



**NSG ATV-2 Lessons Learned
Part 1
ISS Ground Controller (GC)**

- ATV-2 Johannes Kepler launched on 02-16-11
 - ATV Liftoff: 047/15:50:55GMT (02/16/2011 09:50Local Houston).
 - 1st TDRS event started at 16:24 GMT
 - Data Lock was reported at 16:51:22 as expected
 - White Sands confirmed nominal 2k FWD/8K return.
 - ATV GC reported Good Telemetry from TDRS.
 - ISS GC configured S-band to High Data Rate (64k) Non-CoHo for the first several hours as requested by ATV.
- Mission duration as of 03-29-11 is 42 days.
 - Current Undock and Re-entry is tentatively planned for 06-04-11.

ATV Lessons Learned – ISS GC				
Topic	Lesson Learned	Response	Reference	Status
Launch Count	Some confusion in launch count regarding whether or not the ATV (pad) Sendback Telemetry UMI file (ex) R22 in MCC-H was the correct file.	GSOC/ATV GC to provide updates to OIP Vol D 6.5.5 and Vol E 8.9.1 (UMI file selection)	OIP Vol D 6.5.5. Vol E 8.9.1	Open
	Launch Count OIP did not clarify that actual Pad data was to be used in place of Playback data from WSC.	ATV has provided inputs to update the OIP. Upon final OIP update, ISS GC will provide updates to GSFC Launch Count package to stay consistent with ATV Launch count OIP.	OIP Vol E 6.10	Open
ATV Launch Slip	ATV Launch was threatened due to ATV TDRS Comm Gaps created by the launch Slip.	ISS GC working with the GSFC/White Sands to improve the process for managing rescheduling of TDRS Comm for launch slips.		Open
	A considerable amount of time was required to acquire SSA events for what ATV considered acceptable for “Go for Launch”.	Root Cause Analysis opened by GSFC.		Open
	The Network Director had to instruct WSC to bump other users to insure that ATV launch events were acquired.			Open
LEOP TDRS Comm	Flight Rule does not clearly define ATV requirement of # of hours of Continuous SSA for GO/NO GO Criteria.	ISS GC needs Flight Rule E 3-4 to identify Comm Launch requirements to include SSA Continuous Comm for X-hours and have an understanding that TDRS rescheduling due to slips takes time and could continue to occur up to Launch to cover full TDRS Critical Period continuous comm. •ATV to provide status on use of Operational SMA and possibly MA services(pending engineering analysis) to support LEOP phase.	Flight Rule E3-4	Open

ATV Lessons Learned – ISS GC				
Topic	Lesson Learned	Response	Reference	Status
TDRS Planning	ATV GC requested SHO extensions within minutes of the TDRS events ending.	Communicate to ATV Team that a minimum of 10 minutes is required for the TDRS request to process through WSC. It also takes time for the GC to build the actual event. The procedure describes : Changes can be requested up to <u>1-hour</u> prior to the desired TDRS event start. In case of spacecraft emergency, the minimum time to start an emergency SHO is 15 minutes.	OIP Vol E6.3.1.3 OIP Vol E6.3.1.3.3	Open
	ATV utilized SMA/MA Services in HDR outside of RF ICD described capabilities.	ATV to provide status on use of Operational SMA and possibly MA services in HDR (pending engineering analysis) to support all phases of Mission. For ATV 3, OIP procedures will have to be updated with new ops capabilities. Will require RFICD updates if approved.	RF ICD	Open
Real Time Operations	ATV Eb/No requests were per OIP and only asked for them when really needed. This was good and helped White Sands cut down on work load.	Three ATV Eb/No reading requests have been provided to ATV GC via FN WSC Satisfied all ATV request for Eb/No readings in a timely manner	Internal Notes: N066160A N065271C N065071B	Closed
Other OIPs	TDRS Operations - Nominal TDRS Scheduling codes	Created codes for all SA/MA/SMA HDR and tracking (Coherent and Non-coherent). Scheduling SHOs as vehicle configuration expectations (i.e. if vehicle will be in HDR for 5-hour, TDRS should be scheduled as such). This prevents multiple GCMRs by ISS GC every pass and cuts down on possible errors as well as ISS GC Touch Time. Pending Eng analysis, this can be used for MA/SMA	OIP Vol E 6.3	Open
	BCC	ISS GC will Update Codes for HDR and tracking	OIP Generic Section 10.	Open

ATV Lessons Learned – ISS GC				
Topic	Lessons Learned	Response	Reference	Status
RF ICD	ATV utilized services of HDR(64k) for SMA/MA which are not documented in the RF ICD	ATV to status capabilities to maintain the Vehicle in High Data rate Update OIP to specify that any configurations not listed in the RF ICD have to be pre-coordinated as Engineering Testing SHOs, 24-hours prior to allow for planning.	TBD	Open
ATV Real time Operations	SMAR/MAR (Rtn only) events were put on the LAN as MA/SMA Fwd/Rtn events. ATV Operators assumed a Fwd link was available when in fact none was scheduled.	SHO Editor (GC Tool to put TDRS Schedule on LAN) was not programmed correctly to display MAR and SMAR services to the LAN. SHO Editor codes were updated to reflect exact services scheduled.		Closed
	Several requests from ATV GC to reconfigure TDRS TLM to 8k with not enough time remaining in the event	GCMRs require 30-seconds to execute. Some calls came within 10-seconds ATV GC reported Flight Controllers are commanding the vehicle back to 8k prior to LOS Need ATV to understand to just let SHO run out until next SHO.		Open
	Space Network Anomalies/Configuration that inhibited OIP/FR wording that solid comm (MA, etc) would be more readily available.	TDRS-46 Battery Issue During Eclipse (thru day 82): During the TDRS/Sun eclipse period on 02/16, battery 2 dropped within failure limits. Based on that rate, voltage was trending to drop below the required 1.0 volts during the 02/18 GMT Eclipse. Had that occurred, load shedding of the <u>entire</u> spacecraft payload will be required. To prevent load shedding the entire TDR,S the following occurred based on priority: <ul style="list-style-type: none"> •MA Forward (turned off daily ~2.5 hours during eclipse starting 2/14 - 3/23) •SA1 (turned off full-time 2/16 - 3/17) •SA2 (remained active) •MA Return (remained active) F038178F was updated as information was provided. The Eclipse season will still occur mid February – late March 2012. For ATV -3 this may not be an issue due to possible TDRS constellation changes. TDRS-171 Ground Terminal MA Support Down from Fall 2010 through June 2011.	NAM 0001303 Flight Note – 038178F	Info Only