

DATE: April 17, 2012

SUBJECT: ATV-3 Mission Summary Status

LOCATION: JSC, Regents Park III

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INTRODUCTION

Mr. Thomas Russell convened the April 17, 2012, Network Support Group (NSG) Automated Transfer Vehicle (ATV)-3 mission summary status splinter meeting to discuss network support during the ATV-3 mission (refer to the presentation, *Automated Transfer Vehicle – 3 [ATV-3] Mission Summary Status*).

MEETING

- A. Mr. Russell provided a mission profile. Launch was March 23, 2012, on an Ariane-5 from Kourou, French Guiana. Liftoff was nominal. Docking was March 28, 2012. Undocking is scheduled for September 3, 2012 and re-entry is scheduled for September 4, 2012.
- B. Mr. Russell reviewed the network support. The Goddard Space Flight Center (GSFC) Network Integration Center (NIC) provided mission coordination and console support. The White Sands Complex (WSC) provided S-band telemetry and command support. The Communications Service Office (CSO)/NASA Integrated Services Network (NISN) provided voice and data support. The GSFC Flight Dynamics Facility (FDF) provided acquisition data and pointing/tracking data support. Easter Range (ER) C-band support was not required. ER C-band support can be called up for contingency/emergency.
- C. Mr. Russell stated that the standard documentation was in effect for this mission.
- D. Mr. Russell reviewed the network testing. The Backup Control Center (BCC) – Huntsville Operations Support Center (HOSC) retest was not successful. The command objective of the test was not met. The ATV-3/H-II Transfer Vehicle (HTV)-3 BCC-HOSC command test was successful. A BCC – HOSC confidence test will be conducted after the delivery of upgraded Marshall Space Flight Center (MSFC) Small Conversion Device (SCD) with 7.0 software. This is expected to take place after June 2012.
- E. Mr. Russell reviewed the NIC, CSO/NISN, and FDF staffing and support. There were no issues with the NIC or CSO/NISN. During ATV-3 support, FDF was unable to perform Orbit Determination (OD) post insertion. There was a problem with coherent services. A vector was received from the ATV Control Center (ATV-CC) via the Johnson Space Center (JSC) Trajectory Operations Officer (TOPO). Tracking and Data Relay Satellite (TDRS) coherent tracking data was received by approximately Launch plus 12 hours. FDF then performed OD and provided the JSC TOPO with an ATV OD vector. FDF received a predicted ATV vector labeled insertion. FDF found that the ATV separation would occur after the insertion epoch provided. The correct vector was found in the backup vectors, improperly labeled. There was a minor error in the Launch Count. Mr. Jim Bangerter stated that this should be a Lessons Learned item.
- F. Mr. Russell reviewed the Space Network (SN) support. There were no issues locking up non-coherent. For the first coherent event, there was no lock on multiple attempts. Coherent was locked on the second event. It was found that the vehicle was mis-configured. Mr. Bangerter commented that the support should not have come up in coherent. This needs to be carried as a Lessons Learned item. The ATV project needs to understand so that there is no re-occurrence of this problem. The network spends time and effort troubleshooting a problem that does not exist.
- G. Mr. Russell reviewed the SN Discrepancy Reports (DR). DR 63900 is a failure to lock and is related to Scheduling Orders (SHO) and events. This DR has been re-assigned to JSC. JSC is waiting on input from the European Space Agency (ESA). DR 63901 is an

unexpected drop in signal and the cause is not known. There were no equipment issues. It is believed that this may be due to a spacecraft issue. This has also been re-assigned to JSC. Mr. Erik Richards stated that the Comprehensive Discrepancy System (CDS) needs to be updated. The point-of-Contact (POC) is old. It was stated that more than one POC can be input or the DR can be assigned per mission. Ms. Melissa Blizzard accepted an action item to investigate the method to assign more than one assignee in the DR system (action item 0412-NSG ATV3-01). (Editor's Note: The ability to assign multiple assignees already exist. But for the purpose of this action item JSC has elected a single source (Bill Foster) to handle all DR's assigned to JSC. This action item is **CLOSED**) Until resolved, Mr. Roy Harris will be the JSC POC. DR 63765 was receipt of triplicate Forecast Schedules from JSC. JSC needed to update a Ground Controller (GC) Local Operating Procedure (LOP). Mr. Bob Hudgins reported that the Forecasts are good now. This DR is closed.

- H. Mr. Russell presented a list of Eb/N0 requests and media hold requests to date.
- I. Mr. Russell presented a list of critical periods to date.
- J. Mr. Russell presented a graph of the TDRS service usage from launch to docking. The majority of the support was Multiple Access (MA).
- K. Mr. Russell reviewed the network issues.
 - 1. Late receipt of ATV-3 1-day launch slip and no Ariane-5 second boost contingency TDRS Schedule Request Files. JSC cannot get the data earlier than Launch minus 2 days. This is not in the Program Requirements Document (PRD). Ms. Elizabeth Clark stated that if the boost does not occur, WSC has a major reschedule effort. WSC needs the information as early as possible. Mr. Bangerter stated that this issue needs further discussion offline with WSC and FDF.
 - 2. Trajectory delivery dates stated in the requirements are different than actually received. Mr. Bangerter asked that JSC push the projects to meet the requirements. Ms. Clark asked if the JSC Operations Interface procedure (OIP) is different than the other PRD. Messrs. Thomas Russell and Charles Wilson accepted an action item to Review operational documentation (MCC-H ATV OIP and applicable PRDs) to make them match for trajectory data delivery dates (L-90, L-30, L-22, etc) and work to revise any unrealistic dates such as the L-90 day requirement for delivery of trajectory data (action item 0412-NSG ATV3-02).
- L. Mr. Russell reviewed the Lessons Learned.
 - 1. WSC voice circuits not configured as expected for Launch support. WSC was unable to identify where voice circuits were configured on their keyset on the day of launch. It has been decided that a Launch minus 1 day voice check will be conducted. The test will be documented by a Briefing Message (BM). The voice circuits will be frozen at the end of the test.
 - 2. WSC/GSFC/JSC Pre-mission Scheduling Meeting. It has been decided that a meeting with WSC, the Spaceflight Mission Managers (SMM), and JSC GCs will be conducted at Launch minus 30 days to identify TDRS support, Critical Periods, and WSC activities. This will be conducted prior to all Visiting Vehicle (VV) launches. Ms. Clarks stated that there could be an issue if all the products are not available. Mr. Rich Romansky is ok with Launch minus 22 days. Mr. Charles Wilson stated that JSC received the products at approximately Launch minus 17 days. Mr. Bangerter that the Launch minus 30 days is not a good timeframe. Ms. Clark

- stated that less than L minus 22 days does not help WSC. Mr. Bangerter stated that the ESA customer needs to change from L minus 17 days to L minus 30 days. There is no C-band requirement. The main concern is scheduling. This needs to be worked by Mr. Wilson and the ATV-4 project. Mr. Turonald Banks noted that the PRD stated 90 days. Mr. Bangerter stated that the 90-day period is not realistic and the PRD needs to be revised to a more realistic requirement.
3. JSC test to verify transmitting ATV TDRS Scheduling Window (TSW) and TDRS schedules to WSC caused an overload of the Network Protocol Gateway (NPG), which in turn, caused load shedding of the Network Control Center Data System (NCCDS). The test was not properly coordinated and conducted too close to launch. A Schedule Request (SR) and Briefing Message (BM) will be provided for any testing utilizing WSC equipment and personnel. Mr. Richards stated that the Ops and EIF databases on the SN Access System (SNAS) were not sync'd. WSC is working on syncing the databases now. It is the customer responsibility to keep the databases sync'd. Mr. Bangerter stated that the databases need to be kept sync'd so that customers don't have to use the real-time system for testing. Mr. Richards stated that WSC will sync the International Space Station (ISS) and VVs starting with missions not flying. WSC will then coordinate with JSC on ATV.
 4. Vector not resident in the NCCDS for the TDRS event for the Command Checkout during the Launch Count at L-6:55. The requirement for FDF was not provided. FDF had to generate the vector prior to event start. There was no impact. Vector information will be documented in the Launch BM and Launch Count. This item is in the launch count and there is a checklist in the BM.
 5. WSC auto-throughput disabled prior to docking. WSC auto-throughput did not remain enabled through docking per the Launch Count. A separate Interim Support Instruction (ISI) will be issued for auto-throughput management and documented in the Launch Count.
- M. Mr. Russell reviewed the undocking/re-entry plan. IN support will be from Launch minus 4 hours of Critical Period start through re-entry / loss of TDRS telemetry. The FDF will provide OD.
- N. Mr. Russell reviewed ATV-4 mission preparations. He stated that testing will not occur simultaneously with ATV-3 TDRS events.
- O. Mr. Russell reviewed the open work. Open work includes BCC – HOSC testing and engineering testing for S-band Multiple Access (SMA) at 64 kbps. The question was raised as to whether there will be SMA 64-kbps support required. Mr. Bangerter stated that it should not be assumed as there was none on ATV-3. JSC is working to get Electronic Flight Notes (EFN) access for the SMMs.
- P. Mr. Richards asked if Freeze Exemption Requests (FER) should be in the ISI 005 (hardware and software freeze). Mr. Bangerter stated that they should. Mr. Richards stated that there are a lot of FERs at WSC and the ISI is not re-released. Mr. Bangerter stated that he would check into this.

ACTION ITEM REVIEW

Two action items were assigned at the April 17, 2012, NSG ATV-3 mission summary splinter meeting.

AI No.	Assignee	Action	Status
0412-NSG ATV3-01	Melissa Blizzard/ GSFC/HSF	Investigate the method to assign more than assignee in the DR system.	CLOSED
		Response: The ability to assign multiple assignees already exist. But for the purpose of this action item JSC has elected a single source (Bill Foster) to handle all DR's assigned to JSC.	
0412-NSG ATV3-02	Tom Russell/ GSFC/HSF and Charles Wilson/ JSC/ GC	Review operational documentation (MCC-H ATV OIP and applicable PRDs) to make them match for trajectory data delivery dates (L-90, L-30, L-22, etc). Work to revise any unrealistic dates such as the L-90 day requirement for delivery of trajectory data.	Open

(Original Approved By)
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