

DATE: October 18, 2011

LOCATION: Regents Park III, Room 201

SUBJECT:

Attendance:

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## INTRODUCTION

Ms. Aldora Louw Convened the October 18, 2011, Human Spaceflight (HSF) Network Support Group (NSG) Obsolescence-Driven Avionics Redesign (ODAR) Working Group (WG) meeting to discuss ODAR requirements, project status, and schedules.

## MEETING

- A. Action Item Review. Mr. Steven Testoff asked for a review of the action items from previous ODAR WG meetings.
  1. Action Item 082411-ODAR WG-02. Inputs have been provided and were discussed at the October 2011 NSG ODAR WG splinter session. This item is **CLOSED**.
  2. Action Item 082411-ODAR WG-03. Dr. Kluk sdahl is working with Mr. Tracy Minish to determine how formally this risk will be documented. This risk has been raised through Johnson Space Center (JSC) Mission Operations Directorate (MOD). This item is **CLOSED**.
  3. Action Item 082411-ODAR WG-04. Dr. Kluk sdahl is working with Mr. Tracy Minish to determine how formally this risk will be documented. This risk has been raised through JSC MOD. This item is **CLOSED**.
- B. Tracking and Data Relay Satellite System (TDRSS) Codes.
  1. The TDRSS Return (RTN) codes are still needed.
  2. Mr. Ryan Levin and Ms. Louw will be meeting on October 18, 2011 to discuss this item. A meeting will be set up with the White Sands Complex (WSC) later in the week of October 17 to discuss the status of the codes.
  3. Ms. Debra Rambo-Cleek has provided copies of what is needed to Mr. Jim Bangerter.
  4. It is necessary to keep Messrs. Mike Marston and Ray Sparks informed of the progress of this item. Ms. Louw stated that it will be necessary for Messrs. Marston and Sparks, the JSC Ground Controllers (GC), and her to meet when all the required data is gathered.
  5. WSC needs to provide data for the one RTN link. Mr. Erik Richards stated that WSC is waiting on a software delivery. Mr. Bangerter stated that he will check the status of the software delivery with Mr. Rich Romansky.
  6. The goal is not to interfere with International Space Station (ISS) operations during testing.
  7. Mr. Sparks stated that he needs the eFDP 01 software for testing. He will need the software by October 21. Mr. Marston asked if the upgrade is needed for network testing and Mr. Sparks stated that it is. Mr. Marston stated that he will talk with the software personnel. Ms. Louw stated that this will be part of the discussion later in the week.
  8. Editor's Note: Ms. Louw provided the following update after the meeting. Mr. Ryan Levin and Ms. Rambo-Cleek met with the JSC GCs (Messrs. Joe Whitney and Dan Leftwich), the WSC rep (Mr. Erik Richards), and Mr. Fred Pifer. We are all set. The following is a summary of the meeting:
    - (a) Letter from Mr. Jim Bangerter to increase priority on WSC software upgrade (determined letter should say upgrade needed by December 2<sup>nd</sup>. (Mr. Ryan Levin is going to coordinate with Jim).
    - (b) WSC will send diagram of routing – to show requirement for software upgrade (Mr. Erik Richards).

- (c) JSC/WSC/Goddard Space Flight Center (GSFC) - all to provide best dates for testing (Messrs. Whitney, Levin, and Richards – due NLT Oct 28).
  - (d) GC to provide list of code combinations for testing (Mr. Whitney).
  - (e) GSFC will schedule test (Messrs. Fred Pifer and Levin).
  - (f) GSFC will send out a Briefing Message (BM) for the test (Mr. Pifer).
  - (g) Ms. Louw will continue to track this item during the ODAR WG meetings on Wednesday afternoons. Once the test dates are known we will schedule the test and have a discussion to make sure that the ground networks are ready to support the testing.
- C. Integrated Communications Unit (ICU). The ICU is now expected at the Electronic Systems Test Laboratory (ESTL) in two weeks.
- D. ODAR Transition Plan. Ms. Louw stated that the ODAR transition plan is organized in two sections. Section 1 is the Mission Control Center (MCC) ODAR transition plan and Section 2 is the MCC ODAR Fallback plan.
1. The ODAR splinter at the NSG is a working group meeting to gather information for the following topics:
    - (a) Transition from legacy systems to ODAR. This will occur when the ICU is activated.
    - (b) Transition from ODAR back to legacy systems. This is a fallback plan.
  2. Each facility needs to provide the following information for the transition plan.
    - (a) Areas/Equipment in their facility that will be affected.
    - (b) High-level procedures for transition.
    - (c) Any dependencies on transitioning.
    - (d) Time in which the transition can be accomplished.
- E. Element Input
1. JSC Building 8. All JSC video distribution is via Building 8.
    - (a) For ODAR, Building 8 will be upgrading its systems. Mr. Rick Canter stated that systems will be built in parallel. The system should be approved and ready for simulations in June 2012. When the ICU is on orbit, it will only be necessary to move to a different console.
    - (b) There are no plans, currently, to decommission the present system until a couple of months after the ICU is operational. With patching, it is possible to use the old or new system. Dr. Kluksdahl asked if there is a plan for the patches. Mr. Charles Boehl replied that there is a DDR schedule and a subcontractor is in place. It is easy to identify the patch points.
    - (c) Building 8 can receive the transport stream and convert it to SDI until it is converted to digital. Building 8 can ingest the SDI if ODAR falls back. Dr. Kluksdahl asked when this capability will be tested. Mr. Charles Boehl replied that the SDI ingest will be tested prior to the ICU change over. The Preliminary Design Review (PDR) for the Sony systems is scheduled to be held in a couple of weeks.
    - (d) Mr. Robbie Frazier asked if there are plans to pursue an additional playback and real-time service for MCC to the Marshall Space Flight Center (MSFC). Dr. Kluksdahl stated that there is an operations concept. Building 8 is the distribution point. This would have to be discussed with FD, MOD, etc.

- (e) Ms. Louw stated that Canadian Space Agency (CSA) support needs to be discussed as well. Mr. Joe Aquino stated that the CSA needs to update its requirements. Mr. Frazier stated that the CSA need to keep its peering points going. Mr. Phil Cauthen stated that there are no plans to change.
  - (f) Mr. Aquino stated that there plans to add 2 new services to the existing 4 real-time services and add 6 new playback for MSFC. There will be a separate implementation for the POIC. This is a general communications issue that can be worked with CSA and the NACAIT. Building 8 has the infrastructure to add the additional channels. Mr. Aquino stated that from an operations perspective, it is not a good idea to have to keep switching to get the required channels. Ms. Louw stated that there patching procedures will be ready when the design review is completed.
  - (g) Ms. Louw stated that Building 8 will provide general validation of the video formats.
  - (h) Mr. Boehl stated that all should be in place by May 2012. Ms. Louw stated that when the detailed schedule is ready, it will be provided, and then it can be determined when Building 8 can participate in testing.
  - (i) Mr. Boehl stated he thought the flow testing was the fiber testing. The fiber testing can be done at any time. Decoding is different. The boxes need to be in place to do decoding testing. Building 8 has a virtual matrix. The transport stream demarc is at the decoders. All else in the facility is SDI. Transport stream testing is anticipated for the February time frame.
2. WSC
- (a) Ms. Louw asked if there will need to be any physical changes when moving from legacy mode to ODAR. Mr. Sparks stated that it will be necessary to enable the matrix switch to allow the Forward (FWD) link out.
  - (b) Ms. Louw asked if new profiles will be needed for the eFDPs. Mr. Sparks stated that all would be set up.
  - (c) The question was raised as to how the multicast addresses will be enabled. Mr. Sparks stated that the addresses have not been tested in the eFDPs yet and the schedule is to do the testing the first of the New Year. All the required configurations will be in place by that time.
  - (d) The FWD link is not enabled in the flight following mode. At the time it is needed, the proper switch is enabled. It is like the Front End Processor Replacement (FEPR) today, except that MSFC is the host and JSC is the client. WSC has stated it is possible to send to both ports and that they will enable the proper port.
  - (e) Ms. Louw asked about the RTN link. How will the eFDP know the proper VCIDs and multicast addresses? Mr. Sparks stated that there will be script. There is a contingency file that the operations group can initiate with agreement between JSC and MSFC. A different configuration file will be loaded when the ICU is activated. All the eFDPs will go to the new configuration file. One will be prime; one will be backup; and one will be in record mode. This will cover the Line Outage Recorder (LOR) requirement at WSC. The eFDP can be taken back to the legacy configuration via a configuration change if necessary. No hardware changes are required to go back.

- (f) Dr. Kluksdahl stated that all this needs to be documented.
  - (g) It was stated that the FWD LIs and 1080 are ready. The RTN LIs are not ready. WSC is not ready for automated testing; software is needed. The software can be ready as soon as November, but JSC needs to make it known to WSC that this is a priority.
  - (h) Mr. Aquino stated that JSC wants to run all the quad 2 items as well as the current 8000 test. Mr. Marston stated that the end of December is the probable date. Eight weeks of testing with TDRSS will be scheduled and that now makes testing at the end of December. Mr. Richards stated that a decision needs to be made and discussions held with WSC on the priority of the software for the LIs. The software is needed so that testing can be accomplished without impacting ISS operations. Mr. Bob Marriot stated that this test was originally scheduled for this past August and a plan was in place. He stated that he does not understand how WSC got this far off track. Mr. Richards stated that he could not address that, but the software section stated that the software would not be ready until March unless it is made a priority. Mr. Bangerter stated that he will ask WSC to include the software in the first delivery. Messrs. Jim Bangerter accepted an action item to work with Mr. Erick Richards to develop an email for transmission to JSC requesting JSC contact WSC to give a higher priority to completing the software required for ODAR testing (quad 2 software) (action item 101811-ODAR WG-01). Mr. Joe Whitney stated that the 8000 SIC is in place.
  - (i) Ms. Louw asked if any WSC changes will be needed when the ICU is activated. The reply was no. If WSC has to go back, the older ports can be scheduled. WSC is not deleting the codes. WSC has to be told how long to hold on to the ports. Dr. Kluksdahl stated that that is dependent on decisions by the Program, as to how long it will be necessary to stay in the fallback posture. Mr. Bangerter stated that it can be expected that WSC will press to have the ports released.
3. MSFC. MSF is currently on the ISS IP Ground Routed Network (IIGoR) on the test MOC. MSFC can switch to the Mission Ops Processor (MOP). Configuration files can be loaded to the eFDP and the swap to operations made. When (ISS) Downlink Enhancement Architecture (IDEA) is gone, a team will be sent to WSC to remove the equipment that supports IDEA, but not IIGoR. The routers can be removed at any time. To fallback, all that is required is configuration changes. MSFC will then see the 150-Mbps link vice the 300-Mbps link.
  4. MCC. When transitioning to ODAR, 5 areas will be impacted: front-end systems, networks, JSL (OCA), voice and video. There is no voice in the legacy mode. Voice fallback will be easier than other areas. There will be a lot of effort needed for the OCA transition/fallback. The Small Conversion Devices (SCD) will have to be maintained so that they can be brought back up. We will not be going back to IDEA. It will have been decommissioned. ODAR will be on IIGoR and will go back to IDEA mode. Video will fallback to the old interfaces.
  5. Space Station Training Facility (SSTF). Ms. Louw will work on getting the SSTF data for the transition plan.
- F. Other
1. Dr. Kluksdahl stated that OST needs to do a comprehensive review of the transition plan.

2. Familiarity with the old equipment needs to be maintained should fallback be necessary.
3. Prior to sending the plan out for the next review; Building 8 processes are needed; additional details for MSFC are needed from Mr. Sparks; and the WSC details on the ports are needed.
4. Ms. Louw stated that she is working the IDEA to IIGoR transition plan. This has been sent out once for review and will be distributed again. The proposed transition is scheduled for April 2012. Dr. Kluksdahl stated that the extension of IDEA has been identified as a budget risk. This is being discussed at the MOD level.

### **ACTION ITEMS**

The following action item was assigned at the October 18, 2011, HSF NSG ODAR WG splinter meeting:

101811-ODAR WG-01	Jim Bangerter/GSFC/NASA/HSF ND
ACTION:	Develop an email for transmission to JSC requesting JSC contact WSC to give a higher priority to completing the software required for ODAR testing (quad 2 software) (working with Messrs Richards and Ryan Levin).

(Original Approved By)  
Ms. Aldora Louw/JSC