



ATV-3 JSC MOD FRR

ATV-3 JSC MOD Flight Readiness Review (FRR)



Agenda

- Network CoFR Requirements/Endorsements
- Open Work and Exceptions
- Network Support
- C-band Radar Support
- VHF Support Status
- Significant Changes
- TDRS Update
- Network Readiness
- Backup

Jim Bangerter
Network Director
GSFC/Code 450.1
February 10, 2012



ATV-3 JSC MOD FRR

Network CoFR Requirements/Endorsements

Requirement	SN	ER Resources	FDF	NIC	CSO/NISN
Network					
Flight Anomaly Resolution					
Anomaly-Procedures					
No Constraints					
Flight Preparation Process Plan (FPPP) Requirements Met					



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



ATV-3 JSC MOD FRR

Open Work and Exceptions

- **Standard Open Work**
 - **Automated Transfer Vehicle-3 (ATV)**
 - **White Sands Complex (WSC) Mission Readiness Test (MRT)**
 - **Flight Dynamics Facility (FDF) Vector Verification Tests**
 - **L-4 checkout**
- **Nonstandard Open Work**
 - **Confidence re-test of Backup Control Center (BCC) Command interface**
- **Exceptions**
 - **None**



ATV-3 JSC MOD FRR

Network Support

- **ATV will utilize TDS, TD171, TDW (SMA), and TDZ**
- **Launch & Early Orbit Phase (LEOP) – Continuous S-band Single Access (SSA) coverage**
- **On-Orbit – Multiple Access (MA) Forward/Return Continuous, and one SSA for 20 min every 5 orbits (minimum)**
- **Re-Entry – continuous SSA starting 1 hour prior to undocking thru +12 hours for re-entry**
- **Re-scheduling plan for launch slip in place**



ATV-3 JSC MOD FRR

C-band Radar Support

- **C-band radars will provide Visiting Vehicle (VV) contingency support within agreed upon call-up times for Nominal and Off-duty hours**
 - **Interim Support Instruction (ISI) for C-band Radar Contingency Call-up Procedures will be published prior to mission**



ATV-3 JSC MOD FRR

VHF Support Status

- **Very High Frequency (VHF) Emergency Communication Verification Passes**
 - **VHF-1 good two-way voice checks performed with International Space Station (ISS) and Wallops Ground Station (WGS) on 12/26/11**



ATV-3 JSC MOD FRR

Significant Changes

- **Space Network (SN)**
 - **Data Interface System (DIS)**
 - **Obsolescence Driven Avionics Redesign (ODAR) Software Delivery 001 delivered mid-December 2011**
 - **New VHF-1 system at WSC (new antenna/tower) – Completion 02/24/12**
- **FDF**
 - **New modernized FDF Software system – used during Soyuz-29S mission**
- **Communication Services Office (CSO)/NASA Integrated Services Network (NISN)**
 - **Small Conversion Device (SCD) replacement for BCC interface**
 - **Mission Operations Voice Enhancement (MOVE) Type D Keypad – completion date 04/2012**
 - **Nortel Router Project Upgrade – completion date 05/30/12**



ATV-3 JSC MOD FRR

TDRS Update

- **TDRS Spare (F-3) has experienced multiple frequency failures in the Master Frequency Generator (MFG) A and B. No redundancy**
- **TDRS-6 (F-6) is moving to 046W as backup to F-3**
 - **Drift started on 02/01/12 and arrival expected on 03/20/12**



ATV-3 JSC MOD FRR

Network Readiness

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



ATV-3 JSC MOD FRR

Backup



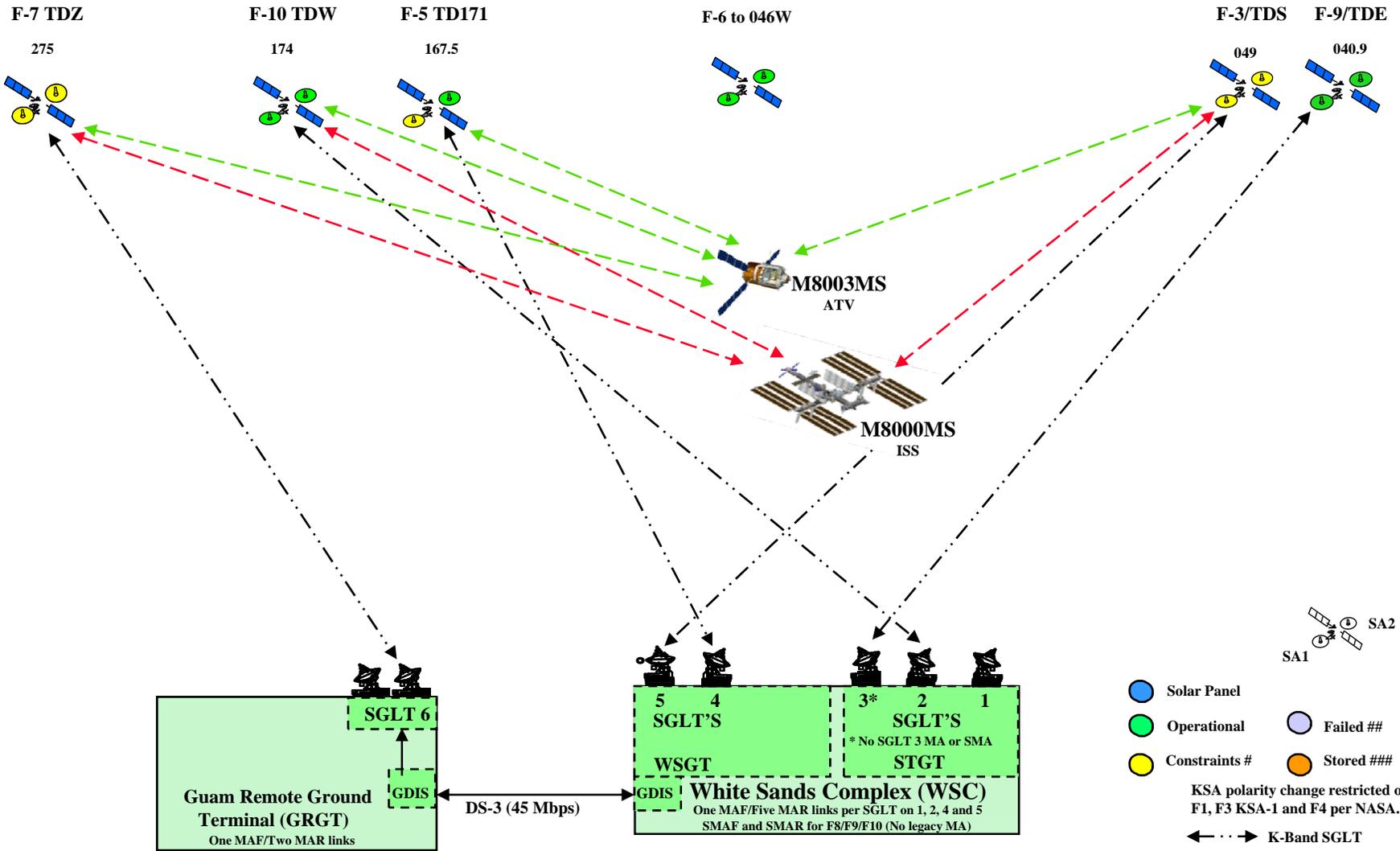
ATV-3 JSC MOD FRR

WSC VHF-1 Status

- **Engineering Change (EC) TO011-01 and -02 have been created for the WSC work**
 - **New VHF-1 tower was erected at WSC on 01/15/12**
 - **VHF-1 tower completed on 01/27/12**
 - **VHF-1 system move to Extended TDRS Ground Terminal (ETGT) started on 01/31/12 and testing should be completed by 02/24/12**
 - **Audio recording via MOVE system and camera installation will be performed with the VHF-2 system EC TO011-02 scheduled for completion 03/05/12**



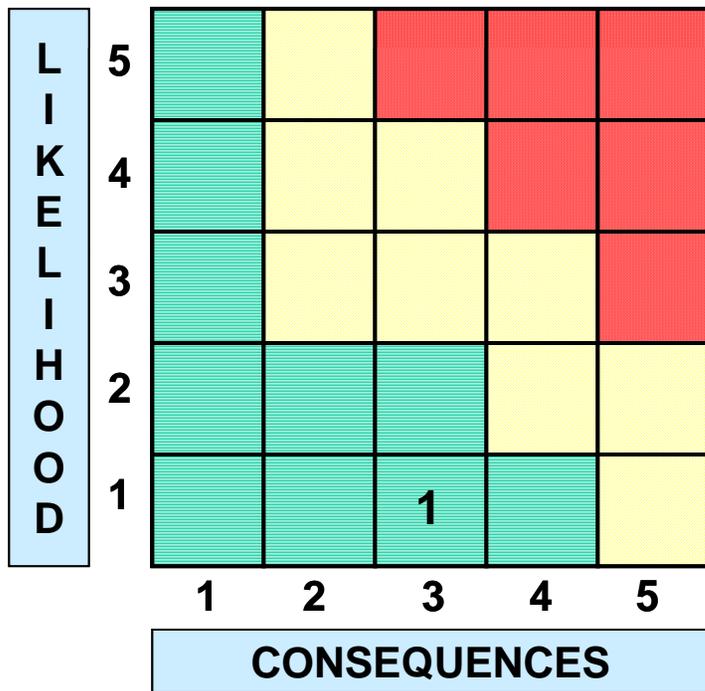
ATV-3 JSC MOD FRR





ATV-3 JSC MOD FRR

Risks



LxC Trend	Rank	Approach	Risk Title
1x3 ➡	1 Low	M	ATV ephemeris Uncertainty

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



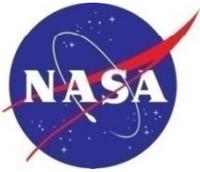
ATV-3 JSC MOD FRR

ATV-3 Risk (cont'd)

Rank	Risk Statement	Approach & Plan	Comments
1	If ATV ephemeris uncertainty exceeds +/- 9sec, then antenna pointing and signal acquisition/tracking could not be obtained	Mitigate – Accept Risk <ul style="list-style-type: none">WSC can expand uncertainty range to sweep wider range if necessary	No further action is planned. ATV 1 and 2 were successfully supported by the SN under similar conditions

Risk Criticality





**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
ATV-3 Mission*

Carolyn P. Dent 11/5/2012
 Carolyn P. Dent, Chairperson, Code 301, GSFC, Systems Review Office Date

Susan L. Hoge FOR: 1/5/12
 Susan L. Hoge, Code 595 Date
 GSFC, Navigation and Mission Design Branch

John J. Hudiburg 1/5/12
 John J. Hudiburg, Code 599 Date
 GSFC, 450 Senior Technical Authority

Bradford Butts 1/5/12
 Bradford Butts, Code 761 Date
 GSFC, Systems Management Branch

Scott A. Greatorex 01/05/12
 Scott A. Greatorex, Code 450.1 Date
 GSFC, Chief, Networks Integration Management Office

Joseph M. Aquino 1/5/12
 For Joseph M. Aquino, JSC, Code DD13 Date
 Manager
 Space Communications Integration Office



*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
ATV-3 Mission*

Donald W. Shinnars, Code 452
GSFC, Space Network Project

01/05/12
Date

James A. Bangerter, Code 450.1
GSFC, Human Spaceflight Network Director

01/05/12
Date