SUBJECT: ATV-2 Mission Operations Readiness Review (MORR) Minutes

DATE: November 30, 2010

PLACE: GSFC, Building 8 Auditorium

TIME CONVENED: 1300 TIME ADJOURNED: 1400

ATTENDANCE

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WELCOME/INTRODUCTION
Mr. Jim Bangerter convened the November 30, 2010, Automated Transfer Vehicle (ATV)-2 Mission Operations Readiness Review (MORR) to assess the readiness of the Integrated Network (IN) to satisfy the requirements for the ATV-2 mission (refer to the presentation package, *Automated Transfer Vehicle-2 [ATV] Mission Operations Readiness Review*).

The ATV-2 Review Board members are as follows:

- Mr. Scott Greatorex, GSFC, Code 450.1, Chief, Networks Integration Management Office.
- Robert L. Jones, GSFC, Code 599, 450 Senior Technical Authority.
- Bradford Butts, GSFC, Code 761, Systems Management Branch.
- Mr. Dennis Woodfork, GSFC, Code 595, Navigation and Mission Design Branch.
- Mr. Joe Aquino, JSC, Manager, JSC DD13, Space Communications Integration Office (Ms. Jewel Hervey signing for).
- Mr. Donald Shinners, GSFC, Code 452, Space Network Project.
- Mr. James Bangerter, GSFC, Code 450.1, Human Spaceflight Network Director.

WELCOME
Mr. Jim Bangerter provided a welcome to the attendees.

ATV-2 MISSION OVERVIEW
Ms. Elizabeth Clark provided an ATV-2 Mission Overview.

A. Project Mission Summary. Ms. Clark reviewed the objectives of the mission. ATV-2 is an unmanned resupply spacecraft developed by the European Space Agency (ESA) to deliver equipment, spare parts, and consumables to the International Space Station (ISS).
B. Events. Ms. Clark reviewed the ATV-2 mission events.
C. Mission Summary. Ms. Clark provided a mission summary. The launch is currently scheduled for February 15, 2011. The launch time is To Be Determined (TBD). There will be one launch attempt per day for three days with a stand down after the third day to replenish the Liquid Oxygen tanks. The launch vehicle is an Ariane launching from Kourou, French Guiana. The primary payload is 10 tons of supplies and scientific payload. Docking is scheduled for February 27, 2011. Undocking is scheduled for June 2011. Re-entry is scheduled for June 2011.
D. ISS Supply Sequence. Ms. Clark reviewed the ISS supply sequence.

INTEGRATED NETWORKS REQUIREMENTS
Ms. Clark provided the IN requirements. Ms. Clark reviewed the Eastern Range (ER), NASA Integrated Services Network (NISN), Flight Dynamics Facility (FDF), Space Network (SN), and Network Integration Center (NIC) requirements. She noted that these are the same requirements as for the H-II Transfer Vehicle (HTV). There were no issues.

LAUNCH HOLD CRITERIA
Ms. Clark reviewed the launch hold criteria. There is one item; Flight Rule (E2-1) states that a Tracking and Data Relay Satellite (TDRS) is required as part of the criteria for ATV.

NETWORKS CONFIGURATION
Ms. Clark reviewed the ATV-2 support networks configuration.

DOCUMENTATION
Ms. Clark reviewed the ATV mission documentation. Documentation is up to date. The list includes the Interim Support Instructions (ISI) to be published.

ANALYSIS AND TESTING

A. Radio Frequency (RF) Analysis. Ms. Ronna Kirchoff provided an RF analysis summary.
    1. ATV command support may be requested for S-band Single Access (SSA) or Multiple Access (MA). All forward links are positive.
    2. ATV real-time telemetry support may be requested for SSA or MA. ATV telemetry dumps may be requested for SSA. All return service margins are positive.
    3. SN support of ATV periods when the ephemeris uncertainty exceeds +/- 9 seconds is on a best-effort basis until a more accurate set of ATV vectors are received at the White Sands Complex (WSC).
    4. The RF interface Control Document (ICD) is under configuration control.
    5. Ms. Kirchoff reviewed the RF frequency analysis summary table.
B. Network Feasibility Analysis. Mr. Mike Virden provided a network feasibility analysis summary.
    1. Evaluations of Forecast Period ATV launch requirements indicate no additional impacts should be expected than is currently experienced in scheduling for any other expendable Launch Vehicle (ELV) or Launch and Early Orbit (LEOP) customer as long as the launch window duration is minimized.
    2. There are two conflict scenarios. The ATV-2 launch slips 5 or more days so that the GLORY launch occurs within ATV's first 3.5 days of flight, then GLORY's request for continuous LEOP support may be impacted. ATV-2 launch slips 12 days, then conflict resolution with STS-134 may be required.
C. RF Compatibility Testing Results. Mr. Ralph Zimmerman provided an RF compatibility testing results summary. The ATV Category-II RF compatibility test was conducted at the European Aeronautic Defense and Space Company (EADS) Space Transportation (ST) facility in Germany in 2004. There has been no additional compatibility testing since ATV-1.

NETWORKS REQUIREMENTS VERIFICATION RESULTS
Ms. Clark provided a networks requirements verification results summary. System Validation Test Slot 1 (SVT1), SVT2, and an ATV-2 TDRS Telemetry Data Flow were conducted. All test objectives were met. Ms. Clark reviewed the ATV-2 test matrix. Ms. Clark noted that testing included the Marshall Space Flight Center (MSFC) Huntsville Operations Support Center (HOSC). Mr. Scott Greatorex asked is any testing included radiating and Ms. Clark stated that the testing did.

LAUNCH ACTIVITIES

Mr. Clark reviewed launch activities. Ms. Clark reviewed the launch day sequence of events (launch count). Spaceflight Mission Manager (SMM) staffing and activities were outlined. Ms. Clark reviewed the IN timeline summary. All mark events are shown on the timeline. Ms. Clark reviewed the IN Freeze Plan.

NETWORKS STATUS

Representatives from the IN elements provided an element status and support readiness statement.

A. ER Operations. Mr. Mike Gawel provided an ER status. There have been no ER configuration changes since the last mission. There are no open Discrepancy Reports (DR). There are no outstanding documentation items. Staffing is sufficient to meet all requirements. All required personnel are trained and certified. Mr. Gawel stated that JDI, Merritt Island Launch Annex (MILA), and Wallops radars will be used. The ER is ready to support the ATV-2 mission.

B. SN. Mr. Johnny Chavez provided an SN status. SN Access System (SNAS) release 4 has been postponed. Release 10006 has been rescheduled for January 2011. The Mission Operations Voice Enhancement (MOVE) NTR cutover has been December 5, 2010. The antenna Sub-System Controller (SSC) is slipping to January 2011. Guam Data Interface System-Replacement (GDIS-R) has been accepted. TDRSS operations Control Center (TOCC) upgrades are complete. Mr. Bob Marriott asked the status of the Integrated Receiver (IR) replacement. Mr. Chavez stated that the replacement is ongoing and the legacy receivers will be used for ATV and HTV. Mr. Chavez reviewed the fleet status. The next eclipse season is 01/21/11 through 03/23/11. There are no open DRs. There are no outstanding documentation items. Staffing is sufficient to meet all requirements. All required personnel are trained and certified. The SN is ready to support the ATV-2 mission.

C. FDF. Mr. Pepper Powers provided an SN status. 'FreeFlyer' will be used to generate ATV-2 line summary data. 'FreeFlyer' was used for HTV-1, Soyuz-23S, and Soyuz-24S support as well as supporting the Space Shuttle since STS-117. FDF will be using the ISSONet for vector transfers between FDF and Johnsons Space Center (JSC)/ISS Trajectory Operations Officers (TOPO). ISSONet has been operational since June 2010. There are no open DRs. There are no outstanding documentation items. Staffing is sufficient to meet all requirements. All required personnel are trained and certified. The FDF is ready to support the ATV-2 mission.

D. NISN Operations. Mr. Al Duany provided a NISN operations status. There are 5 voice loops and 4 data interfaces. There have been no configuration changes since the last mission. There are no current open Problem Management Dispatch System (PMDS) items. There are no outstanding documentation items. Staffing is sufficient to meet all requirements. All required personnel are trained and certified. NISN will process all FERs during the mission in accordance with NISN SOP-002. Mr. Duany stated that NISN is ready to support the ATV-2 mission.

E. NIC Operations. Mr. Eric Mount provided a NIC operations status. There have been no NIC configuration changes since the last mission. There are no open DRs. There are no outstanding documentation items. There are two Freeze Exemption Requests (FER) and both have been approved. Facilities are GREEN. Staffing is sufficient to meet all

requirements. All required personnel are trained. Mr. Mount stated that the NIC is ready to support the ATV-2 mission.

INTEGRATED NETWORK SUMMARY

A. Risks. Ms. Clark reviewed the network risks. There is one risk on the NISN MOVE Switch Failure. If the MOVE system switch experienced a failure at the connection point to the system interface cards, then the switch would fail which would impact GSFC local elements and NIC who will lose voice contact with their customers and supporting elements. As mitigation, meet-me numbers or direct black phone numbers will be provided for all missions that have critical voice requirements. The prime MOVE switch does have some internal redundancy; however, there is no MOVE backup switch to provide overall redundancy.
B. Standard open work includes WSC Mission Readiness Test (MRT), FDF Vector Verification, and L-1 day circuit checkout. There is no non-standard open work.
C. There are no issues or concerns.
D. The IN is ready to support the ATV-2 mission.

REVIEW BOARD CERTIFICATION

The ATV-2 MORR Review Board signed the Certificate of Flight Projects Directorate Networks Readiness certifying that, with successful completion of flight readiness preparations and closure of associated action items, all integrated network elements are ready to support the ATV-2 mission. All board members stated that the IN was ready to support with the closure of the open items.

RFA REVIEW

No RFAs were assigned at the November 30, 2010, ATV-2 MORR.

ACTION ITEM REVIEW

No action items were assigned at the November 30, 2010, ATV-2 MORR.

(Original Approved By)
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