

SUBJECT: Soyuz-28, Expedition 29 / Increment 29 MORR Minutes

DATE: August 9, 2011

PLACE: Goddard Space Flight Center, B8 Auditorium

TIME CONVENED: 1300 TIME ADJOURNED: 1400

#### ATTENDANCE

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## **INTRODUCTION**

Mr. Jim Bangerter convened the Soyuz-28, Expedition 29 / Increment 29 Mission Operations Readiness Review (MORR) to review Integrated Network (IN) element mission operations readiness (refer to the presentation, *Soyuz-28, Expedition 29 Increment 29 Mission Operations Readiness Review [MORR]*). This MORR covers changes and updates to the network since the Soyuz-27 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, Chairperson, GSFC/Code 301, Systems Review Office.
  - Mr. Robert L. Jones, GSFC/Code 599, 450 Senior Technical Authority (not present).
  - Mr. Scott A. Greatorex, GSFC/Code 450.1, Chief, Networks Integration Management Office (NIMO).
  - 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) (Ms. Jewel Hervey signed for).
  - Mr. Marco Midon, GSFC/Code 453, Ground Network Project.
  - Mr. Donald W. Shinnors, GSFC/Code 452, Space Network Project.
  - Mr. Thomas L. Barlow, DFRC, Range Technical Monitor, Western Aeronautical Test Range (WATR) (Mr. Mike Yettaw signed for).
  - 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.

### **B. Mission Overview**

1. Mr. Riley reviewed the Mission Profile. He stated that the launch is scheduled for September 22, 2011, 0134Z. Docking to the International Space Station (ISS) will be September 24, 2011. 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.
2. Mr. Riley reviewed ISS Supply Sequence. The supply sequence illustrates the activities during the different increments.

### **C. Integrated Network (IN) Overview**

1. Mr. Riley 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.
2. Mr. Riley reviewed the documentation. The table shows what documentation is or will be in place and when including Interim Support Instructions (ISI). All documentation is up to date.

3. Mr. Riley stated that there have been no Program Requirement Document (PRD) changes.
4. Mr. Riley reviewed the Operational/Network Changes. The White Sands Complex (WSC) is working on providing Very High Frequency (VHF)-1/-2 transmit and receive recording capability. This is under review at this time. WSC has installed the Mission Operations Voice Enhancement (MOVE) which could provide the recording capability vice the VHF PCs. Ms. Dent asked if there is plan to test the capability once installed. Mr. Riley responded that the test plan will be included as part of the Engineering Change (EC). Ms. Dent asked if there is a decision date. Mr. Bangerter stated that the MOVE installation was completed on August 19. The Operational Readiness Review (ORR) is scheduled for September. The recording capability will not be implanted prior to this mission. Mr. Greatorex asked if the capability is a requirement. Mr. Riley stated that it is not; that it is a 'nice to have' capability. The recordings can be used as a troubleshooting tool when there are issues with the VHF communication link.
5. Mr. Riley provided a Network Verification Test summary. VHF-1 good two-way checks were performed with the ISS and WGS on July 1, 2011; Dryden Flight Research Center (DFRC) on July 6, 2011; and WSC on July 6, 2011. Mr. Riley commented that the WSC passes had excellent communications and the ISS crew commented on the excellent communications as well. WSC has completed a recabling effort in its communications shelter and the communications has definitely been enhanced. WSC is investigating further improvements.

#### D. Integrated Network Element Status

1. Network Integration Center (NIC). Mr. Riley provided a NIC status.
  - (a) There have been no software or hardware operational changes since the Soyuz 27 MORR.
  - (b) There are no open Discrepancy Reports (DR).
  - (c) There are three Freeze Exemption Requests (FER) in the system.
  - (d) There is no open work.
  - (e) There are no projected changes.
  - (f) Facilities are Green.
  - (g) Staffing is sufficient to meet all requirements.
  - (h) Documentation is up to date.
  - (i) Mr. Riley stated that the NIC is ready to support Soyuz-27.
2. Space Network (SN)/WSC. Mr. David Glasscock provided a SN/WSC and WSC VHF status.
  - (a) There have been no software or hardware operational changes since the Soyuz 27 MORR.
  - (b) There are no open DRs.
  - (c) There is no open work.
  - (d) There are no projected changes.
  - (e) Mr. Glasscock provided a status of the Tracking and Data Relay Satellite System (TDRSS) fleet.
    - (1) TDRS-3 (TDS) K-band Single Access (KSA)-1R Intermittent 1-second Drops. The KSA-1 return has been demonstrating intermittent 1-second dropouts at a frequency of about one every other day. These dropouts are not

- limited to one user, one time of day, or even every service for one user. The Pin Diode Attenuators (PDA) have already been adjusted to a minimum setting allowing little or no room for further adjustment.
- (2) TDRS-3 (TDS) Polarization Limits. TDRS-3 KSA-2 is locked in Left-hand Circular Polarization (LCP) due to a switch failure. Due to the limited number of LCP users, TDRS-3 KSA-1 is restricted to Right-hand Circular Polarization (RCP) only.
  - (f) Staffing is sufficient to meet all requirements.
  - (g) Documentation is up to date.
  - (h) Mr. Glasscock stated that the SN/WSC is ready to support Soyuz-28.
  - (i) Mr. Glasscock provided a WSC VHF status.
    - (1) There have been no software operational changes since the Soyuz-27 MORR.
    - (2) Hardware changes have been made in the VHF system. The VHF-1 and -2 cable replacement project was completed on June 6, 2011. This effort replaced and redressed all the cabling within the VHF shelter. The directional couplers were replaced on June 21, 2011.
    - (3) There is one open DR on the VHF-1 noisy downlink. The system is currently Green. A successful support was conducted on July 6, 2011. Mr. Greatorex asked what is required to close this DR. Mr. Glasscock responded that WSC wants to complete some final cleanup. Mr. Riley stated that the pass taken was on System 2. System 1 has not taken a pass. Mr. Bangerter stated that there is no issue having the DR remain open. The open DR provides the justification for the future separation of the two systems. The system is Green for support. Mr. Shinnars stated that the DR will remain open until the end of this mission. If the mission support is clean, the DR will be closed.
    - (4) Open work is the audio record capability on the VHF system.
    - (5) Projected work is the audio record capability on the VHF system. Additionally the two systems will be separated. Currently, they share the same tower and rotator assembly.
    - (6) Staffing is sufficient to meet all requirements.
    - (7) Documentation is up to date.
    - (8) Mr. Glasscock stated that WSC VHF systems are ready to support Soyuz-28.
    - (9) Mr. Bangerter stated that he is aware that F9 is moving to 41 degrees (TDE). Mr. Bangerter asked when the satellite will be active. Mr. Glasscock stated that the satellite will arrive at 41 degrees on September and will undergo testing and transition until September 12. Mr. Bangerter asked that the MORR be updated with this information and that the information be provided for the MOD FRR as well. Mr. David Glasscock accepted an action time to update the Soyuz-28 MORR and MOD FRR packages with the F9 to TDE data (action item Soyuz-28 MORR-01). (Editor's Note: the requested information was provided. This action item is **CLOSED**.)
3. WGS. Mr. Mark Harris provided a WGS status. There have been no software or hardware operational changes since the Soyuz 27 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. Riley commented that WGS had a good VHF-1 pass. Mr. Harris stated that WGS is ready to support Soyuz-28.

4. DFRC. Mr. Justin Thomas reported that there have been no software or hardware operational changes since the Soyuz 27 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. Riley commented that DFRC had a good VHF-1 pass and even performed an early handover to WSC. Mr. Thomas stated that DFRC is ready to support Soyuz-28.
5. NASA/DoD C-bands Eastern Range (ER). Mr. Mike Gawel provided an ER resources status. ISS Visiting Vehicles (VV) are not routinely supported by the ER and Western Range (WR). If a contingency is declared by the ISS Ground Controller (GC) during a VV mission, the ranges have agreed the ER and WR C-band radars will provide VV contingency support within agreed upon call-up times for Nominal and Off-duty hours. An ISI for C-band Radar Contingency Call-up Procedures will be published prior to mission. The ER will review the ISI prior to its release. Mr. Gawel reviewed the C-band Radar Contingency Call-up procedure. The procedure was implemented for Soyuz-27 for the first time. Mr. Bangerter stated that once the procedure is finalized, the procedure will be included in the standard documentation. Mr. Gary Morse asked if the policy/procedure applies only to Soyuz. Mr. Bangerter replied that at this time it applies to Soyuz and the Automated Transfer Vehicle (ATV) and H-II Transfer Vehicle (HTV). The procedure does not apply to the Commercial Orbital Transportation Services (COTS) projects. COTS projects are still considered in the test mode. When COTS projects are considered operational C-band support will not be provided; so there is no budget up front.
6. NASA Integrated Services Network (NISN). Mr. Randy Honeycutt provided the NISN status.
  - (a) There have been no software or hardware operational changes since the Soyuz 27 MORR.
  - (b) There have been no changes to the Marshall Space Flight Center (MSFC) Russian Services activities.
  - (c) There are no Problem Management and Dispatch System (PMDS) tickets.
  - (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) NISN will process all FERs during the mission in accordance with NISN SOP-002.
  - (i) Mr. Honeycutt stated that NISN is ready to support Soyuz-28.
7. Flight Dynamics Facility (FDF). Mr. Phil Beckner reported there have been no software or hardware operational changes since the Soyuz 27 MORR. There are no open DRs. The Soyuz-28 Two Line Elements (TLE) have been transmitted and reception verified by VHF sites. There are no projected changes. Staffing is sufficient to meet all requirements. The Soyuz-28 Mission Support Plan will be delivered by September 15, 2011. Mr. Bangerter asked about the transition from the Open to Closed IONet. Ms. Hoge replied that the transition will be complete at the end of October. Mr. Beckner stated that FDF is ready to support Soyuz-28.

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

1. Mr. Riley reviewed the requirements/test matrix.
2. Mr. Riley reviewed the one risk (VHF-2). VHF-2 is not periodically End-to-End (ETE) tested. The 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.

### **BOARD COMMENTS**

Ms. Dent polled the Review Board for their comments. All the board members stated that the network is ready to support Soyuz-28.

### **ACTION ITEM REVIEW**

One action item was assigned at the August 9, 2011, Soyuz-28 MORR.

<b>AI No.</b>	<b>Assignee</b>	<b>Action</b>	<b>Response</b>	<b>Status</b>
Soyuz-28 MORR-01	David Glasscock/ WSC	Update the Soyuz-28 MORR and MOD FRR packages with the F9 to TDE data.	The requested information was provided.	Closed

### **RFA REVIEW**

No Requests for Action (RFA) were assigned at the August 9, 2011, Soyuz-28 MORR.

(Original Approved By)

James A. Bangerter  
GSFC/NASA/450.1  
HSF ND

Kevin Riley  
GSFC/HSF/NOM