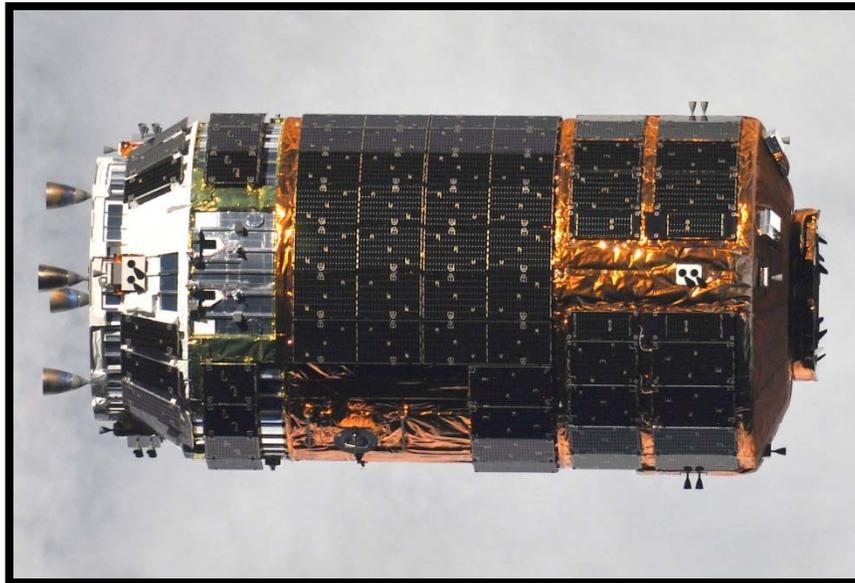




H-II Transfer Vehicle-3 (HTV)

H-II Transfer Vehicle-3 (HTV) Johnson Space Center (JSC) Mission Operations Directorate (MOD) Flight Readiness Review (FRR)



Agenda

- Network CoFR Requirements/Endorsements
- Open Work/Exceptions
- Support Plan
- C-band Radar Support Plan
- Significant Changes
- TDRS Support
- Risks
- Network Readiness

Jim Bangerter
Network Director
GSFC/Code 450.1
June 27, 2012



H-II Transfer Vehicle-3 (HTV)

Network CoFR Requirements/Endorsements

Requirement	White Sands Complex (WSC)	Eastern Range (ER) Resources	Flight Dynamics Facility (FDF)	Network Integration Center (NIC)	Communications Service Office(CSO)/NASA Integrated Services Network (NISN)
Network	Ready to Support	Ready to Support	Ready to Support	Ready to Support	Ready to Support
Flight Anomaly Resolution	Ready to Support	Ready to Support	Ready to Support	Ready to Support	Ready to Support
Anomaly-Procedures	Ready to Support	Ready to Support	Ready to Support	Ready to Support	Ready to Support
No Constraints	Ready to Support	Ready to Support	Ready to Support	Ready to Support	Ready to Support
Flight Preparation Process Plan (FPPP) Requirements Met	Ready to Support	Ready to Support	Ready to Support	Ready to Support	Ready to Support



Ready to Support



Not Applicable/None



Standard /Non-Standard Open Work with expected resolution prior to flight



Open work without expected resolution, without assistance prior to flight, unavoidable constraint violation



H-II Transfer Vehicle-3 (HTV)

Open Work/Exceptions

- **Standard Open Work**
 - None
- **Nonstandard Open Work**
 - None
- **Exceptions**
 - None



H-II Transfer Vehicle-3 (HTV)

Support Plan

- **Launch & Early Orbit Phase (LEOP) through Berthing**
 - **Continuous S-band Single Access (SSA) coverage**
- **Rendezvous/Berthing – 07/27/12 @ 209/12:10Z**
- **UnBerthing – 08/26/12 (30 days docked) @ 208/1540Z**
 - **Space Network (SN) will support continuous SSA one hour prior to undocking thru re-entry**
- **Multiple Access (MA) Forward/Return and S-band Multiple Access (SMA via TDE and TDW)**



H-II Transfer Vehicle-3 (HTV)

Support Plan (cont'd)

- **Tracking and Data Relay Satellite (TDRS) HTV-3 Coverage**
 - **TDRS utilization for SSA support: TDS, TD171, TDZ**
 - **MA/SMA service via all TDRS'**
 - **TDRS support during docked ops is not required**



H-II Transfer Vehicle-3 (HTV)

C-band Radar Support Plan

- **C-band radars will provide Visiting Vehicle (VV) contingency support within agreed upon call-up times for Nominal and Off-duty hours**



H-II Transfer Vehicle-3 (HTV)

Significant Changes

- **WSC**
 - **Hardware:**
 - **Shuttle Unique Equipment (SUE) removal at Second TDRSS Ground Terminal (STGT) and White Sands Ground Terminal (WSGT)**
 - **Tracking and Data Relay Satellite System (TDRSS) Status**
 - **F6 relocated to 62 degrees West longitude through July for TDRS-K testing**
 - **Will relocate back to 46 W after test termination**



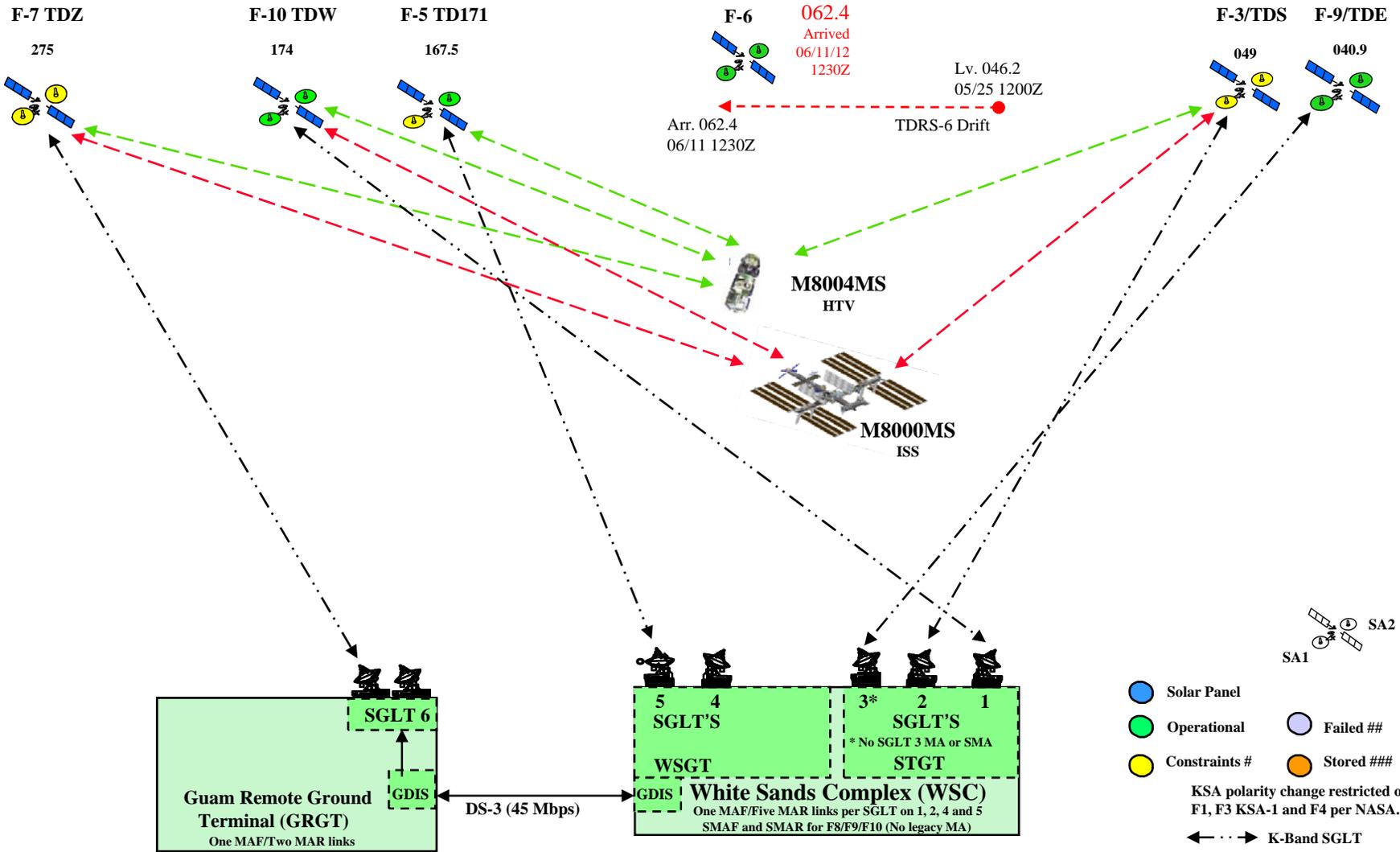
H-II Transfer Vehicle-3 (HTV)

Significant Changes (cont'd)

- **CSO/NISN**
 - **IDEA/IIGoR**
 - **The Mission Control Center (MCC) and Marshall Space Flight Center (MSFC) teams successfully transitioned the ISS Ku-band data from the IDEA network to the IIGoR network on 05/10/12**



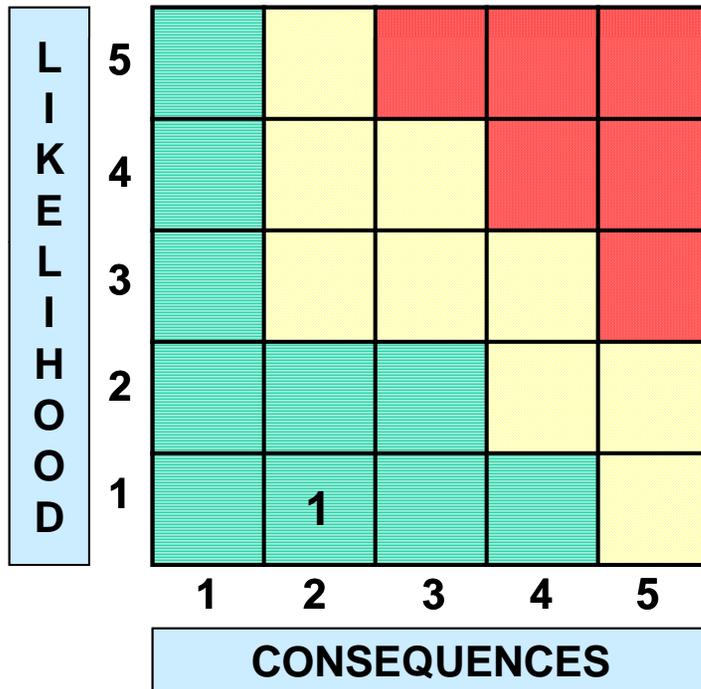
H-II Transfer Vehicle-3 (HTV)





H-II Transfer Vehicle-3 (HTV)

Risks



LxC Trend	Rank	Approach	Risk Title
*	1	M	HTV-3 SMAR 8kb support

Criticality	L x C Trend	Approach
High	↓ Decreasing (Improving)	M – Mitigate
Med	↑ Increasing (Worsening)	W – Watch
Low	➡ Unchanged	A – Accept
	* New since last mission	R – Research



H-II Transfer Vehicle-3 (HTV)

HTV-3 SMAR 8kb support Risk

Rank	Risk Statement	Approach & Plan	Comments
1 	<p>If TDRS SSAR resources are not available for HTV-3 8kb supports</p> <p>Then, the 8kb support will have to be supported on TDRS MAR and SMAR links. Compatibility testing indicates that data drops may occur due to a negative link margin</p>	<p>Continue to support with this known risk. HTV-1 and HTV-2 have been supported with this risk with no impact to either mission</p>	<p>Detailed Test Objective (DTO) supports were conducted as an engineering test during HTV-1. The HTV receiver maintained continuous lock during the DTO events</p> <p>In addition, MA/SMA supports were scheduled during the HTV-2 mission. Again, there were no problems with the supports</p> <p>JAXA plans to schedule MA/SMA supports during the HTV-3 mission</p>

Risk Criticality





H-II Transfer Vehicle-3 (HTV)

Network Readiness

- **The Network is ready to support HTV-3**



H-II Transfer Vehicle-3 (HTV)

Space Communication and Navigation (SCaN) Test Bed

- **Flight Rule B11-127 addresses all VV S-band Comm constraints**
- **Flight Rule B19-XX addresses SCaN test bed radiation management with International Space Station (ISS)**
- **EV6-12-4709 - Summary of Radio Frequency Compatibility (RFC) Analyses between the SCaN Test Bed and ISS Visiting Vehicles**
- **SCaN OIP addresses scheduling coordination activities with JSC Pointers**
- **SCaN Test Bed scheduling priority is below ISS and VVs**



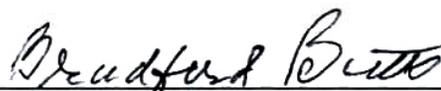
*Exploration and Space Communications
Projects Division*



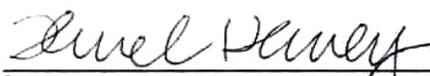
Certificate of Flight Projects Directorate Networks Readiness

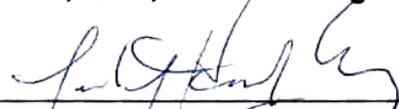
This is to certify that with successful completion of flight readiness preparations and closure of associated action items, all integrated network elements are ready to support the HTV-3 Mission

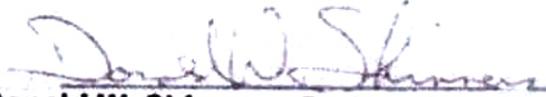
 5/24/2012
 Carolyn P. Dent, Chairperson Date
 Code 301, GSFC, Systems Review Office

 5/24/12
 Bradford Butts, Code 761 Date
 GSFC, Systems Management Branch

 05/24/12
 Scott A. Greator, Code 450.1 Date
 GSFC, Chief, Networks Integration Management Office

 5/24/12
 Joseph M. Aquino, JSC, Code DD13 Date
 Manager, Space Communications Integration Office

 5/24/2012
 John J. Hudiburg, Code 599 Date
 GSFC, 450 Senior Technical Authority

 5/24/2012
 Donald W. Shinnars, Code 452 Date
 GSFC, Space Network Project

 5/24/2012
 Susan L. Hoge, Code 595 Date
 GSFC, Navigation and Mission Design Branch

 5/24/12
 James A. Bangerter, Code 450.1 Date
 GSFC, Human Spaceflight Network Director