ATV Operational Review Splinter

September 12, 2007

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Near Earth Networks Services

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Agenda

- Mission Overview
- Network Test
- Interim Support Instructions (ISI)
- C-band Tracking
- FDF Support
- FDF Staffing
- NIC Staffing
- SN Support
- WSC TOA Staffing
- Proposed Activities/Open Discussions

Mission Overview

- Launch is scheduled for January 31, 2008, from the French Guyana launch site at Kourou
- Launch window TBD
- Automated Transfer Vehicle (ATV) docking is planned to occur at Launch plus 36 hours
- C-band radar will track orbits (TBS)
- ATV separations occurs at Launch plus (TBS)
- Space Network (SN) initial acquisition on TD?? is expected at (TBS)
- SN support continues through docking

Network Test Status

- **The following SN test have been completed:**

1. **ISS End-to-End Testing of ESTL/MCC/ESA**
   - **ATV Docking Video test**
2. **ATV 5.1 (End-to-End) Scheduling Test, February 9, 2007**
   - **Drop box and scheduling test**
3. **ATV SVT-4B (End-to-End) Test, December 9, 2004**
   - **TDRS link, encryption and link interruption, recovery of lost TM flow**
4. **ATV Pointing Calibration Test, December 7, 2004**
   - **Verify the S-band RF interface between the ESTEC rooftop antenna and the SN (TDS) in preparation for the upcoming ATV SVT4B Test**

Network Test Status *(cont'd)*

- **The following SN test have been completed: (continued)**

5. **ATV-MCC-H Joint End-to-End Test, November 17 and 19, 2004**
   - **ATV ground segment to process 8 and 64 kbps ATV telemetry from WSC to ATV-CC using the MCC-H bent-pipe and IGS configuration**
6. **ATV SVT4A (End to End) Test, May 24, 2004**
   - **End-to-End (ETE) command and telemetry**
7. **ATV Transponder/TDRSS Capability Test, May 17-21, 2004**
   - **Verify the S-Band RF interface between the (Bremen ATV) rooftop antenna and the SN (TDRS) in preparation for upcoming ATV Transponder/TDRSS Compatibility Test**
8. **ATV Pre-capability RF Test, April 19, 2004**

Network Test Status *(cont'd)*

- **Remaining Space Network (SN) Test is a SVT5**
  - **Objectives as follows:**
    - **Final ETE interface test of TDRS link; Final encryption test over one of the links (TDRS or ARTEMIS) to confirm that the encryption keyset plugs have been correctly installed in the ATV**
    - **Final ETE check of parallel TM flows through TDRS and ARTEMIS links to be active simultaneously**
    - **Test will occur 30 to 60 prior to launch.**

Interim Support Instructions

- **The Networks will issue the following Interim Support Instructions (ISI) for ATV**

  1. **ISI 001 Premission Status L-30 days**
  2. **ISI 002 Launch Count L-7 days**
  3. **ISI 003 Critical Mission Period Restrictions L-7 days**
  4. **ISI 004 Mission Termination after Reentry is confirmed**

C-band Tracking

- **A minimum of five C-band passes will be scheduled via the Eastern Range**
- **Three C-band sites will be scheduled**
- **Orbits TBD**

FDF Support

- ATV orbit determination using available TDRS and C-band tracking data. Orbit determination will be performed after ATV injection and just prior to and after planned ATV maneuvers
- FDF will send ATV vectors based on FDF orbit determination to ESA via JSC
- For the first ATV mission, provide ESA (via JSC) with ATV ephemeris data based on FDF orbit determination after separation so ESA can verify ATV GPS results
- Provide ATV acquisition data to supporting SN sites. Acquisition data will be based on ESA-provided ATV vectors (via JSC) or on FDF orbit determination, depending on mission phase
- Provide ESA (via JSC) with TDRS vector data

FDF Staffing

- Launch through launch + 3 orbits
- (Scheduled maneuver - 1 orbit) through (scheduled maneuver plus 3 orbits)
- (Docking - 4 hours) through docking
- During docked ops, FDF will follow nominal ISS support schedule, Monday/Wednesday/Friday
- (Undocking - 1 hour) through the de-orbit burns (approximately undocking + 6 hours)
- Contingency support: as needed, best effort basis

NIC Operations

- **SMM responsibilities:**
  - **Will work schedule conflicts with SN scheduling**
  - **The central point of contact for all ATV SN anomalies**
  - **Will monitor all SN events when console is staffed**
  - **Will insure all steps in the launch count are followed**
  - **Will generate any required ISIs during the ATV mission**
  - **Will conduct a shift briefing for each shift**

NIC Staffing

- SMM coverage will begin 4 hours prior to launch and through docking
- SMM will cover all critical periods during the docking
- SMM will support undocking through reentry

SN Support

- The WSC complex will provide continuous support of the ATV mission
- ATV will schedule SSA and MAF/MAR SHOs as low-data rate, non-coherent, and two-way tracking. MAR SHOs will be scheduled low-data rate, non-coherent, one way tracking
- GCMRs will be required to get the SHOs to high-data rate and coherent. Coordination of the SHO configuration will be covered in the prepass briefings between ATV-CC GC and ISS GC
- All of ATVs SSA and MAF/MAR SHOs will have two-way tracking scheduled, but will be non-coherent by default since ATVs transponder will not always be in coherent mode. WSC stated this deliberate mismatch is OK. The scheduling system will take the SHO, but the tracking data will just get tagged as invalid. ATV-CC understands that FDF will not be performing OD unless ATVs transponder mode is commanded to coherent, and the SHO is GCMR'd to coherent

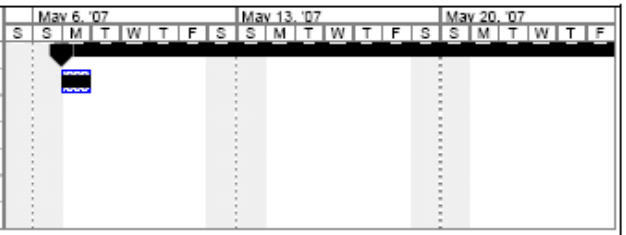
WSC TOA Staffing

- **WSC TOA will staff for the following activities:**
  - **Launch and any early burns**
  - **Any critical periods**
  - **Docking and undocking**
  - **Will be on-call for ATV contingency**

Near Earth Networks Services

2007 ATV Milestones

ID	Task Name	Duration	Start	Finish
1	ATV	182 days	Mon 5/7/07	Tue 1/15/08
2	TDRSS Scheduling Test (5.1)	1 day	Mon 5/7/07	Mon 5/7/07
3	TDRSS Scheduling Re-Test (5.1)	1 day	Thu 11/1/07	Thu 11/1/07
4	SVT 4.3 (Columbus Activitation)	3 days	Mon 12/3/07	Wed 12/5/07
5	ATV Docking Video (TDRSS/ESTL)	2 days	Tue 12/4/07	Wed 12/5/07
6	SVT 5 ETE Ops @ Launch Pad	5 days	Tue 11/27/07	Tue 12/4/07
7	Launch (NET)	1 day	Tue 1/15/08	Tue 1/15/08



Project: ATV Milestone Schedule CY0
Date: Wed 9/5/07

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

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Proposed Activities/Open Discussions

- **ATV 5.1 (End-to-End) Scheduling Test**
  - **Scheduling, drop box, and GCMRs training**