DATE: March 29, 2011

SUBJECT: NSG ATV Mission Status and HTV Post Mission Status Minutes

LOCATION: JSC, Regents Park III

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INTRODUCTION

Ms. Elizabeth Clark convened the March 29, 2011, Network Support Group (NSG) Automated Transfer Vehicle (ATV) mission status and H-II Transfer Vehicle (HTV) post mission status meeting to discuss ATV mission planning and lessons learned and HTV post mission lessons learned (refer to the presentations, *Automated Transfer Vehicle [ATV-2] Mission Status, ATV-2 Lessons Learned Part 1, and HTV-2 Post Mission Review and Lessons Learned*).

MEETING

A. Ms. Clark provided an ATV mission status.
   1. The ATV-2 is named the Johannes Kepler. The launch date was February 16, 2011 at 1550:55Z. The docking date was February 24, 2011. The undocking date is June 4, 2011.
   2. The first launch attempt on February 15 was scrubbed. The Space Network (SN) supported from L-9 hours through the scrub. The second, successful, launch attempt was on February 16 and the SN supported from L-9 hours through rendezvous.
   3. Mr. Mitch Venable stated that there are some lessons learned in place from the engineering passes. Johnson Space Center (JSC) would like more 'heads up' so that the network can better prepare. The network provided some Multiple Access (MA) passes. All performance data has been provided.
   4. The SN supported 774 events to date. Mr. Venable stated that there was more support for High Data Rate (HDR) S-band MA (SMA) than MA. The Radio Frequency (RF) Interface Control Document (ICD) will be updated based on the SMA and MA HDR data.
   5. Ms. Clark provided a Tracking and Data Relay Satellite System (TDRSS) usage overview. Ms. Clark reviewed charts that illustrated the events per TDRS from prelaunch through Day of Year (DOY) 80, usage prelaunch through DOY 80, and service usage prelaunch through docking. The ATV project has been scheduling more MA than S-band Single Access (SSA) service usage. The project seems to have gained confidence in the MA HDR. There was an issue with rescheduling support when the Artemis was not available.
   6. Ms. Clark reviewed the Critical Periods to Date table. There have been more critical periods than ATV-1.
   7. The White Sands Complex (WSC) has held the data as requested. WSC has provided the RF performance data as requested.
   8. Ms. Clark reviewed the SN Discrepancy Reports (DR).
      (a) All DRs are under investigation except 60901. This has been **CLOSED**.
      (b) Mr. Venable stated that he would like to line the DRs up against specific events. There may be an issue going between data rates.
      (c) Mr. Glasscock stated that he would follow up on the SN ATV DRs. He will need to identify who will work the DRs when Mr. Johnny Chavez leaves WSC.
      (d) Mr. Venable stated that some DRs seem to match up with ground Radio Frequency Interference (RFI).
   9. Ms. Clark reviewed the Integrated Network (IN) elements support. The Flight Dynamics Facility (FDF) provided premission C-band analysis, orbit determination, acquisition data, and TDRS vector support with no problems reported. The NASA Integrates Services Network (NISN) provided voice and data services with no

problems reported. The Network Integration Center (NIC) Spaceflight Mission Managers (SMM) were on console from L-9 hours through rendezvous and provided conflict resolution assistance with no problems reported. C-band radar support was provided with no problems reported.

10. Ms. Clark reviewed the lessons learned.
    (a) SN Forecast Scheduling. Launch events scheduled in the Forecast period did not get scheduled with the requested times. JSC submitted events with minimum duration and tolerance. Forecast Scheduling has no way of knowing the events did not schedule as requested. This may be a Space Network Access System (SNAS) setup issue. This is very risky for launch events. Ms. Clark stated that the issue was caught early and the schedule worked, but it could have had a big impact. Mr. Bangerter stated that other customers could have take the time that JSC thought it had requested and then rescheduling would have to be worked. This could have been a major impact on the WSC Scheduling Office.
    (b) Launch Slip Rescheduling. A Root Cause and Corrective Action (RCCA) has been opened. The problem was late scheduling of ATV-2 critical launch events. There was a miscommunication between JSC, GSFC, and WSC in filling the TDRS critical times for the ATV-2 mission post launch and early orbit. This item will be addressed in an NSG splinter session.

B. Mr. Venable discussed ATV-2 lessons learned.
   1. Mr. Venable provided a mission operations summary.
   2. Mr. Venable provided an overview of several lessons learned.
      (a) Launch Count. There was some confusion in the launch count regarding a pad event which resulting in a file not being received. The launch count will be updated. Mr. Venable will provide input.
      (b) ATV Launch Slip. This was a scheduling issue and is being discussed in other meetings.
      (c) LEOP TDRSS Comm. The Flight Rule does not clearly define the ATV requirement of the number of hours of continuous SSA support for a GO/NO GO decision. JSC is talking with the project and the Flight Rule will be updated.
      (d) TDRS Planning. The ATV Ground Controller (GC) requested Scheduling Order (SHO) extensions within minutes of the TDRS event ending. The proper procedure was communicated to the project and ATV has been receptive.
      (e) Real-time Operations. ATV Eb/No requests were made per the Operations Interface Procedure (OIP) and only when needed. The data has been provided. WSC is satisfied.
      (f) Other OIPs. All service support codes were created. It is preferred that ATV schedule the vehicle at the high data rate. In regards to the Backup Control Center (BCC), the International Space Station (ISS) GC will updated the codes for HDR and tracking.
      (g) RF ICD. ATV used services for HDR for SMA and MA which were not documented in the RF ICD. The data rates need to be defined and documented. Engineering passes will be scheduled.
      (h) ATV Real-time Operations. SMA Return (SMAR) and MA Return (MAR) events were put on the Local Area Network (LAN) as MA/SMA forward and return events. This was an internal JSC issue and has been resolved. Several

requests were received from the ATV GC to reconfigure TDRS telemetry to 8 kbps without enough time remaining in the event. JSC is waiting on input from ATV as to why this occurred. JSC does not believe this will occur again. ATV was satisfied with SN services support.

C. Mr. Erik Richards provided an HTV-2 post mission review and reviewed lessons learned.
   1. Mr. Richards reported that HTV-2 launched on January 22, 2011 and docked with the ISS on January 27, 2011. The undocking was March 28, 2011.
   2. The SN supported from L-8 hours through rendezvous and HTV departure through reentry. The SN supported 311 events to date. HTV-2 events were supported at 8 kbps on both the MA and SMA. No problems were reported.
   3. The RF ICD has been updated for 8 kbps MA and SMA.
   4. Mr. Richards provided a TDRSS usage overview. Mr. Richards reviewed charts that illustrated the HTV-2 TDRSS service usage prelaunch through DOY 57, HTV-1 / HTV-2 service usage; HTV-2 TDRSS usage, and HTV-1 / HTV-2 TDRS usage.
   5. Mr. Richards reviewed the HTV-2 TDRSS critical requests table.
   6. Mr. Richards reviewed the WSC requested services. A number of performance data requests were made.
   7. Mr. Richards reviewed the SN DRs. There were four DRs. Two were fixed; one was closed and one is open. An additional DR was opened on March 29 on SMA back to back events.
   8. Mr. Richards reviewed the IN elements support. The FDF provided premission C-band analysis, orbit determination, acquisition data, TDRS vector support, and evaluated HTV tracking data and the HTV oscillator frequency with no problems reported. NISN provided voice and data services with no problems reported. The NIC SMMs were on console from L-8 hours through M1 and PM1D maneuvers, L-4 hours through rendezvous, L-2 hours prior to undocking through the critical period, L-2 hours prior to reentry through JSC release, and provided conflict resolution assistance with no problems reported. C-band radar support was provided with no problems reported.
   9. One issue was reported. There was HTV IOS RFI. A possible source was identified and is being mitigated.
   10. Mr. Richards reviewed the lessons learned.
      (a) End-to-End Testing (ETE) in October 2010. There was a network-wide SNAS outage. The SMM was able to send the required GCMRs. The testing was successfully completed. The GSFC NIC/SMM is a viable backup to the JSC GCs for VV testing.
      (b) Scheduling Launch Event. The launch event needs to be a single event on Acquisition of Signal (AOS) TDRS. This allows all prelaunch GCMR testing on launch event and eliminated TDRS handover during powered flight.
      (c) Marshall Space Flight Center (MSFC) Huntsville Operations Support Center (HOSC) Backup Control Center (BCC) testing. The network wanted to test with the BCC after the events in Japan. There were problems in testing; the Logical Port Address (LPA) for BCC command at WSC was misconfigured. BCC testing should be done premission.

ACTION ITEM REVIEW
No action items were assigned at the March 29, 2011, NSG ATV and HTV status meeting.

(Original Approved By)
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