

SUBJECT: Soyuz-32, Expedition 33 / Increment 33 MORR Minutes

DATE: August 2, 2012

PLACE: Goddard Space Flight Center, B12 / Room N112

TIME CONVENED: 1430

TIME ADJOURNED: 1530

ATTENDANCE

| <i>Last Name</i> | <i>First Name</i> | <i>Organization</i> | <i>E-mail Address</i> | <i>Telephone #</i> |
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INTRODUCTION

Mr. Jim Bangerter convened the August 2, 2012, Soyuz-32, Expedition 33 / Increment 33 Mission Operations Readiness Review (MORR) to review Integrated Network (IN) element mission operations readiness (refer to the presentation, *Soyuz-32/Expedition 33 Increment 33 Mission Operations Readiness Review [MORR]*). This MORR covers changes and updates to the network since the Soyuz-31 MORR.

MEETING ITEMS

A. Welcome/Introduction

1. Mr. Bangerter reviewed the agenda for the MORR.
2. Mr. Bangerter reviewed the MORR board membership.
 - Ms. Carolyn P. Dent, GSFC/Code 301, Systems Review Office.
 - Mr. Virendra Thanvi, GSFC/Code 599, 450 Senior Technical Authority.
 - Mr. Scott A. Greatorex, GSFC/Code 450.1, Chief, Networks Integration Management Office (NIMO) (not in attendance).
 - Ms. Susan L. Hoge, GSFC/Code 595, Navigation and Mission Design Branch.
 - Mr. Bradford Butts, GSFC/Code 761, Systems Management Branch.
 - Mr. Joseph Aquino, JSC/DD13, Manager, Space Communications Integration Office (SCIO).
 - Mr. Daniel Hein, GSFC/Code 452, Space Network Project.
 - Mr. Michael Yettaw, DFRC, Range Technical Monitor, Western Aeronautical Test Range (WATR).
 - Mr. James A. Bangerter, GSFC/Code 450.1, Human Spaceflight Network Director.
3. Mr. Bangerter provided an overview of the review process (Goddard Space Flight Center [GSFC] MORR, Johnson Space Center [JSC] Mission Operations Directorate [MOD] Flight Readiness Review [FRR], and Stage Operations Readiness Review [SORR]). GSFC does not participate directly in the SORR, but is represented by the JSC Ground Controller's (GC) Office. The FRR is scheduled for August 16, 2012. The SORR is To Be Determined (TBD).

B. Mission Overview

1. Mr. Pifer reviewed the Mission Profile. He stated that the launch is scheduled for October 15, 2012, Greenwich Mean Time (GMT) TBD. Docking to the International Space Station (ISS) will be October 17, 2012. The Soyuz will remain docked for approximately 6 months at which time it becomes the Russian Crew Return Vehicle. The payload is crew, logistics, and supplies. The vehicle is the upgraded Soyuz which has flown 6 missions. Mr. Earl Baum asked if this will be an early rendezvous mission, based on the recent success of the Progress flight which docked on orbit 4 earlier this week. Mr. Bangerter stated that it has not been determined yet. Should it be an early rendezvous mission, docking would occur on Orbit 4 and the ground sites would not have view.
2. Mr. Pifer reviewed ISS Supply Sequence. The supply sequence illustrates the activities during the different increments.

C. Integrated Network (IN) Overview

1. Mr. Pifer reviewed the ISS/Soyuz IN Overview diagram. This is the basic network configuration in support of the ISS and Soyuz. The diagram is color coded for the different network elements. Green denotes the U.S. segment and Blue denotes the Russian segment. Tracking and Data Relay Satellite (TDRS)-6 has been designated as backup to TDRS-3 (spare). If TDRS-3 is lost, TDRS-6 would be used as Spare.
2. Mr. Pifer reviewed the documentation. The table shows what documentation is or will be in place and when including Interim Support Instructions (ISI). ISIs are considered open work. All other documentation is up to date. Mr. Pifer noted that C-band support is contingency only.
3. Mr. Pifer stated that there has been one Program Requirement Document (PRD) change. The ISS Vol-1 PRD has been updated. The Communications Service Office (CSO) NASA Integrated Services Network (NISN) TV communications requirement to provide 2 video channels has been increased to 6 for the Huntsville Operations Support Center (HOSC) Annex, Canadian Space Agency (CSA) peering point, Glenn Research Center (GRC) Telescience Support Center (TSC), Ames Research Center (ARC) TSC, and the Remote Principal Investigator (RPI) peering point. Mr. Joe Aquino stated that this is an Obsolescence-Driven Avionics Redesign (ODAR) requirement.
4. Mr. Pifer reviewed the Operational/Network Changes. Upgrades have been made at the White Sands Complex (WSC).
 - (a) Very High Frequency (VHF)-1 Quad Yagi antenna/tower installation and all associated work is complete. The system has been tested and is GREEN.
 - (b) The WSC VHF-1 Operational Readiness Review (ORR) was completed on May 30, 2012. Two action items were assigned. One action remains open; WSC to maintain a record (12 months from the ORR) of VHF emergency communications pass data to verify the full VHF-1 capability. The masking survey has been completed, the report is being finalized. Mr. Scott Greatorex asked if the masking survey was a physical and noise survey and the response was yes.
5. Mr. Pifer provided a Network Verification Test summary. VHF-1 two-way checks were performed with the ISS and there were no issues (Wallops Ground Stations [WGS] on December 26, 2011; Dryden Flight Research Facility [DFRC] on February 23, 2012; and WSC on June 25, 2012). Future checks are planned on a quarterly basis. The passes will be coordinated with the JSC GC prior to the Soyuz-32 launch.
6. Mr. Pifer discussed Network VHF Proficiency Simulations. Simulations have been scheduled to ensure network proficiency and provide training. The ISS crew does not participate. Simulations were completed with DFRC and WGS. The next simulation is planned for approximately 30 days prior the launch of Soyuz 32.

D. Integrated Network Element Status

1. Network Integration Center (NIC). Mr. Eric Mount provided a NIC status.
 - (a) There have been no software changes since the Soyuz-31 MORR.
 - (b) NIC consoles have been reconfigured. All systems have been tested and verified. The H-II Transfer Vehicle (HTV) mission was supported with the new configuration.
 - (c) There are no open Discrepancy Reports (DR).
 - (d) There are no Freeze Exemption Requests (FER) in the system.

- (e) There is no open work.
 - (f) There is a projected change to upgrade the NIC Display Distribution System. There is no impact to the mission.
 - (g) Facilities are Green.
 - (h) Staffing is sufficient to meet all requirements.
 - (i) Documentation is up to date.
 - (j) Mr. Mount stated that the NIC is ready to support Soyuz-32/Expedition 33 and ISS Increment 33.
2. Space Network (SN)/WSC. Mr. James Ruspoli provided a SN/WSC and WSC VHF status.
 - (a) Mr. Ruspoli reviewed software changes. The Network Control Center Data System (NCCDS) was upgraded to correct the Multiplexer/Demultiplexer (MDM) bandwidth allocation.
 - (b) Mr. Ruspoli reviewed the hardware changes. As of July 10, 2012, 195 Mission Operations Voice Enhancement (MOVE) keysets have been retrofitted.
 - (c) There are no open DRs.
 - (d) There is no open work.
 - (e) There are no projected changes.
 - (f) Staffing is sufficient to meet all requirements.
 - (g) Documentation is up to date.
 - (h) Mr. Ruspoli stated that the SN/WSC is ready to support Soyuz-32/Expedition 33 and ISS Increment 33
 - (i) Mr. Ruspoli provided a WSC VHF status.
 - (1) There have been no software or hardware changes since the Soyuz-32 MORR.
 - (2) There are no open DRs.
 - (3) There is no open software work. Open hardware work includes the VHF-1/2 antenna camera installation, VHF-1 remote switching and keying for the Power Amplifiers (PA), and VHF-1/2 uplink/downlink audio recording separation.
 - (4) Staffing is sufficient to meet all requirements.
 - (5) Documentation is up to date.
 - (6) Mr. Ruspoli stated that WSC VHF systems are ready to support Soyuz-32/Expedition 33 and ISS Increment 33
 3. WGS. Mr. Mark Harris provided a WGS status. There have been no software or hardware operational changes since the Soyuz-31 MORR. There are no open DRs. There is no open work. There are no projected changes. Staffing is sufficient to meet all requirements. Documentation is up to date. Mr. Harris stated that WGS is ready to support Soyuz-32/Expedition 33 and ISS Increment 33
 4. DFRC. Mr. Justin Thomas reported that there have been no software or hardware operational changes since the Soyuz-31 MORR. There are no open DRs. There is no open work. There are no projected changes. Staffing is sufficient to meet all requirements. Documentation is up to date. Mr. Thomas stated that DFRC is ready to support Soyuz-32/Expedition 33 and ISS Increment 33
 5. NASA/Department of Defense (DoD) C-bands Eastern Range (ER). Mr. Jim Neal provided an ER resources status. ISS Visiting Vehicles (VV) are not routinely supported by the DoD C-band radars. If a contingency is declared by the ISS GC

- during a VV mission, the ranges have agreed that C-band radars will provide VV contingency support within agreed upon call-up times for Nominal and Off-duty hours. Support will be provided on a best-obtainable basis. An ISI for C-band Radar Contingency Call-up Procedures will be published prior to mission. Prior to L-10 days, the ER will provide an update to the Points-of-Contact (POC) for the ISI. The ER will also send the HSF Network Director (ND) and Spaceflight Mission Manager (SMM) a status of the available radars. This notice will not preclude any radar maintenance, etc. Mr. Neal reviewed the C-band Contingency procedure.
6. Flight Dynamics Facility (FDF). Mr. Warren Mitchell reported that there have been no software or hardware operational changes since the Soyuz-31 MORR. There are no open DRs. The Soyuz-32 test Two Line Elements (TLE) will be transmitted and reception verified by the VHF sites to ensure the operational TLEs can be processed for the mission. There are no projected changes. Staffing is sufficient to meet all requirements. The Soyuz-32 Mission Support Plan will be delivered by September 24, 2012. Mr. Mitchell stated that FDF is ready to support Soyuz-32/Expedition 33 and ISS Increment 33
 7. CSO. Mr. Randy Honeycutt provided the CSO status.
 - (a) Mr. Honeycutt reported that the MOVE software release 2.0.2 was attempted. A glitch was discovered that caused cross talk. A partial back-out was performed and a temporary fix applied. The vendor has determined the cause of the problem and a software fix will be provided in Release 2.0.3. The date of the release is TBD.
 - (b) There have been no hardware operational changes since the Soyuz-31 MORR.
 - (c) There have been no changes to the Marshall Space Flight Center (MSFC) Russian Services activities.
 - (d) There are no open NASA Integrated Communications Services (NICS) Information Technology Service Management (NITSM) tickets.
 - (e) Mr. Honeycutt stated that there is no software open work.
 - (f) The Nortel Router Replacement Project (NRRP) upgrade work continues. All equipment has been delivered to the sites. The Host Centers are in various stages of installation. The Test Readiness Review (TRR) was completed March 4, 2012. The project is scheduled for completion in April or May 2013. Ms. Sue Hoge asked if the project is on schedule for the completion date. Mr. Honeycutt stated that it should be. Mr. Bangerter stated that the WSC transition should not occur until JSC is ready to transition. Mr. Aquino stated that JSC does not want the transition to occur until all VV missions are concluded. There is a JSC window of opportunity towards the end of 2012.
 - (g) Mr. Aquino asked if the MOD FRR presentation should include the continuing 64- to 8-kbps conversion. Mr. Bangerter stated that this item does not have to appear in the presentation.
 - (h) There are no projected changes.
 - (i) Staffing is sufficient to meet all requirements.
 - (j) Documentation is up to date.
 - (k) NISN will process all FERs during the mission in accordance with NISN SOP-002.

(1) Mr. Honeycutt stated that CSO is ready to support Soyuz-32/Expedition 33 and ISS Increment 33

E. Integrated Network Summary. Mr. Pifer provided an IN summary.

1. Mr. Pifer reviewed the requirements/test matrix. Mr Pifer noted that the remaining work is standard work.
2. Mr. Pifer reviewed the one risk (VHF-2). VHF-2 is not periodically End-to-End (ETE) tested. The Federal Aviation Administration (FAA) has refused to allow the use of the restricted frequency for periodic VHF-2 system validation. The last VHF-2 ETE Comm check was performed in September 2004. This is a very low risk. Stations can conduct testing via a dummy load, but cannot radiate. This is an accepted risk. Mr. Pifer stated that this risk is considered to be decreasing due to the addition of proficiency simulations. Mr. Bangerter stated that the situation is understood and the risk agreed to.

BOARD COMMENTS

Ms. Dent polled the Review Board for their comments. All the board members stated that the network is ready to support Soyuz-31 pending closure of the action item and any TBDs.

ACTION ITEM REVIEW

No action items were assigned at the August 2, 2012, Soyuz-32 MORR.

RFA REVIEW

No RFAs were assigned at the August 2, 2012, Soyuz-32 MORR.

(Original Approved By)

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