATV and HTV support will be supplied by the SSCC to the ESA and JAXA gateways as required. The TDRS state vectors accuracy requirement is 200 meters, three sigma. State vector formats are specified in JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, Vol.1, latest revision).

OND: FLIGHT 2A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/26/01

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/23/00

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[PRD] DATABASE RECORD:      533541          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I      APPROVAL DATE:         02/11/02
                                           INITIAL DATE:         08/23/96
ITEM NUMBER:                T3G          DATE LAST CHANGED:    12/09/02
SECTION:                    2100          TIME LAST CHANGED:    13:18:39

REQUESTER:                  JSC
TEST CODE:                  CORE                FLT 2A
TRACKING NO.                S01-05-5          S02-02-1          S609-1          S610-3          S804-1
                           S905-1          S910-1          S912-1

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1. DESCRIPTION: ISS TRANSMITTED FREQUENCY MEASUREMENT

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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PROGRAM NUMBER: 30000

SECTION 2100 - METRIC DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

CONTINUED

[PRD] DATABASE RECORD: 533541
ITEM NUMBER: T3G

The GSFC FDF shall process ACS S-band, ATV S-Band, HTV S-band, and Ku-Band one way doppler data to be used for determining the operational short and long term stability of the ISS transponders. This processing shall be provided when scheduled until transponders frequency shift signatures are established for all S-Band services and the Ku-Band services. Results shall be provided to the SSCC for use in estimating the required frequency information in the TDRSS scheduling and ground control messages.

The responsible Visiting Vehicle control center shall process appropriate data to be used for determining the operational short and long term stability of the transponders. This processing shall be provided when scheduled until transponder frequency shift signatures are established for S-Band services. Results shall be provided to the SSCC, ATVCC, and HTVCC for use in estimating the required frequency information in the TDRSS scheduling and ground control messages.

OND: FLIGHT 2A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02

[PRD] DATABASE RECORD: 551187 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/25/01
INITIAL DATE: 04/13/99
ITEM NUMBER: GT4G DATE LAST CHANGED: 12/09/02
SECTION: 2100 TIME LAST CHANGED: 13:24:21

REQUESTER: GSFC JSC
TEST CODE: CORE FLT 2A
TRACKING NO. S008-1 S904-1 S905-1 S910-1

1. DESCRIPTION: ISS STATE VECTORS

The JSC SSCC shall provide, as required, ISS, ATV, HTV, and Soyuz acquisition data to the TDRS via GSFC FDF. The ATV and HTV

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PROGRAM NUMBER: 30000

SECTION 2100 - METRIC DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 551187
ITEM NUMBER: GT4G

acquisition data shall be provided by the ATV and HTV control centers, respectively, to the SSCC. State vector formats are specified in JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, VOL.1, latest revision).

OND: FLIGHT 2A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/26/01

[PRD] DATABASE RECORD: 556069 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/30/03
INITIAL DATE: 06/23/00
ITEM NUMBER: T6EGX DATE LAST CHANGED: 07/23/04
SECTION: 2100 TIME LAST CHANGED: 10:43:38

REQUESTER: JSC
TEST CODE: CORE
TRACKING NO. S008-1 S02-02-1 S03-01-1

1. DESCRIPTION: C-BAND RADAR SUPPORT

NASA and DoD C-Band radar support is required for ISS free flyer support. Support is currently estimated at approximately 15 passes per year and will be scheduled as required. Currently, use of C-Band Metric Data is to support the:

- 1. Tracking of the Soyuz to provide updated pointing information for the VHF 2 communications systems at the NASA VHF stations.
- 2. Other ISS free flying elements as required.

SUPPLIER: ER AGENCY: 45 RANS/DOU (45TH SPACE WING)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/23/04

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INTERNATIONAL SPACE STATION ORBITAL VOL-I
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PROGRAM NUMBER: 30000

SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533542 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 05/11/01
INITIAL DATE: 08/23/96
ITEM NUMBER: T1G DATE LAST CHANGED: 12/09/02
SECTION: 2200 TIME LAST CHANGED: 14:02:35

REQUESTER: JSC
TEST CODE: CORE FLT 2A
TRACKING NO. S01-05-5 S609-1 S905-1 S910-1

1. DESCRIPTION: WSC RECORDING INTERVAL

The S-Band and Ku-Band return links shall be recorded at the White Sand Complex (WSC) for all ISS elements and held for a period of 50 hours or longer if specifically requested. Playback shall be required in the event of communications or facility failures. Playback of the Ku-Band data will utilize the same communications link as the real-time data, but real-time and playback will not be transmitted simultaneously. Playback of S-band data shall occur simultaneously (on separate channel) with real-time support. Playback of ACS, ATV and H TV S-band data shall utilize one common, shared playback channel.

OND: FLIGHT 2A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/06/01

[PRD] DATABASE RECORD: 533544 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/06/02
INITIAL DATE: 08/23/96
ITEM NUMBER: T2G DATE LAST CHANGED: 12/10/02
SECTION: 2200 TIME LAST CHANGED: 09:42:04

REQUESTER: JSC
TEST CODE: CORE FLT 4A
TRACKING NO. S008-1 S01-05-5 S02-02-1 S609-1 S610-1
S804-1 S910-1

1. DESCRIPTION: ASSEMBLY CONTINGENCY SUBSYSTEM (ACS) S-BAND
RETURN SERVICE FROM WSC TO SSCC

The ACS SSAR link data rate operates at 192Kbps (High Data Rate mode), 12Kbps (Low Date Rate mode). The ISS ACS System can be operated

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SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533544
ITEM NUMBER: T2G

coherently or non-coherently, but generally in the non-coherent mode.

The requirements for the ACS S-Band return data to the SSCC are as follows:

- a. A 192 / 12 kbps, synchronous, serial bitstream data and clock service shall be provided for the transfer of S-Band downlink telemetry.
- b. A 192 / 12 kbps, synchronous, serial bitstream data and clock service shall be provided for the transfer of recorded S-Band downlink telemetry. The recorded ACS S-Band service recorded HTV S-Band service, and recorded ATV S-Band service shall share a single ISS recorded S-band service configurable to 192/64/12/8/2/1 Kbps data rate.
- c. A NISN Real-time Critical Service is required.
- d. SSCC Mission Critical Systems/MSN security level interface is required.
- e. The data transport delay shall not exceed 600 ms from WSC to SSCC. The delay shall not vary.
- f. The maximum bit error rate shall be 10E-6.
- g. The communications service shall be transparent to the SSCC. (i.e., the data shall be presented by the communications equipment to the SSCC in the same format as that presented by the WSC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the SSCC and shall require no additional processing or data handling capabilities on the part of the SSCC. The data provided by the WSC shall not be altered by the communications service.)
- h. The communications service shall be capable of handling rate changes between 192 kbps and 12 kbps.
- i. Refer to JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, Vol. I, latest revision) for detailed interface requirements.

OND: FLIGHT 4A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

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PROGRAM NUMBER: 30000

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PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533544
ITEM NUMBER: T2G

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02

[PRD] DATABASE RECORD: 533545 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 06/23/00
INITIAL DATE: 08/23/96
ITEM NUMBER: H3G DATE LAST CHANGED: 12/10/02
SECTION: 2200 TIME LAST CHANGED: 09:48:05

REQUESTER: MSFC
TEST CODE: CORE FLT 4A
TRACKING NO. S008-1 S609-1 S610-1 S804-1 S905-1
S910-1

1. DESCRIPTION: ASSEMBLY CONTINGENCY SUBSYSTEM (ACS) S-BAND
RETURN SERVICE FROM WSC TO HOSC

The ACS SSAR link data rate operates at 192Kbps (High Data Rate mode), 12Kbps (low data rate). The ISS system can be operated coherently or non-coherently, but generally in the non-coherent mode.

The requirements for the S-band return data to the HOSC are as follows:

- a. A 192 / 12 kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of S-Band downlink telemetry.
- b. A 192 / 12 kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of recorded S-Band downlink telemetry.
- c. A NISN Mission Critical Service is required.
- d. HOSC Mission Critical Systems/SER security level or higher is required.
- e. The data transport delay shall not exceed 600 ms from WSC to HOSC.
- f. The maximum bit error rate shall be 10E-6.
- g. The communications service shall be transparent to the HOSC. (i.e., the data shall be presented by the communications equipment to the HOSC in the same format as that presented by the WSC to the communications equipment.

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[PRD] DATABASE RECORD: 533545
ITEM NUMBER: H3G

Any overhead added by the communications service shall be removed from the data prior to delivery to the HOSC and shall required no additional processing or data handling capabilities on the part of the HOSC. The data provided by the WSC shall not be altered by the communications service.)
h. The communications service shall be capable of handling rate changes between 192 kbps and 12 kbps.

OND: FLIGHT 4A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/26/01
RESPONSE:

[PRD] DATABASE RECORD: 533546 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 08/15/00
INITIAL DATE: 08/23/96
ITEM NUMBER: T4G DATE LAST CHANGED: 12/10/02
SECTION: 2200 TIME LAST CHANGED: 09:57:16

REQUESTER: JSC
TEST CODE: CORE FLT 5A.1
TRACKING NO. S008-1 S609-1 S804-1 S905-1 S910-1

1. DESCRIPTION: Ku-BAND RETURN SERVICE FROM WSC TO THE SSCC

The KSAR link data rate operates at 50 Mbps. In the future, the KSAR link may be upgraded to 75 Mbps, and then to 150 Mbps.

The requirements for Ku-Band return data to the SSCC are as follows:

- a. A 50 Mbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of Ku-Band downlink data.
- b. A NISN Mission Critical Service is required.

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PROGRAM NUMBER: 30000

SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533546
ITEM NUMBER: T4G

- c. SSCC Mission Critical Systems/MSN security level interface is required.
- d. The data transport delay shall not exceed 600 ms from WSC to SSCC. The delay shall not vary.
- e. The maximum bit error rate shall be 10E-6.
- f. The communications service shall be transparent to the SSCC. (i.e., the data shall be presented by the communications equipment to the SSCC in the same format as that presented by the WSC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the SSCC and shall not be altered by the communications service.)
- g. Refer to JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, Vol. I, latest revision) for detailed interface.

OND: FLIGHT 5A.1 -1 MONTH

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/26/01
RESPONSE:

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[PRD] DATABASE RECORD: 533547 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/06/02
INITIAL DATE: 08/23/96
ITEM NUMBER: H5G DATE LAST CHANGED: 12/10/02
SECTION: 2200 TIME LAST CHANGED: 09:58:38

REQUESTER: MSFC
TEST CODE: CORE FLT 5A.1
TRACKING NO. S008-1 S02-02-1 S609-1 S804-1 S905-1
S910-1

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1. DESCRIPTION: Ku-BAND RETURN SERVICE FROM WSC TO THE HOSC

The KSAR link data rate operates at 50 Mbps. In the future, the

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INTERNATIONAL SPACE STATION ORBITAL VOL-I
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PROGRAM NUMBER: 30000

SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533547
ITEM NUMBER: H5G

KSAR link may be upgraded to 75 Mbps, and then to 150 Mbps.

The requirements for Ku-band return data to the HOSC are as follows:

- a. A 50 Mbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of Ku-band downlink data.
- b. A NISN Mission Critical Service is required.
- c. HOSC Mission Critical Systems/SER security level or higher interface is required.
- d. The data transport delay shall not exceed 600ms from WSC to HOSC. The delay shall not vary.
- e. The maximum bit error rate shall be 10E-6.
- f. The communications service shall be transparent to the HOSC. (i.e., the data shall be presented by the communications equipment to the HOSC in the same format as that presented by the WSC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the HOSC and shall require no additional processing or data handling capabilities on the part of the HOSC. The data provided by the WSC shall not be altered by the communications service.)

OND: FLIGHT 5A.1 -3 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02

[PRD] DATABASE RECORD: 553526 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/06/02
INITIAL DATE: 11/04/99
ITEM NUMBER: T14G DATE LAST CHANGED: 12/10/02
SECTION: 2200 TIME LAST CHANGED: 10:03:02

REQUESTER: JSC
TEST CODE: CORE
TRACKING NO. S008-1 S02-02-1 S911-1 S912-1

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INTERNATIONAL SPACE STATION ORBITAL VOL-I
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PROGRAM NUMBER: 30000

SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553526
ITEM NUMBER: T14G

1. DESCRIPTION: ATV S-BAND RETURN FROM WSC TO SSCC

The ATV SSAR link data rate operates at 64 or 8 Kbps. The ATV S-band MA Return link data rate operates at 8 Kbps. The ATV S-band system can be operated coherently or non-coherently. ATV requirement for TDRSS coherent mode operation is the ATV tracking purposes only.

- a. A 8/64 kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of S-Band downlink telemetry.
- b. A 8/64 kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of recorded S-band downlink telemetry. The recorded ACS S-band service, recorded HTV S-band service, and recorded ATV S-band service shall share a single ISS recorded S-band service configurable to 192/64/12/8/2/1 kbps data rates.
- c. A NISN Mission Critical Service is required.
- d. SSCC Mission Critical Systems/MSN security level interface is required.
- e. The data transport delay shall not exceed 600 ms from WSC to SSCC. The delay shall not vary.
- f. The maximum bit error rate shall be 10E-6.
- g. The communications service shall be transparent to the ESA Gateway. (i.e., the data shall be presented by the communications equipment to the ESA Gateway in the same format as that presented by the WSC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the ESA Gateway and shall require no additional processing or handling capabilities on the part of the ESA Gateway. The data provided by the WSC shall not be altered by the communications service).
- h. The communications service shall be capable of handling rate changes between 8 and 64 kbps.
- i. Refer to JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, Vol. I, latest revision.) for detailed interface requirements.

OND: TBS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

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PROGRAM NUMBER: 30000

SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553526
ITEM NUMBER: T14G

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02

[PRD] DATABASE RECORD: 553529 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/06/02
INITIAL DATE: 11/05/99
ITEM NUMBER: T15G DATE LAST CHANGED: 02/12/04
SECTION: 2200 TIME LAST CHANGED: 15:22:49

REQUESTER: JSC
SUBREQUESTER: HTV
TEST CODE: CORE
TRACKING NO. S008-1 S01-05-5 S02-02-1 S911-1 S912-1

1. DESCRIPTION: HTV S-BAND RETURN FROM WSC TO SSCC

The HTV SSAR link data rate operates at 8 and 2 Kbps. The HTV S-band MA Return link data rate operates at 2 Kbps. The HTV S-band system can be operated coherently or non-coherently. HTV requirement for TDRSS coherent mode operation is for HTV tracking purposes only.

- a. A 8 and 2 Kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of S-band downlink telemetry.
- b. A 8 and 2 Kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of recorded S-band downlink telemetry. The recorded ACS S-Band service, recorded HTV S-band service, and recorded ATV S-Band service shall share a single ISS recorded S-band service configured to 192/64/12/8/2/1 kbps data rates.
- c. A NISN Real-time Critical Service is required.
- d. SSCC Mission Critical Systems/MSN security level interface is required.
- e. The data transport delay shall not exceed 600 ms from WSC to SSCC. The delay shall not vary.
- f. The maximum bit error rate shall be 10E-6.
- g. The communications service shall be transparent to the JAXA Gateway. (i.e., the data shall be presented by the communications equipment to the JAXA Gateway in

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PROGRAM NUMBER: 30000

SECTION 2200 - TELEMETRY DATA

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553529
ITEM NUMBER: T15G

the same format as that presented by the WSC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the JAXA Gateway and shall require no additional processing or data handling capabilities on the part of the JAXA Gateway. The data provided by the WSC shall not be altered by the communications service).

- h. The communications service shall be capable of handling rate changes between 8 and 2 Kbps.
- i. Refer to JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, Vol. I, latest revision) for detailed interface requirements.

OND: TBS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: INWORK SEE RESPONSE RESPONSE DATE: 03/14/02
RESPONSE: Waiting on a required date.

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2300 - COMMAND SYSTEMS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 544838 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 06/26/00
INITIAL DATE: 04/30/98
ITEM NUMBER: HT3G DATE LAST CHANGED: 12/10/02
SECTION: 2300 TIME LAST CHANGED: 10:27:24

REQUESTER: MSFC JSC
TEST CODE: CORE FLT 4A
TRACKING NO. S008-1 S804-1 S910-1 S912-1

1. DESCRIPTION: ASSEMBLY CONTINGENCY SUBSYSTEM (ACS) S-BAND
FORWARD SUPPORT FROM SSCC TO WSC

The ISS ACS SSAF link data rate operates at 72 kbps (High Data Rate mode) or 6 kbps (Low Data Rate mode).

- a. A 72 / 6 kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of spacecraft uplink data.
- b. A NISN Real-time Critical Service is required.
- c. SSCC Mission Critical Systems/MSN security level interface is required.
- d. The data transport delay shall not exceed 400 ms from SSCC to WSC. The delay shall not vary.
- e. The maximum bit error rate shall be 10E-6.
- f. The communications service shall be transparent to the WSC. (i.e., the data shall be presented by the communications equipment to the WSC in the same format as that presented by the SSCC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the WSC and shall require no additional processing or data handling capabilities on the part of the WSC. The data provided by the SSCC shall not be altered by the communications service.)
- g. Refer to JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, Vol. I, latest revision) for detailed interface.
- h. The communications service shall be capable of supporting rate changes between 72 kbps and 6 kbps.
- i. The WSC shall remove the modulation from the TRDSS forward link to the ISS when signals are removed at the SSCC output.

OND: FLIGHT 4A -6 MONTHS

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2300 - COMMAND SYSTEMS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 544838
ITEM NUMBER: HT3G

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO SEE RESPONSE RESPONSE DATE: 03/26/01
RESPONSE: NOCMT - 10i - Not a NISN item.

[PRD] DATABASE RECORD: 553539 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 06/26/00
INITIAL DATE: 11/05/99
ITEM NUMBER: T5GT DATE LAST CHANGED: 01/30/03
SECTION: 2300 TIME LAST CHANGED: 15:22:26

REQUESTER: JSC
SUBREQUESTER: HTV
TEST CODE: CORE
TRACKING NO. S008-1 S911-1

1. DESCRIPTION: HTV S-BAND FORWARD SUPPORT FROM SSCC TO WSC

The S-band Single Access Forward (SSAF) link and/or S-band MA forward link originate at the SSCC and shall be transported to the WSC. The HTV SSAF link operates at 250 bps.

- a. A 250 bps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of spacecraft uplink data.
- b. A NISN Real-time Critical Service is required.
- c. SSCC Mission Critical Systems/MSN security level interface is required.
- d. The data transport delay shall not exceed 400ms from SSCC to WSC. The delay shall not vary.
- e. The maximum bit error rate shall be 10E-6.
- f. The communications service shall be transparent to the WSC. (i.e., the data shall be presented by the communications equipment to the WSC in the same format as that presented by the SSCC to the communications

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SECTION 2300 - COMMAND SYSTEMS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553539
ITEM NUMBER: T5GT

- equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the WSC and shall require no additional processing or data handling capabilities on the part of the WSC. The data provided by the SSCC shall not be altered by the communications service).
- g. Refer to JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, Vol. I, latest revision) for detailed interface requirements.
- h. The WSC shall remove the modulation from the TRDSS forward link to the ISS when signals are removed at the SSCC output.

OND: TBS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: INWORK RESPONSE DATE: 01/26/01

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/26/00

[PRD] DATABASE RECORD: 553540 REQUIREMENT STATUS: APPROVED R

DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/06/02

ITEM NUMBER: T6GT INITIAL DATE: 11/05/99

SECTION: 2300 DATE LAST CHANGED: 12/10/02

TIME LAST CHANGED: 10:31:36

REQUESTER: JSC

SUBREQUESTER: ATV

TEST CODE: CORE

TRACKING NO. S008-1 S01-02-2 S02-02-1 S911-1 S912-1

1. DESCRIPTION: ATV S-BAND FORWARD SUPPORT FROM SSCC TO WSC

The ISS S-band Single Access Forward (SSAF) link and/or S-band MA forward links originate at the SSCC and shall be transported to the WSC. The ATV SSAF link operates at 1Kbps. The ATV S-band forward link

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SECTION 2300 - COMMAND SYSTEMS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553540
ITEM NUMBER: T6GT

data rate operates at 1 Kbps in MA.

- a. A 1 kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of spacecraft uplink data.
- b. A NISN Real-time Critical Service is required.
- c. SSCC Mission Critical Systems/MSN security level interface is required.
- d. The data transport delay shall not exceed 400 ms from SSCC to WSC. The delay shall not vary.
- e. The maximum bit error rate shall be 10E-6.
- f. The communications service shall be transparent to the WSC. (i.e., the data shall be presented by the communications equipment to the WSC in the same format as that presented by the SSCC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the WSC and shall require no additional processing or data handling capabilities on the part of the WSC. The data provided by the SSCC shall not be altered by the communications service).
- g. Refer to JSC/GSFC Operational Communications ICD for MCC Systems (JSC 11534, Vol. I, latest revision) for detailed interface requirements.
- h. The WSC shall remove the modulation from the TRDSS forward link to the ISS when signals are removed at the SSCC output.

OND: TBS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/06/02

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 PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
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 PROGRAM NUMBER: 30000

SECTION 2300 - COMMAND SYSTEMS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD:      553541          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I      APPROVAL DATE:         08/15/00
                               INITIAL DATE:         11/05/99
ITEM NUMBER:                T7GT          DATE LAST CHANGED:    12/10/02
SECTION:                    2300          TIME LAST CHANGED:    10:40:27

REQUESTER:                  JSC
TEST CODE:                  CORE
TRACKING NO.                S008-1      S911-1      S912-1
    
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1. DESCRIPTION: KU-BAND FORWARD SUPPORT FROM SSCC TO WSC

The ISS requires either a pseudo-random (PN) spread or data modulated Ku-band Single Access Forward (KSAF) link. A given TDRSS support event may contain both modulation or PN spreading, but not at the same time. The service will be configured by Ground Control Message Requests (GCMR) during the event to switch between data modulated or PN spread.

Data will originate at the SSCC and be transported to WSC at 3 Mbps. In the future, an ISS upgrade to accommodate a data rate of approximately 12 Mbps, and the 25 Mbps, may occur.

The PN spreading is used by the ISS for autotrack operations only and can be any PN code.

- a. A 3 Mbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of spacecraft uplink data.
- b. A NISN Real-time Critical Service is required.
- c. SSCC Mission Critical Systems/MSN security level interface is required.
- d. The data transport delay shall not exceed 400 ms from SSCC to WSC.
- e. The maximum bit error rate shall be 10E-6.
- f. The communications service shall be transparent to the WSC. (i.e., the data shall be presented by the communications equipment to the WSC in the same format as that presented by the SSCC to the communications equipment. Any overhead added by the communications service shall be removed from the data prior to delivery to the WSC and shall require no additional processing or data handling capabilities on the part of the WSC. The

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[PRD] DATABASE RECORD: 553541
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data provided by the SSCC shall not be altered by the
communications service).
g. Refer to JSC/GSFC Operational Communications ICD for MCC
Systems (JSC 11534, Vol. I, latest revision) for detailed
interface requirements.

OND: FLT 5A.1 -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/26/01

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 08/15/00

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SECTION 2700 - COMMUNICATION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD:      544849          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I      APPROVAL DATE:         02/06/02
                                           INITIAL DATE:         04/30/98
ITEM NUMBER:                HT4GK         DATE LAST CHANGED:    12/10/02
SECTION:                    2700          TIME LAST CHANGED:    10:56:11

REQUESTER:                  MSFC                JSC
TEST CODE:                  CORE                FLT 3A
TRACKING NO.                S008-1            S01-02-2            S02-02-1            S804-1            S905-1
                             S910-1            S912-1

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1. DESCRIPTION: MULTI-ELEMENT INTEGRATION TEST (MEIT) AT KSC-SSPF

- a. A 192 / 12 kbps, synchronous, serial bit-stream data and clock service from KSC-SSPF to JSC-SSCC shall be provided for the transfer of test S-band return data. The high and low data rates will not be required simultaneously.
- b. A 72 / 6 kbps, synchronous, serial bit-stream data and clock service from JSC - SSCC to KSC - SSPF shall be provided for the transfer of test S-Band forward link data. The high and low data rates will not be required simultaneously.
- c. A 192 / 12 kbps, synchronous, serial bit-stream data and clock service from WSC to SSCC shall be provided for the transfer of test S-Band downlink telemetry. The high and low data rates will not be required simultaneously.
- d. A 72 / 6 kbps, synchronous, serial bit-stream data and clock service from SSCC to WSC shall be provided for the transfer of test S-Band uplink data. The high and low data rates will not be required simultaneously.
- e. A 192 / 12 kbps, synchronous, serial bit-stream data and clock service from WSC to HOSC shall be provided for the transfer of test S-Band downlink telemetry. The high and low data rates will not be required simultaneously.
- f. A NISN Mission Critical Service is required.
- g. SSCC and HOSC Mission Critical Systems/SER level interface is required.
- h. The maximum bit error rate shall be 10E-6.
- i. The data transport delay shall not exceed 600ms.
- j. In support of MEIT testing, a relay from KSC to TDRS maybe required.
- k. The following voice services shall be provided for support of MEIT testing.

CLASSIFICATION UNCLASSIFIED

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SECTION 2700 - COMMUNICATION

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[PRD] DATABASE RECORD: 544849
ITEM NUMBER: HT4GK

GSFC to KSC Test Coordination	1 circuit	routine
GSFC to WSC Test Coordination	1 circuit	routine
GSFC to JSC Test Coordination	2 circuits	routine
GSFC to MSFC Test Coordination	1 circuit	routine

OND: FLIGHT 3A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: NOCMT SEE RESPONSE RESPONSE DATE: 03/14/02
RESPONSE: Future MEIT testing requirements are still being defined as indicated in NPRD Rev.H

SUPPLIER: KSC AGENCY: KSC/PH-B (KENNEDY SPACE CENTER)

SUPPLIER COMMITMENT: WILCO SEE RESPONSE RESPONSE DATE: 04/30/01
RESPONSE: REF: a: Data circuit will be provided using NISN circuit established to support ISS requirements from JSC.
REF: b. Data circuit will be provided using NISN circuit established to support ISS requirement JSC.
REF: j. This test coord will be assigned by GSFC COMM Manager when needed.
REF: Items c,d,e,f,g,h,i, and k are not KSC responsibility.

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SECTION 2710 - AIR/GROUND VOICE COMMUNICATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD:      533551          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I      APPROVAL DATE:         02/11/02
                                           INITIAL DATE:         08/23/96
ITEM NUMBER:                T1GX          DATE LAST CHANGED:    12/10/02
SECTION:                    2710         TIME LAST CHANGED:    14:56:51

REQUESTER:                  JSC
TEST CODE:                  CORE          FLT 2R
TRACKING NO.                S002-2      S01-02-2    S01-06-1    S02-02-1    S609-1
                           S804-1      S808-1      S905-1
    
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1. DESCRIPTION: VHF VOICE

Communications services shall be provided between SSCC and MCC-H, MCC-M and the VHF ground stations located at Dryden Flight Research Center, the White Sands Complex, and Wallops Flight Facility Tracking Station for the bi-directional transmission of voice. Additionally, a VHF site voice coordination loop interconnecting the control centers, communications facilities, and the VHF ground stations is required.

The capability is required to uplink and downlink Space-to-Ground VHF analog voice communications between the MCC-H, MCC-M, ISS and Soyuz via Dryden Flight Research Center (DFRC), Wallops Flight Facility (WFF), and the White Sands Complex (WSC) ground stations as scheduled.

The Service Module (SM) VHF-1 voice/packet data downlink frequency is 143.625mhz and the uplink frequency is 139.208mhz. The modulation is FM with a deviation of plus or minus 10 kHz. Support passes will be scheduled on request.

In addition to normal uplink/downlink support of (SM) VHF-1, the sites are required to provide downlink receive capability on Soyuz-TM VHF-2 at a frequency of 121.750 MHz. Uplink capability on VHF-2 at a frequency of 130.167 MHz is for emergency use only.

VHF 1 and VHF 2 support at DFRC, WFF, and WSC will be on a 4 hour call up and scheduled incase of Soyuz or ISS spacecraft emergency. Operator proficiency passes will be scheduled as needed (approximately 6 passes per year per site). VHF 2 support will be scheduled after each Soyuz launch, two Soyuz launches are projected per year. Approximately 6 passes per launch will be scheduled as follows: 3 at WLPS, 2 at WSC, and 1 at DFRC.

All view period support from Wallops, White Sands and Dryden on ISS

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SECTION 2710 - AIR/GROUND VOICE COMMUNICATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533551
ITEM NUMBER: T1GX

VHF 1 and Soyuz VHF 2 is required during any Soyuz or ISS spacecraft
emergency for the duration of ISS operations.

REF: ITEM T9GT SECTION ISO2750 DBR 558566

OND: FLT 2R -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO SEE RESPONSE RESPONSE DATE: 03/14/02
RESPONSE: WFF and WSC requires 24 notification. Less than
24 hours will be scheduled through the WFF shift
supervisor at (804 824-2375) and WSC at (505 527-7157)
on a best effort basis.

SUPPLIER: DFRC AGENCY: DFRC/XOS (X - DRYDEN FLIGHT RESEARCH CENTER)
SUBSUPPLIER: FD

SUPPLIER COMMITMENT: WILCO SEE RESPONSE RESPONSE DATE: 02/25/02
RESPONSE: Dryden will provide VHF voice 5 days a week,
8 hours a day. Hours of operation will be normal duty
hours from 0730-1600 PST. Emergency/contingency support
outside these hours will provide on an 3 hours best
effort basis.

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 PROGRAM NUMBER: 30000

SECTION 2730 - VOICE NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD:      533567          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I      APPROVAL DATE:         01/30/03
                                           INITIAL DATE:         08/23/96
ITEM NUMBER:                TIGHT         DATE LAST CHANGED:    03/10/03
SECTION:                    2730         TIME LAST CHANGED:    13:18:24

REQUESTER:                  JSC
SUBREQUESTER:               ZTM
TEST CODE:                  CORE
TRACKING NO.                S008-1      S01-02-2      S01-05-3      S02-02-1      S03-01-1
                           S609-1      S804-1        S905-1        S910-1        S912-1
    
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1. DESCRIPTION: VOICE CIRCUITS REQUIREMENT

NISN shall provide voice communications services for voice communications between the SSCC, HOSC, NASA Centers, and the International Partner (IP) for the following locations.

CIRCUITS	DESTINATION	OND
120 CKTS	SSCC to HOSC (Mission,Sim Supt) (NCHD)	FLT 5A.1 -8 months
5 CKTS	SSCC to HOSC (JSC TCS support) (NCHD)	FLT 5A.1 -5.5 months
5 CKTS	SSCC to HOSC (PAO support) (NCHD)	FLT 2A -6 months
7 CKTS	SSCC to GSFC (Miss,Sim Supt) (NCHD)	FLT 1A -6 months
31 CKTS	SSCC to CSA (Miss,Sim Supt) (NCHD)	FLT 6A -6 months
14 CKTS	SSCC to MCC-M (Miss,Sim Supt) (Critical)	FLT 2A -6 months
34 CKTS	SSCC to MCC-M (Miss,Sim Supt) (NCHD)	FLT 2A -6 months
1 CKTS	HOSC to GSFC (Mission Supt) (NCHD)	FLT 5A.1 -10 months
24 CKTS	HOSC to ARC TSC (Miss,Sim Supt) (NCHD)	FLT UF-1 -10 months
48 CKTS	HOSC to GRC TSC (Miss,Sim Supt) (NCHD)	FLT 5A.1 -9 months
18 CKTS**	HOSC to UoA/Birmingham (NCHD)	FLT 5A.1 - 3.75
3 CKTS	HOSC to RSA via SSCC (NCHD)	FLT 5A.1 - 8 months
18 CKTS**	HOSC to Ottawa,Ontario Canada (NCHD)	UF-1 - 6 months

**A full duplex data circuit is required to extend voice loops via EVoDS.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

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SECTION 2730 - VOICE NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533567
ITEM NUMBER: TIGHT

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/11/03

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/30/03

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INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD:      533557          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I       APPROVAL DATE:          01/30/03
                                           INITIAL DATE:          08/23/96
ITEM NUMBER:                T1GT           DATE LAST CHANGED:     02/28/03
SECTION:                    2734           TIME LAST CHANGED:     14:51:03

REQUESTER:                  JSC
TEST CODE:                  CORE           FLT 6A
TRACKING NO.                S008-1      S01-02-2  S03-01-1  S609-1      S804-1
                           S905-1      S910-1

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1. DESCRIPTION: DATA TRANSFER INTERFACE FOR SSCC TO CSA

NISN shall provide a NASA Operational WAN communications service for communications between the SSCC and the CSA gateway in St-Hubert. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: realtime telemetry, planning data files, file transfer (uplink and downlink), and archived ISS Systems data.

Requirements for SSCC to CSA data transfer interface are as follows:

- a. CIR of 256 kbps shall be provided for the transfer of uplink, downlink, planning, archive, and ground-to-ground data files.
- b. CIR of 384 kbps shall be provided for the transfer of ISS systems telemetry.
- c. A NISN Mission Critical Service (for a and b) is required.
- d. A SSCC and CSA Mission Critical Systems/MSN security level interface is required.
- e. The one way data transport delay shall not exceed 600 ms (for a and b).
- f. The maximum numbers for packet loss is less than .001 percent (for a and b).
- g. A CIR of 384 kbps shall be provided for transfer of Remote Multi-Purpose Support Room (RMPSR) Robotic video.
- h. A NISN PIP service (for g) is required.
- i. Refer to the SSCC to CSA Ground Segment ICD (SSP 45004) for detailed interface requirements.

OND: FLIGHT 6A -6 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533557
ITEM NUMBER: T1GT

RESPONSE: Awaiting funding approval.

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/30/03

[PRD] DATABASE RECORD: 533558 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/30/03
INITIAL DATE: 08/23/96
ITEM NUMBER: T2G DATE LAST CHANGED: 02/28/03
SECTION: 2734 TIME LAST CHANGED: 14:40:04

REQUESTER: JSC
TEST CODE: CORE FLT 6A
TRACKING NO. S008-1 S01-02-2 S03-01-1 S609-1 S804-1
S905-1 S910-1

1. DESCRIPTION: DATA TRANSFER INTERFACE FOR CSA TO SSCC

NISN shall provide a NASA operational WAN communications service, for communications between the CSA and the SSCC gateway in St-Hubert. This WAN service, utilizing TCP/IP protocol suite, will transport the following data.

Requirements for CSA to SSCC data transfer interface are as follows:

- a. CIR of 50 kbps shall be provided for the transfer of ISS Systems telemetry requests
- b. CIR of 256 kbps shall be provided for the transfer of uplink, downlink, planning, archive, and ground-to-ground data files.
- c. A NISN Mission Critical Service is (for a and b)required.
- d. A SSCC and CIS Mission Critical Systems/MSN security level interface is required.
- e. The one way data transport delay shall not exceed 600ms (for a and b).

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 533558
ITEM NUMBER: T2G

- f. The maximum numbers for packet loss is less than .001 percent (for a and b).
- g. A CIR of 384 kbps shall be provided for transfer of RMPSR Robotic video.
- h. A NISN PIP service (for g) is required.
- i. Refer to the SSCC to CSA Ground Segment ICD (SSP 45004) for detailed interface requirements.

OND: FLIGHT 6A -6 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03
RESPONSE:

[PRD] DATABASE RECORD:	533560	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	02/06/02
		INITIAL DATE:	08/23/96
ITEM NUMBER:	T3GT	DATE LAST CHANGED:	01/30/03
SECTION:	2734	TIME LAST CHANGED:	16:25:50

REQUESTER:	JSC				
TEST CODE:	CORE	FLT 1A			
TRACKING NO.	S008-1	S01-02-2	S02-02-1	S609-1	S610-1
	S804-1	S905-1			

1. DESCRIPTION: DATA TRANSFER INTERFACE FOR SSCC TO MCC-M

NISN shall provide a NASA Operational WAN communications service for communications between the SSCC and the MCC-M gateway. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types for both real-time and simulations: Shuttle data, ECS command and telemetry, SM health and status, trajectory data, ISS commands (payload and core), ISS command responses, command history data files, real-time and recorded telemetry, planning data files, file transfers (uplink and downlink), and archived ISS Systems data.

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[PRD] DATABASE RECORD: 533560
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Mission data flowing between the MCC-H and MCC-M has been categorized by mission criticality as being either Mission Critical or Mission non-critical. Negotiated agreement with NISN to modify bandwidth and availability requirements for each category is defined below; however reliability and packet loss remain as documented in Appendix B for Mission Critical Services.

Requirements for SSCC to MCC-M data transfer interface are as follows:

- 1.a. A Real-time Mission Critical 640 kbps data interface shall be provided to transport the following data services with a maximum restoral time of less than 15 minutes.
 - Preplanned FGB and SM commands, command responses, spacecraft, downlink, command history, and planning.
 1. Data, uplink, archive and ground-to-ground files.
 2. EIS Realtime commands.
 3. Russian Orbiting Segment (ROS)CCSDS packet telemetry.
 4. Processed Shuttle telemetry.
 5. ISS Systems telemetry.
 6. PPCP and transport messages.
- b. A NISN Real-time Critical Service is required.
- c. A SSCC and MCC-M Mission Critical Systems/MSN security level interface is required.
- d. The one way data transport delay shall not exceed 700 ms.
- e. The maximum acceptable packet loss is .001 percent.
- 2.a. A Mission Non-Critical 640 kbps data interface shall be provided to transport the following data files with a maximum restoral time of less than 3 hours.
 1. General File Transfer (planning, trajectory, flight control, security).
 2. Houston Support Room (HSR) telemetry.
 3. HSR general file exchange.
 4. HSR remote administration.
 5. HSR remote baseline update.
- b. A NISN Mission Critical Service is required.
- c. A SSCC and MCC-M Mission Critical Systems/MSN security level interface is required.
3. Ref to the SSCC to RSA Ground Segment ICD (SSP 50057) for detailed interface requirements.

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[PRD] DATABASE RECORD: 533560
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OND: FLIGHT 1A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 10/03/02

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/06/02

[PRD] DATABASE RECORD: 533561 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 05/21/01
INITIAL DATE: 08/23/96
ITEM NUMBER: T4G DATE LAST CHANGED: 12/10/02
SECTION: 2734 TIME LAST CHANGED: 15:19:52

REQUESTER: JSC
TEST CODE: CORE FLT 1A
TRACKING NO. S008-1 S01-02-2 S01-05-5 S609-1 S610-1
S804-1 S905-1 S910-1 S912-1

1. DESCRIPTION: DATA TRANSFER INTERFACE FOR MCC-M TO SSCC

NISN shall provide a NASA Operational WAN communications service for communications between the MCC-M and the SSCC gateway. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types for both realtime and simulations: Shuttle data, ECS command and telemetry, SM health and status, trajectory data, ISS commands (payload and core), ISS command responses, command history data files, realtime and recorded telemetry, planning data files, file transfer (uplink and downlink), and archived ISS Systems data. Mission data flowing between the MCC-M and MCC-H has been categorized by mission criticality as being either Mission Critical or Mission Non-Critical. Negotiated agreement with NISN to modify bandwidth and availability requirements for each category is defined below; however, reliability and packet loss remain as documented in Appendix B for Mission Critical Services.

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[PRD] DATABASE RECORD: 533561
ITEM NUMBER: T4G

Requirements for MCC-M to SSCC data transfer interface are as follows:

- 1.a. Real-time Mission Critical 640 kbps data interface shall be provided to transport the following data services with a maximum restoral time of less than 15 minutes:
 - 1. Shared multi-segment command data.
 - 2. Command Express reports.
 - 3. Russian Segment (RS) commands.
 - 4. Real-time United States On-Orbit Segment (USOS) telemetry.
 - 5. Transfer of recorded USOS data.
 - 6. Transfer of uplink, downlink, planning, and ground-to-ground data files.
 - b. A NISN Real-time Critical Service is required.
 - c. A SSCC and MCC-M Mission Critical Systems/MSN security level interface is required.
 - d. The one way data transport delay shall not exceed 700 ms.
 - e. The maximum acceptable packet loss is .001 percent.
-
- 2.a. A Mission Non-Critical 640 kbps data interface shall be provided to transport the following dta files with a maximum restoral time of less than 3 hours.
 - 1. Moscow Support Room (MSR) telemetry.
 - 2. MSR general file exchange.
 - 3. MSR remote administration.
 - 4. MSR remote baseline update.
 - b. A NISN Mission Critical Service is required.
 - c. A MCC-M and SSCC Mission Critical Systems/MSN security level interface is required.
-
- 3. Refer to the SSCC to RSA Ground Segment ICD (SSP 50057) for detailed interface requirements.

OND: FLIGHT 1A -6 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/06/01

CLASSIFICATION UNCLASSIFIED

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[PRD] DATABASE RECORD: 533561
ITEM NUMBER: T4G

[PRD] DATABASE RECORD: 538278 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/08/01
INITIAL DATE: 05/21/97
ITEM NUMBER: KT5GKT DATE LAST CHANGED: 12/10/02
SECTION: 2734 TIME LAST CHANGED: 15:22:57

REQUESTER: KSC JSC
SUBREQUESTER: S01-02-2 S705-1
TEST CODE: CORE FLT 2A

1. DESCRIPTION: JSC-SDIL TO KSC-SSPF/PAD DATA TRANSFER INTERFACE

JSC requires 192 Kbps full duplex circuit between the JSC Software Development Integration Laboratory (SDIL) and the KSC Space Station Processing Facility (SSPF)/PAD for the transfer of flight software loads. AIS sensitivity level 3 interface is required, and a non-critical highly desirable data classification for availability and a maximum bit error rate of 10E-6

OND: FLIGHT 2A -10 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/20/01
RESPONSE:

SUPPLIER: KSC AGENCY: KSC/PH-B3B (K - KENNEDY SPACE CENTER)
SUBSUPPLIER: USK-102

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 04/30/01

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/08/01

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PROGRAM NUMBER: 30000

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[PRD] DATABASE RECORD:      544851          REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I      APPROVAL DATE:         02/08/02
                                           INITIAL DATE:         05/01/98
ITEM NUMBER:               HT6GT          DATE LAST CHANGED:    01/30/03
SECTION:                   2734          TIME LAST CHANGED:    16:26:50

REQUESTER:                 MSFC              JSC
TEST CODE:                 CORE              FLT 5A.1
TRACKING NO.               S008-1      S01-02-2   S02-02-1   S804-1      S905-1
                           S910-1

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1. DESCRIPTION: SSCC TO HOSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for communications between the SSCC and the HOSC. This WAN service, utilizing the Transmission Control Protocol/Internet Protocol (TCP/IP) suite of protocols, will transport the following data types: commands (payload and core), command responses, command history data files, planning data files, uplink file transfers, archived ISS Systems data, and archive requests. NISN shall provide a serial bit-stream service for the transmission of simulated S-Band downlink telemetry. These data types are identified below as either operational or simulation requirements.

- a. CIR of 112 kbps shall be provided for the transfer of operational and simulated command responses via a dedicated point to point circuit or equivalent dedicated private network.
- b. CIR of 112 kbps shall be provided for the transfer of operational and simulated command history files.
- c. CIR of 192 kbps shall be provided for the transfer of planning data files.
- d. CIR of 150 kbps shall be provided for the transfer of archived ISS Systems data files.
- e. CIR of 192 kbps, synchronous, serial bit-stream data and clock service shall be provided for the transfer of downlink S-band downlink telemetry.
- f. A CIR of 4 kbps shall be provided for the transfer of real-time and simulated IAM antenna. FLT 5A.1 -3.5 months
- g. Two ISDN circuit with BRI of 128 Kbps each shall be provided for the transfer of Orbiter Communications Adapter (OCA) data. OND: FLT 5A.1-2.5
- h. A NISN Mission Critical Service (for a through f) is

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[PRD] DATABASE RECORD: 544851
ITEM NUMBER: HT6GT

- required.
- i. SSCC and HOSC Mission Critical Systems/MSN security level interface is required.
- j. The one way data transport delay (for a through f) shall not exceed 100ms.
- k. The maximum acceptable packet loss (for a through f) is .001 percent.
- l. Refer to the SSCC to HOSC ICD (SSP 45001) for detailed interface requirements.

OND: FLT 5A.1 -11 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/08/02

[PRD] DATABASE RECORD:	544853	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	02/08/02
		INITIAL DATE:	05/01/98
ITEM NUMBER:	HT7GH	DATE LAST CHANGED:	12/10/02
SECTION:	2734	TIME LAST CHANGED:	15:53:05

REQUESTER:	MSFC	JSC			
TEST CODE:	CORE	FLT 5A.1			
TRACKING NO.	S008-1	S01-02-2	S02-02-1	S804-1	S905-1
	S910-1				

1. DESCRIPTION: HOSC TO SSCC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for communications between the SSCC and the HOSC. This WAN service, utilizing the Transmission Control Protocol/Internet Protocol (TCP/IP) suite of protocols, will transport the following data types: commands (payload and core), command responses, command history data files, planning data files, uplink file transfers, archived ISS Systems data,

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[PRD] DATABASE RECORD: 544853
ITEM NUMBER: HT7GH

and archive requests. NISN shall provide a serial bit-stream service for the transmission of simulated S-Band downlink telemetry. These data types are identified below as either operational or simulation requirements.

- a. CIR of 112 kbps shall be provided for the transfer of operational and simulated commands via a dedicated point to point circuit or equivalent dedicated private network.
- b. CIR of 300 kbps shall be provided for the transfer of operational and simulated uplink files.
- c. CIR of 192 kbps shall be provided for the transfer of planning data files.
- d. CIR of 1 kbps shall be provided for the transfer of archive requests.
- e. Two ISDN circuits with a BRI of 128 kbps each shall be provided for the transfer of Orbiter Communications Adapter (OCA) data. OND: FLT 5A.1 -2.5 months
- f. A NISN Mission Critical Service (for a through d) is required.
- g. A SSCC and HOSC Mission Critical Systems/MSN security level.
- h. The one way data transport delay shall not exceed 100 ms (for a through d).
- i. The maximum acceptable packet loss is .001 percent (for a through d).
- j. Refer to the SSCC to HOSC ICD (SSP 45001) for detailed interface requirements.

OND: FLT 5A.1 11 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/27/02

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/27/02

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[PRD] DATABASE RECORD: 545082
ITEM NUMBER: HT17G

- simulated payload Health and Status data.
- b. A circuit of 1.1 Mbps shall be provided for the transfer of IS Training Session Data.
- c. A CIR of 100 kbps shall be provided for the transfer of simulated S-band telemetry data.
- d. A NISN Mission Critical service is required.
- e. A SSTF and HOSC Mission Critical Systems/SER security level interface is required.
- f. The one way data transport delay shall not exceed 100 ms.
- g. The maximum acceptable packet loss is .001 percent.
- h. Refer to the SSTF to MSFC POIC and Remote Area for Payload Support (RAPS) ICD (SSP 50088) for detailed interface requirements.

OND: FLIGHT 5a.1 -11 MONTHS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/27/02
RESPONSE:

[PRD] DATABASE RECORD:	545083	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	02/08/02
		INITIAL DATE:	05/05/98
ITEM NUMBER:	HT18G	DATE LAST CHANGED:	01/30/03
SECTION:	2734	TIME LAST CHANGED:	16:34:37

REQUESTER:	MSFC	JSC			
TEST CODE:	CORE	FLT 5A.1			
TRACKING NO.	S008-1	S01-02-2	S02-02-1	S804-1	S910-1

1. DESCRIPTION: HOSC TO SSTF DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for communications between the HOSC and the SSTF. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: simulated payload health and status data and (IS) Training

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[PRD] DATABASE RECORD: 545083
ITEM NUMBER: HT18G

Session Data Stream.

- a. A CIR of 1.4 Mbps shall be provided for the transfer of Remote Area for Payload Support (RAPS) data and Instructor Operator Station (IS) Training Session data.
- b. A CIR of 100kbps shall be provided for the transfer of S-band command data.
- c. A NISN Mission Critical service is required.
- d. A SSTF and HOSC Mission Critical Systems/SER security level interface is required.
- e. The one way data transport delay shall not exceed 100ms.
- f. The maximum acceptable packet loss is .001 percent.
- g. Refer to the SSTF to MSFC POIC and RAPS ICD (SSP 50088) for detailed interface requirements.

OND: FLT 5A.1 - 11 mo.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/27/02
RESPONSE:

[PRD] DATABASE RECORD:	551497	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	01/31/03
		INITIAL DATE:	05/04/99
ITEM NUMBER:	HT31G	DATE LAST CHANGED:	02/28/03
SECTION:	2734	TIME LAST CHANGED:	15:21:10

REQUESTER:	MSFC	JSC			
TEST CODE:	CORE	FLT 5A.1			
TRACKING NO.	S008-1	S01-02-2	S02-02-1	S03-01-1	S905-1
	S910-1				

1. DESCRIPTION: JSC TSC TO HOSC DATA TRANSFER INTERFACE

NISN shall provide a WAN communications service for communications between the JSC TSC and the HOSC. This WAN service, utilizing TCP/IP

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[PRD] DATABASE RECORD: 551497
ITEM NUMBER: HT31G

protocol suite, will transport the following data types: Real-time data, COR Dump of real-time data, LOR P/B of real time, LOR P/B of COR Dump, PIMS data, GSE packet definition and distribution, OCMS data, telemetry services and commanding services.

The X-windows interface requires a CIR of 56 Kbps for each active session (screen which is continually updating). The X-windows interface

requires a CIR of 56 Kbps for the combined non-active sessions.

- a. A CIR of 1,544Mbps shall be provided for the transfer of X-window commands, commands responses, PIMS data, PPS data, and uplink file transfer. OND: FLT 5A.1-9.5 months.
- b. A NISN Premium service is required.
- c. A HOSC and JSC Mission Critical Systems/SER security level interface is required.
- d. The one way data transport delay shall not exceed 100ms.
- e. The maximum acceptable packet loss is 1 percent.
- f. Refer to the POIC to Generic User IDD (SSP 50305) for detailed interface requirements.

OND: FLT 5A.1 - 9.5 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03
RESPONSE:

[PRD] DATABASE RECORD: 551498 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/31/03
INITIAL DATE: 05/04/99
ITEM NUMBER: T32GH DATE LAST CHANGED: 02/28/03
SECTION: 2734 TIME LAST CHANGED: 15:21:42
REQUESTER: JSC

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[PRD] DATABASE RECORD: 551498
ITEM NUMBER: T32GH

TEST CODE: CORE FLT 5A.1
TRACKING NO. S008-1 S01-02-2 S02-02-1 S03-01-1 S905-1
S910-1

1. DESCRIPTION: HOSC TO JSC TSC DATA TRANSFER INTERFACE

NISN shall provide a WAN communications service for communications between the HOSC and the JSC TSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: Real-time data, COR dump or real-time data, LOR P/B of real-time data, LOR P/B of COR dump, PIMS data, PPS data, GSE packet definition and distribution, OCMS data, telemetry services and commanding services.

The X-windows interface requires a CIR of 56 Kbps for each active session (screen which is continually updating). The X-window interface requires a CIR of 56Kbps for the combined non-active sessions.

- a. A CIR of 7.544 Mbps shall be provided for the transfer of real-time payload experiment data, stored payload experiment data, payload health and status data, ground ancillary data, downlink file transfers, GSE subset, X-window session data, and custom data packets.
- b. A NISN Premium service is required.
- c. A HOSC and JSC Mission Critical Systems/SER security level interface is required.
- d. The one way data transport delay shall not exceed 100ms.
- e. The maximum acceptable packet loss is 1 percent
- f. Refer to the POIC to Generic User IDD (SSP 50305) for detailed interface requirements.

OND: Flight 5A.1 - 9.5 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

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[PRD] DATABASE RECORD: 551498
ITEM NUMBER: T32GH

RESPONSE:

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: NOCMT SEE RESPONSE RESPONSE DATE: 02/11/03
RESPONSE: This requirement is documented in the ISS Vol II
Utilization PRD and should be deleted from the Vol-I
PRD.

[PRD] DATABASE RECORD: 551501 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/08/02
INITIAL DATE: 05/05/99
ITEM NUMBER: KT35GT DATE LAST CHANGED: 08/05/02
SECTION: 2734 TIME LAST CHANGED: 08:51:48

REQUESTER: KSC JSC
TEST CODE: CORE FLT 2A
TRACKING NO. S008-1 S02-02-1 S905-1 S910-1

1. DESCRIPTION: JSC TO KSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for communications between the JSC and the KSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: software loads, file transfers.

- a. A CIR of 192 Kbps shall be provided for the transfer of flight software loads from the Software Development Integration Laboratory (SDIL) to the Space Station Processing Facility (SSPF).
- b. A CIR of 224kbps shall be provided for the Test Control and Monitor System (TCMS) from the ASI Gateway at JSC to the SSPF.
- c. A SDIL and SSPF Mission Critical Systems/MSN security level interface is required.
- d. A JSC and SSPF Mission Critical Systems/SER security level interface is required for (b.).

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[PRD] DATABASE RECORD: 551501
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- e. A NISN Mission Critical Service is required for (a.).
- f. A NISN Premium Service is required for (b.).

REF: ITEM TK5GKT ISO 2734 DBR 538278

OND: FLT 2A - 10 mos.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02
RESPONSE:

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/08/02

[PRD] DATABASE RECORD:	551502	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	02/08/02
ITEM NUMBER:	T36GK	INITIAL DATE:	05/05/99
SECTION:	2734	DATE LAST CHANGED:	01/31/03
		TIME LAST CHANGED:	11:31:16

REQUESTER: JSC
TEST CODE: CORE FLT 2A
TRACKING NO. S008-1 S02-02-1 S905-1

1. DESCRIPTION: KSC TO JSC DATA TRANSFER INTERFACE

NISN shall provide a NASA Operational WAN communications service for communications between the KSC and the JSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: software loads, file transfer.

- a. A CIR of 192 Kbps shall be provided for the transfer of flight software loads from the SSPF to SDIL.
- b. A CIR of 512kbps shall be provided for the Test Control and Monitor System (TCMS) from the SSPF to

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INTERNATIONAL SPACE STATION ORBITAL VOL-I
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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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CONTINUED

[PRD] DATABASE RECORD: 551502
ITEM NUMBER: T36GK

- the ASI Gateway at JSC.
- c. A CIR of 384kbps shall be provided for compressed video from the SSPF to the ASI Gateway at JSC.
- d. A NISN Mission Critical Service is required for (a.).
- e. A NISN Premium Service is required for (b and c).
- f. A SSPF and SDIL Mission Critical Systems/MSN security level interface is required for (a.).
- g. A SSPF and JSC Mission Critical Systems/SER security level interface is required for (b and c).

REF: ITEM TK5GKT ISO2734 DBR 538278

OND: FLT 2A - 10 mos.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02
RESPONSE:

SUPPLIER: KSC AGENCY: KSC/PZ-H-C (K - KENNEDY SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 04/30/02

 [PRD] DATABASE RECORD: 551503 REQUIREMENT STATUS: APPROVED R
 DOCUMENT ID: ISS VOL-I APPROVAL DATE: 08/16/00
 INITIAL DATE: 05/05/99
 ITEM NUMBER: T37GT DATE LAST CHANGED: 10/03/02
 SECTION: 2734 TIME LAST CHANGED: 16:06:09

REQUESTER: JSC
 TEST CODE: CORE
 TRACKING NO. S008-1 S905-1 S910-1

1. DESCRIPTION: SSCC TO ESA INTERFACE

The SSCC to/from ESA data transfer interface will be located at the

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SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

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CONTINUED

[PRD] DATABASE RECORD: 551503
ITEM NUMBER: T37GT

ESA gateway at the SSCC.

- a. A CIR of 512 Kbps shall be provided for the transfer of spacecraft telemetry.
- b. A SSCC and ESA Mission Critical Systems/MSN security level interface in required.
- c. The one way data transport delay shall not exceed TBD ms.
- d. The maximum acceptable packet loss is 1 percent.
- e. Refer to the SSCC to ESA ICD (SSP 45011) for detailed interface requirements.

OND: TBS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 10/03/02

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 08/16/00

[PRD] DATABASE RECORD:	551504	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	02/09/01
		INITIAL DATE:	05/05/99
ITEM NUMBER:	T38GT	DATE LAST CHANGED:	07/03/02
SECTION:	2734	TIME LAST CHANGED:	08:10:50

REQUESTER: JSC
 TEST CODE: CORE
 TRACKING NO. S01-02-2 S905-1 S910-1

1. DESCRIPTION: ESA TO SSCC INTERFACE

The SSCC to/from ESA data transfer interface will be located at the ESA gateway at the SSCC.

- a. A CIR of 512 Kbps shall be provided for the transfer of file transfers.
- b. A SSCC and ESA Mission Critical Systems/MSN security level

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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

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CONTINUED

[PRD] DATABASE RECORD: 551504
ITEM NUMBER: T38GT

interface is required.

- c. The one way data transport delay shall not exceed TBD ms.
- d. The maximum acceptable packet loss is 1 percent.
- e. Refer to the SSCC to ESA ICD (SSP 45011) for detailed interface requirements.

OND: TBS

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/20/01

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/09/01

[PRD] DATABASE RECORD:	553557	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	02/09/01
ITEM NUMBER:	T40G	INITIAL DATE:	11/05/99
SECTION:	2734	DATE LAST CHANGED:	01/31/03
		TIME LAST CHANGED:	11:32:09

REQUESTER: JSC
 SUBREQUESTER: GRC
 TEST CODE: CORE
 TRACKING NO. S01-02-2 S911-1 S912-1

1. DESCRIPTION: HOSC AND GRC TSC INTERFACE

NISN shall provide a WAN communications service for communications between the HOSC and the GRC TSC. This WAN service, utilizing TCP/IP protocol suite, will transport the following data types: Real-time data, COR dump of real-time data, LOR P/B or real-time data, LOR P/B of COR dump, PIMS data, PPS data, GSE packet definition and distribution, OCMS telemetry services, and command services.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553557
ITEM NUMBER: T40G

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/20/01

[PRD] DATABASE RECORD: 553558 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/12/01
INITIAL DATE: 11/05/99
ITEM NUMBER: H41GH DATE LAST CHANGED: 01/31/03
SECTION: 2734 TIME LAST CHANGED: 11:36:08

REQUESTER: MSFC
TEST CODE: CORE
TRACKING NO. S008-1 S01-02-2 S911-1

1. DESCRIPTION: GRC TSC TO HOSC DATA TRANSFER INTERFACE

The X-Windows interface requires a CIR of 56 kbps for each active session (screen which is continually updating). The X-Windows interface requires a CIR 56Kbps for the combined non-active sessions.

- a. A CIR of 1.544 Mbps shall be provided for the transfer of X-windows commands, command responses, PIMS data, PPS data, and uplink file transfers.
- b. A NISN Premium service is required.
- c. A HOSC and GRC/TSC Mission Critical System/SER security level interface is required.
- d. The one way data transport delay shall not exceed 100 ms.
- e. The maximum acceptable packet loss is 1%.
- f. Refer to the POIC to Generic User IDD (SSP 50305) for detailed interface requirements.

OND: Flight 5A.1 - 8.5 months

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/20/01

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553558
ITEM NUMBER: H41GH

SUPPLIER COMMITMENT: NOCMT SEE RESPONSE RESPONSE DATE: 03/27/02
RESPONSE: This requirement is documented in the ISS Vol II
Utilization PRD and should be deleted from the Vol-I
PRD.

[PRD] DATABASE RECORD: 553759 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 01/31/03
INITIAL DATE: 11/05/99
ITEM NUMBER: H42GH DATE LAST CHANGED: 02/28/03
SECTION: 2734 TIME LAST CHANGED: 15:22:51

REQUESTER: MSFC
SUBREQUESTER: GRC
TEST CODE: CORE
TRACKING NO. S008-1 S01-02-2 S02-02-1 S03-01-1 S911-1

1. DESCRIPTION: HOSC TO GRC TSC DATA TRANSFER INTERFACE

The X-Windows interface requires a CIR of 56 kbps for each session (screen which is continually updating). The X-Windows interface requires a CIR of 56 kbps for the combined non-active sessions.

- a. A CIR of 7.278 Mbps shall be provided for the transfer of real-time payload experiment data, stored payload experiment data, payload health and status data, flight ancillary data, ground ancillary data, downlink file transfers, GSE subsets, and custom data packets.
- b. A NISN Premium service is required.
- c. A HOSC and GRC/TSC Mission Critical System/SER 2 interface is required.
- d. The one way data transport delay shall not exceed 100 ms.
- e. The maximum acceptable packets loss is 1%.
- f. Refer to the POIC and Generic User IDD (SSP 50305) for detailed interface requirements.

OND: Flight 6A.9 months

CLASSIFICATION UNCLASSIFIED

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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 553759
ITEM NUMBER: H42GH

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: NOCMT SEE RESPONSE RESPONSE DATE: 02/11/03

RESPONSE: This requirement is documented in the ISS Vol II
Utilization PRD and should be deleted from the Vol-I
PRD.

[PRD] DATABASE RECORD: 556504 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 05/21/01
INITIAL DATE: 08/15/00
ITEM NUMBER: T43GT DATE LAST CHANGED: 01/31/03
SECTION: 2734 TIME LAST CHANGED: 11:42:27
REQUESTER: JSC
TEST CODE: CORE FLT2A
TRACKING NO. S008-1 S01-02-2 S01-05-5 S03-01-1

1. DESCRIPTION: SSCC AN DSMC INTERFACE FOR SCHEDULING TDRSS

Scheduling messages for ISS shall simultaneously share the same communications interface as the Shuttle scheduling messages. The SSCC shall supply conflict-free TDRSS scheduling messages for all ISS elements including ACS, ATV, and HTV.

- a. A circuits of 64 kbps between the DSMC and the SSCC shall be provided for TDRSS scheduling messages. This interface shall be full duplex and shall be between the ISS and the SSP Programs.
- b. A NISN real-time Critical Service is required.
- c. A SSCC and DSMC Mission Critical Systems/MSN security level interface is required.
- d. Refer to the 530-ICD-NCCDS-MOC Annex 10 for detailed interfacer requirements.

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PROGRAM NUMBER: 30000

SECTION 2734 - VIDEO/DATA NETWORK TRANSMISSION

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 556504
ITEM NUMBER: T43GT

REF: ITEM T3GT SECTION ISO2000 DBR 534320

OND: FLIGHT 2A - 6 months

SUPPLIER: GSFC AGENCY: GSFC/450 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/06/01

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 05/21/01

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 575458 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/17/04
INITIAL DATE:
ITEM NUMBER: GTY8.1G DATE LAST CHANGED: 02/26/04
SECTION: 2750 TIME LAST CHANGED: 15:09:34

REQUESTER: GSFC JSC NASA HQ
TEST CODE: CORE FULL-TIME

1. DESCRIPTION: ISS OPS

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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Y1	M	EXTEND TO HQ	1
G2	M	EXTEND TO GSFC/NIC	
G3	M	EXTEND TO WSC	

NOTE: 1. Voice loop will be extended to the Action Center for HQ ISS staff.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/26/04

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[PRD] DATABASE RECORD: 575462 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/17/04
INITIAL DATE:
ITEM NUMBER: GTY10.1G DATE LAST CHANGED: 02/26/04
SECTION: 2750 TIME LAST CHANGED: 15:09:56

REQUESTER: GSFC JSC NASA HQ
TEST CODE: CORE FULL-TIME

1. DESCRIPTION: ISS FD

RESPONSIBLY AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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Y1	M	EXTEND TO HQ	1

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 575462
ITEM NUMBER: GTY10.1G

G2 M EXTEND TO GSFC/NIC
G3 M EXTEND TO WSC

NOTE 1. Voice loop will be extended to the Action Center for the ISS staff.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/26/04

[PRD] DATABASE RECORD: 575464 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/17/04
INITIAL DATE:
ITEM NUMBER: GTY11.1G DATE LAST CHANGED: 02/26/04
SECTION: 2750 TIME LAST CHANGED: 15:10:46

REQUESTER: GSFC JSC NASA HQ
TEST CODE: CORE FULL-TIME

1. DESCRIPTION: PAO MOSCOW

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
Y1	T/M	EXTEND TO HQ	1
G2	M	EXTEND TO GSFC/NIC	

NOTE: 1. Voice loop will be extended to the Action Center for the ISS staff.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/26/04

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 575466 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/17/04
INITIAL DATE:
ITEM NUMBER: GTY12.1G DATE LAST CHANGED: 02/26/04
SECTION: 2750 TIME LAST CHANGED: 15:11:09

REQUESTER: GSFC JSC NASA HQ
TEST CODE: CORE FULL-TIME

1. DESCRIPTION: ISSP MANAGEMENT COORD

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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Y1	T/M	EXTEND TO HQ	1

NOTE: 1. Voice loop will be extended to the Action Center for the ISS staff.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/26/04

[PRD] DATABASE RECORD: 575467 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/17/04
INITIAL DATE:
ITEM NUMBER: GHT13G DATE LAST CHANGED: 02/26/04
SECTION: 2750 TIME LAST CHANGED: 15:11:32

REQUESTER: GSFC MSFC JSC
TEST CODE: CORE FULL-TIME

1. DESCRIPTION: ISS TN COORD 1

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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T1	T/M	EXTEND TO JSC	
G2	T/M	EXTEND TO WSC	
G3	T/M	EXTEND TO NIC	
M4	T/M	EXTEND TO MSFC	

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

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[PRD] DATABASE RECORD: 575467
ITEM NUMBER: GHT13G

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/26/04

[PRD] DATABASE RECORD: 561754 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 11/14/02
INITIAL DATE: 02/12/02
ITEM NUMBER: GHT15G DATE LAST CHANGED: 02/17/04
SECTION: 2750 TIME LAST CHANGED: 14:01:45

REQUESTER: GSFC MSFC JSC
TEST CODE: STSALL

ASSOCIATED DOC: FLT-I
TRACKING NO. S02-02-1 S02-11-1

1. DESCRIPTION: NISN COMM COORD

Responsilbe Agency: GSFC

REF	CAP	NOTE	TERMINATION LOCATION
T1	T/M	1	Extend to JSC
H2	T/M	1	Extend to MSFC
G3	T/M	1	Distribute to GSFC NISN internal areas

NOTE 1: Orderwire between JSC OST, GSFC COMM MGR, and MSFC NISN (ENMC) and Russian Services Engineering Group (RSEG)for all NISN related voice data issues.

REF: FLT VOL I: ITEM GHT157G SECTION 2750 DBR 567701

SUPPLIER: GSFC AGENCY: GSFC/450 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 11/22/02

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 575468 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 04/06/04
INITIAL DATE:
ITEM NUMBER: TY17.1G DATE LAST CHANGED: 04/29/04
SECTION: 2750 TIME LAST CHANGED: 10:59:32

REQUESTER: JSC NASA HQ
TEST CODE: CORE
TRACKING NO. S04-04-1

1. DESCRIPTION: RS ISS VHF 1

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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T1	T/M	EXTEND TO DFRC	
T2	T/M	EXTEND TO WLP	
T3	T/M	EXTEND TO WSC	
Y4	M	EXTEND TO HQ	1

NOTE: Voice loop will be extended to the Action Center for the ISS staff.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 04/29/04

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[PRD] DATABASE RECORD: 575471 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/17/04
INITIAL DATE:
ITEM NUMBER: T18.1G DATE LAST CHANGED: 04/06/04
SECTION: 2750 TIME LAST CHANGED: 14:25:55

REQUESTER: JSC
TEST CODE: CORE

1. DESCRIPTION: RS ISS VHF 2

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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T1	T/M	EXTEND TO DFRC	1

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 575471
ITEM NUMBER: T18.1G

T2	T/M	EXTEND TO WLP	1
T3	T/M	EXTEND TO WSC	1

NOTE: 1. Downlink receive capability on Soyuz VHF 2. The uplink capability on VHF 2 is for emergency only.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/26/04

[PRD] DATABASE RECORD:	575474	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	06/24/04
		INITIAL DATE:	06/23/04
ITEM NUMBER:	T19.1G	DATE LAST CHANGED:	07/26/04
SECTION:	2750	TIME LAST CHANGED:	09:28:08

REQUESTER: JSC
TEST CODE: CORE FULL-TIME
TRACKING NO. S04-06-02

1. DESCRIPTION: ISS SITE COORD

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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T1	T/M	EXTEND TO DRFC	1
T2	T/M	EXTEND TO WLP	1
T3	T/M	EXTEND TO WSC	1
T4	T/M	EXTEND TO MSFC	2

NOTE: 1. ISS SITE COORD is for VHF 1 & 2 support only.
2. ISS SITE COORD is for VHF 1 support only.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/23/04

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
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OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 558796 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/11/02
INITIAL DATE: 03/29/01
ITEM NUMBER: GHT21G DATE LAST CHANGED: 02/17/04
SECTION: 2750 TIME LAST CHANGED: 14:48:30

REQUESTER: GSFC MSFC JSC
TEST CODE: CORE

ASSOCIATED DOC: FLT-I
TRACKING NO. S01-03-1 S02-02-1

1. DESCRIPTION: WSC PLAYBACK COORD

Responsible Agency: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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T1	T/M	EXTEND TO JSC	1
H2	T/M	EXTEND TO MSFC	1
G3	T/M	EXTEND TO WSC	1

NOTE 1: This circuit will be used for all Shuttle and Station Playbacks.

REF: FLT VOL-I ITEM GHT158G SECTION 2750 DBR 558795

SUPPLIER: GSFC AGENCY: GSFC/450 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 10/03/02

[PRD] DATABASE RECORD: 576238 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 04/06/04
INITIAL DATE:
ITEM NUMBER: Y22.1G DATE LAST CHANGED: 04/29/04
SECTION: 2750 TIME LAST CHANGED: 10:59:53

REQUESTER: NASA HQ
TEST CODE: CORE
TRACKING NO. S04-04-1

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

CONTINUED

[PRD] DATABASE RECORD: 576238
ITEM NUMBER: Y22.1G

1. DESCRIPTION: 1 S/G 1

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
Y1	M	EXTEND TO HQ	1

NOTE: Voice loop will be extended to the Action Center for the ISS staff.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 04/29/04

[PRD] DATABASE RECORD:	576240	REQUIREMENT STATUS:	APPROVED R
DOCUMENT ID:	ISS VOL-I	APPROVAL DATE:	04/06/04
		INITIAL DATE:	
ITEM NUMBER:	Y23.1G	DATE LAST CHANGED:	04/29/04
SECTION:	2750	TIME LAST CHANGED:	11:00:16

REQUESTER: NASA HQ
TEST CODE: CORE
TRACKING NO. S04-04-1

1. DESCRIPTION: 1 S/G 2

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
Y1	M	EXTEND TO HQ	1

NOTE: Voice loop will be extended to the Action Center for the ISS staff.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 04/29/04

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

CONTINUED

[PRD] DATABASE RECORD: 576240
ITEM NUMBER: Y23.1G

[PRD] DATABASE RECORD: 576242 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 04/06/04
INITIAL DATE:
ITEM NUMBER: Y24.1G DATE LAST CHANGED: 04/29/04
SECTION: 2750 TIME LAST CHANGED: 11:00:38

REQUESTER: NASA HQ
TEST CODE: CORE
TRACKING NO. S04-04-1

1. DESCRIPTION: TRANSLATE RUSSIAN TO ENGLISH

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
Y1	M	EXTEND TO HQ	1

NOTE: Voice loop will be extended to the Action Center for the ISS staff.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 04/29/04

[PRD] DATABASE RECORD: 576516 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 06/09/04
INITIAL DATE:
ITEM NUMBER: T25.1G DATE LAST CHANGED: 07/26/04
SECTION: 2750 TIME LAST CHANGED: 09:28:37

REQUESTER: JSC
TEST CODE: CORE ISSALL
TRACKING NO. S04-05-2 S04-05-2A S04-06-1 S04-06-1A

1. DESCRIPTION: IP/GC 1

RESPONSIBLE AGENCY: GSFC

REF	CAP	TERMINATION LOCATION	NOTE
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CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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CONTINUED

[PRD] DATABASE RECORD: 576516
ITEM NUMBER: T25.1G

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T1	T/M	EXTEND TO WSC	
T2	T/M	EXTEND TO WPS	
T3	T/M	EXTEND TO DFRC	

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/23/04

INTERNATIONAL SPACE STATION ORBITAL VOL-I
 PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
 OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
 PROGRAM NUMBER: 30000

SECTION 2800 - VIDEO

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD:      533563      REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I    APPROVAL DATE:         02/08/02
                               INITIAL DATE:         08/23/96
ITEM NUMBER:                T1GT        DATE LAST CHANGED:    12/11/02
SECTION:                    2800        TIME LAST CHANGED:    15:45:48

REQUESTER:                  JSC
TEST CODE:                  FLT 1A
TRACKING NO.                S02-02-1      S609-1      S610-2      S804-1      S905-1
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1. DESCRIPTION: TELEVISION

The ISS operational television is multiplexed into the Ku-band aggregate return link and is transmitted to the SSCC as digital data. Up to four channels may be simultaneously transmitted. The SSCC will convert the digital data to standard National Television Standards Committee (NTSC) signals and corresponding analog voice. JSC will make these television and voice signal available at the JSC located NASA Operational WAN I/F for distribution.

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SUPPLIER: GSFC      AGENCY: GSFC/450.3      (G - GODDARD SPACE FLIGHT CENTER      )
SUPPLIER COMMITMENT: WILCO      RESPONSE DATE: 03/14/02
SUPPLIER: JSC      AGENCY: JSC/DV      (JOHNSON SPACE CENTER      )
SUPPLIER COMMITMENT: WILCO      RESPONSE DATE: 02/08/02
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[PRD] DATABASE RECORD:      553803      REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                ISS VOL-I    APPROVAL DATE:         01/31/03
                               INITIAL DATE:         11/09/99
ITEM NUMBER:                TH2GHT      DATE LAST CHANGED:    02/28/03
SECTION:                    2800        TIME LAST CHANGED:    15:24:35

REQUESTER:                  JSC      MSFC
TEST CODE:                  CORE
TRACKING NO.                S008-1      S01-02-2      S02-02-1      S03-01-1      S911-1
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1. DESCRIPTION: TELEVISION COMMUNICATIONS REQUIREMENTS

NISN is to provide two (2) video channels to the HOSC Annex, CSA Peering Point, GRC TSC, and to the RPI Peering Point. NISN is to encode NTSC video sourced from JSC Building 8, up to 6Mbps per channel. JSC ISD is responsible for delivering NTSC video from JSC Building 8 to the JSC NISN PIP demarcation point. Service restoration for ISD

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
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PROGRAM NUMBER: 30000

SECTION 2800 - VIDEO

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

CONTINUED

[PRD] DATABASE RECORD: 553803
ITEM NUMBER: TH2GHT

resources is less than 8 hours on the weekdays and on-call on weekends.
A NISN PIP service is required to the HOSC and GRC TSC. A NISN SIP
service is required to the RPI Peering Point and CSA. CSA and the RPI
sites are responsible for the delivery of encoded video from the
Peering Point to their facilities. NISN will provide decoding
equipment at the HOSC, GRC TSC, and CSA to deliver NTSC outputs. The
RPI sites require the video to be delivered in IP format for viewing
on a PC. The ISS Orbital PRD Volume II identifies the RPI sites
authorized to receive ISS video.

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/28/03

SUPPLIER: MSFC AGENCY: MSFC/FD43 (MARSHALL SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/11/03

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 01/31/03

[PRD] DATABASE RECORD: 551507 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/11/02
INITIAL DATE: 05/05/99
ITEM NUMBER: T3GT DATE LAST CHANGED: 01/31/03
SECTION: 2800 TIME LAST CHANGED: 14:33:11

REQUESTER: JSC
TEST CODE: CORE FLT 1A
TRACKING NO. S02-02-1 S905-1

1. DESCRIPTION: MCC-M TO MCC-H VIDEO

NISN shall provide one simplex broadcast quality TV circuit from MCC-M
to MCC-H for simulation, Soyuz launch, and real-time support as
scheduled for PAO events.

OND: FLT 1A -6 MONTHS

CLASSIFICATION UNCLASSIFIED

INTERNATIONAL SPACE STATION ORBITAL VOL-I
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 30000

SECTION 2800 - VIDEO

PUBLICATION DATE: 05/31/96 REVISION: 0000 RUN DATE: 08/05/04

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CONTINUED

[PRD] DATABASE RECORD: 551507
ITEM NUMBER: T3GT

SUPPLIER: GSFC AGENCY: GSFC/450.3 (G - GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/27/02
RESPONSE:

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 02/11/02

[PRD] DATABASE RECORD: 561705 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: ISS VOL-I APPROVAL DATE: 02/11/02
INITIAL DATE: 02/11/02
ITEM NUMBER: T5G DATE LAST CHANGED: 07/03/02
SECTION: 2800 TIME LAST CHANGED: 08:10:59

REQUESTER: JSC
TEST CODE: CORE
TRACKING NO. S02-02-1

1. DESCRIPTION: LOW BANDWIDTH VIDEO BEWTEEN MCC-M AND MCC-H

Use of the administrative video conferencing system will be scheduled to support Soyuz and Progress dockings, and other selected scheduled events.

NOTE: Use of this video is desirable but not critical to operations. Availability and reliability of this bandwidth is not guaranteed for mission operations because it is administrative bandwidth.

SUPPLIER: GSFC AGENCY: GSFC/450 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 03/14/02

THIS REPORT CONTAINS 79 PAGES

REPORT BY: FORM=06 DOC=ISS VOL-I APV= APP SPL= G P1030=N