

SUBJECT: STS-135 Operational Readiness Review (ORR) Minutes

DATE: May 17, 2011

PLACE: Goddard Space Flight Center (GSFC), Building 33/H114

TIME CONVENED: 1:00 p.m. TIME ADJOURNED: 3:10 p.m.

ATTENDANCE

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WELCOME/INTRODUCTION

Mr. Jim Bangerter convened the May 17, 2011, STS-135 Operational Readiness Review (ORR) to assess the readiness of the Integrated Network (IN) to satisfy the requirements for the STS-135 mission (refer to the presentation package, *STS-135/ULF7 GSFC Operational Readiness Review*).

The STS-135 Review Board members are as follows:

- Mr. Ken Lehtonen, GSFC, Code 301, Systems Review Office.
- Mr. John Hudiburg, GSFC, Code 599, 450 Senior Technical Authority.
- Mr. Scott Greatorex, GSFC, Code 450.1, Chief, Networks Integration Management Office.
- Ms. Susan Hoge, GSFC, Code 595, Navigation and Mission Design Branch.
- Ms. Victoria Stewart, GSFC, Code 760, Chief, Communications & Security Services Division (CSSD) (Mr. Scott Douglas signing for).
- Mr. Joe Aquino, JSC, Manager, KSC DD13, Space Communications Integration Office (Ms. Jewel Hervey signing for).
- Mr. Gary Morse, KSC, Space Communications and Integration.
- Mr. Steve Currier, GSFC, Code 453, Ground Network Project (Mr. Gary Morse signing for).
- Mr. Donald Shinnors, GSFC, Code 452, Space Network Project.
- Mr. Mike Yettaw, DFRC, Range Technical Monitor, Western Aeronautical Test Range (WATR).

WELCOME

Mr. Jim Bangerter provided a welcome to the attendees. He noted that this was the beginning of the STS-135 Space Shuttle mission preparation reviews: there are three reviews after the Goddard Space Flight Center (GSFC) ORR. The three are the Johnson Space Center (JSC) Mission Operations Directorate (MOD) Flight Readiness Review (FRR), which is currently scheduled for May 26, but will slip until after the STS-134 mission to ensure that any anomalies/issues from STS-134 can be included for discussion at the review (now scheduled for June 14, 2011); the Space Shuttle Program (SSP) FRR; and the Agency FRR. Mr. Bangerter stated that this ORR will use the Request For Action (RFA) and action item process.

Mr. Bangerter noted that this ORR, the last for the SSP, presented a scheduling challenge due to the uncertainty of the STS-134 launch and the need to adhere to the schedule for the follow on STS-135 reviews.

Mr. Bangerter noted that this ORR is being photographed and video recorded. The video will be provided to JSC for archival as part of the SSP Library.

Mr. Bangerter took a moment to recognize the Review Board for their support over the years. He expressed his appreciation for their participation and presented each member with a STS-135 lapel pin.

STS-135 MISSION OVERVIEW

Ms. Melissa Blizzard provided an STS-135 Mission Overview.

- A. Mission Highlights. Ms. Blizzard reviewed the mission highlights. The launch is currently scheduled for June 28, 2011. This is a 51.6-degree inclination launch. The primary payloads are the Multi-purpose Logistics Module (MPLM) Raffaello and a Lightweight Multi-Purpose Carrier (LMC). Ms. Blizzard reviewed the End of Mission (EOM), Transoceanic Abort Landing (TAL), and Abort Once Around (AOA) prime and weather alternate landing sites. The landing is currently scheduled for July 10, 2011. This is a 12 + 0 + 2 day mission.
- B. International Space Station (ISS) Assembly Sequence. Ms. Blizzard reviewed the ISS assembly sequence. This is flight ULF7.

SPACE SHUTTLE INTEGRATED NETWORK OVERVIEW

Ms. Blizzard provided the IN overview.

- A. Space Shuttle IN Overview Chart. Ms. Blizzard reviewed the chart illustrating the network elements and their relationships. The IN configuration is the nominal configuration and there have been no recent changes. Mr. Bangerter stated that the chart will be updated to reflect the planned swap of F4 with F3.
- B. IN Coverage Chart. Ms. Blizzard reviewed the IN network coverage chart. The diagram includes the timeline for the STS-135 Extra Vehicular Activity (EVA). One EVA is planned. It will be conducted by the ISS crew vice the Space Shuttle crew.
- C. Significant STS-133 Anomalies and Issues. Ms. Blizzard reviewed the significant STS-133 anomalies and issues.
 - 1. In Flight Anomalies (IFAs)
 - (a) IFA STS-133-G-001. Wallops Ground Station (WGS) experienced an anomaly in the Monitoring and Control software when changing from low to high frequency. Changing to high frequency caused an enable command to be issued to the Enertec upconverter. This caused the Spaceflight Tracking and Data Network (STDN) high frequency 2106.4063-Mhz signal to be radiated through the 11-Meter (11M) antenna. Five Space Shuttle events were impacted. There have been no recurrences since a software fix was installed on March 3, 2011. This item has been closed.
 - (b) IFA STS-133-G-002. The Second TDRSS Ground Terminal (STGT) Common Time Frequency Standard-A (CTFS-A) failed. A failover from CTFS-A to CTFS-B was performed to restore telemetry. A frequency distribution amp was replaced in CTFS-A to restore it to service. There was a 3 hour 26 minute 46 second S-band Single Access (SSA) Return Service loss on TD171 and TDS. There were no further impacts after the failover. This item has been closed.
 - (c) IFA STS-133-G-003. The Guam Data Interface System Replacement (GDIS-R) experienced numerous incidents of degraded data on the Ku-band Single Access (KSA) and SSA Return services. Post mission testing was unable to duplicate the problem. A contingency workaround is in place for STS-134. Plans are in place to collect additional data if the problem occurs during STS-134. This item remains open.
 - 2. Significant issues
 - (a) The Wallops Flight Facility (WFF) loss power. Power was down for 32 minutes due to a base-wide commercial power outage. The back-up generator failed to come online. This resulted in a 6-minute service loss of S-band and radar data.

Mr. J. R. Hendrickson reported that the generator problem was traced to settings on the switch gear that have since been corrected. To mitigate potential commercial power interruptions, the WFF remained on generator power for STS-134, and expects to do the same for STS-135. This item is closed.

- (b) Houston Television (TV) did not receive Space Shuttle analog video on orbit 45. The common carrier mode switch at the STGT indicated analog while the White Sands Ground Terminal (WSGT) indicated digital. The White Sands Complex (WSC) reconfigured the WSGT mode switch to analog and the video was restored. The anomaly could not be duplicated and this item is closed.

D. Significant STS-134 anomalies and issues. Ms. Blizzard reviewed the significant STS-134 anomalies and issues.

1. Merritt Island Launch Annex (MILA)/Ponce de Leon (PDL)

- (a) The PDL Generator #1 was taken offline and out of service when its water pump failed. Mr. Ray Boatwright reported that the on-site technicians noticed the generator failing and switched to generator #2. The water pump is being replaced in generator #1 and it is expected to be back online on May 17. This item is being tracked via Comprehensive Discrepancy System (CDS) #259598.
- (b) The Quad Helix Ultra High Frequency (UHF) failed to move in elevation or respond to any elevation commands. Mr. Boatwright reported that this anomaly occurred during pre-launch checks and remains under investigation. The Quad Helix UHF was the backup to the TELTRAC UHF. This item is being tracked via CDS #259597.
- (c) The TELTRAC UHF did not downlink UHF voice for 45 seconds of MILA support. Mr. Boatwright reported that it appears that four transmissions did not get through on this prime UHF link. Initial system checks did not reveal any discrepancies. The delog reports indicate that the signal strength was sufficient. This issue remains under investigation. Mr. Hudiburg asked how this issue is being tested. Mr. Boatwright replied that some test scenarios are being developed and test equipment will be used to verify the signals. Mr. Bangerter and Ms. Blizzard accepted an action item to look into making the Portable Spacecraft Simulator (PSS) available to MILA to assist with the testing (**action item STS-135 ORR-01**). This item is being tracked via CDS #259599. Mr. Bangerter noted that this will be documented as an STS-134 IFA.

2. White Sands

- (a) SGLT-6/TD275 SSAR1 CH 1 data degraded (first TDZ event). Mr. David Glasscock reported that when degraded data was noted, the White Sands technician followed the Interim Support Instruction (ISI) and did a failover to the Alpha data stream to address the IPE condition. This restored the data to the Space Shuttle. This issue remains under investigation, but it is suspected to be the result of an IPE failure. This item is being tracked via CDS #61507.
- (b) SGLT-6/TD275 SSAR OCA 2 Mbps data not usable. Mr. Glasscock reported that a failover from channel two was performed to address this problem. It was subsequently discovered that the failover was configured to an incorrect path. The problem is expected to be resolved with a Multiplexer/Demultiplexer (MDM) failover planned for May 17. Ms. Blizzard stated that this pertains to the incident that occurred on the morning of May 17. She noted that no usable Orbiter

Communications Adaptor (OCA) 2 Mbps data had been received via TDZ for the entire STS-134 mission. Mr. Glasscock stated that this is a continuation of the GDIS-R IPE issue that was discussed for STS-133. Mr. Steve Sypher reported that the 192-kbps telemetry was being processed through Guam and the IPE 2B path during the initial events on May 16. IPE 2B was determined to be degraded and was reset. Several passes were supported thereafter. The OCA 2 Mbps data was also being routed through the IPE 2B path and remained degraded. There is an apparent issue on the IPE 2B path with Space Shuttle data. Performing the MDM failover will transition the configuration from the IPE 2B path to the IPE 2A path. Mr. Bob Marriott commented that this issue is a major impact as it affects communications with the crew, so it is receiving high visibility. Mr. Bangerter stated that this anomaly spans multiple missions and it is being taken very seriously. Every effort is being made to resolve this problem and he will keep the Review Board apprised of the status. This item is being tracked via CDS #61522. Mr. Bangerter noted that this will be documented as an STS-134 IFA.

- (c) SGLT-5/TD171 JSC not receiving Channel-3 Alpha Magnetic Spectrometer (AMS) data. The WSGT technician patched around the HRDS to restore data. This issue remains under investigation. This item is being tracked via CDS #61519.
 - (d) Data Capture and Playback System (DCAP) unable to record 4.1Mbps AMS data. Mr. Glasscock reported that when configuring for 4.1 Mb AMS data, the DCAP freezes. All other data rates work without incident. Ms. Blizzard stated that there were no issues reported during pre-launch testing. This item remains under investigation.
3. White Sands Space Harbor (WSSH). Backup UHF A/G circuit is red due to low level. Ms. Blizzard reported that on May 16, the backup UHF A/G circuit from WSSH was unusable due to low levels. It was noted that WSSH had configured the circuit in a loopback mode, which was not removed until just before launch. This interfered with the keying levels. Ms. Blizzard accepted an action item to follow-up with WSSH on this item (**action item STS-135 ORR-02**).
- E. Program Requirements Document (PRD) Changes. Six changes were implemented to the ISS On-Orbit Payloads Utilization PRD/PSP – Volume II – ISS Utilization document. The changes related to voice circuit updates in support of the Robotic Refueling Mission (RRM) payload.
- F. Network Changes for STS-135. Ms. Blizzard reviewed network changes for STS-135.
- 1. The GSFC Space Communications Network Services (SCNS) Contract transition was completed on April 9, 2011.
 - 2. The NASA Integrated Service Network (NISN)/NASCOM elements, including GSFC TV combined under the NASA Integrated Communications Services (NICS) Contract effective June 1, 2011.
- G. Documentation. Ms. Blizzard reviewed the mission documentation list. Generic documentation is up to date. Several documents were recently updated. The matrix shows the Interim Support Instructions (ISI) that are prepared and ready at this time and their scheduled transmission time and the ISIs that are still in preparation.
- H. Potential Launch and Scheduling Conflicts. Ms. Blizzard stated that there is one Expendable Launch Vehicle (ELV) launch during the STS-135 timeframe; a Delta IV

launch scheduled for June 23, 2011. SN resource conflicts are addressed according to the SN Priority List. Human Spaceflight (HSF) Network Operations Managers (NOM) and ELV/Robotics NOMs work to resolve resource conflicts during Space Shuttle testing/mission support periods.

GSFC BASE UTILITIES AND MISSION SUPPORT FACILITIES

Mr. Todd Sanders provided the base facilities status. There are no issues on the West Campus and all facilities are Green. The semi-annual Preventive Maintenance (PM) is due on in May 2011 for the Building 3/13/14 Uninterruptable Power Supply (UPS), but will not be performed until after the STS-134 mission ends. There are no issues on the East Campus and all facilities are Green. Staffing is sufficient to meet all requirements. Mr. Hudiburg asked if there have been any personnel changes and Mr. Sanders replied that there have not been any personnel or contract changes. Mr. Sanders stated that GSFC base utilities and mission support facilities are ready to support STS-135.

INTEGRATED NETWORK ELEMENT STATUS

Representatives from the IN elements provided an element status and support readiness statement.

- A. GSFC NIC. Mr. Melvin Calhoun provided a NIC Status. There have been no recent operational software or hardware changes. There are no open Discrepancy Reports (DRs). There are five open and approved Freeze Exemption Requests (FERs). Mr. Hudiburg asked about the status of the FER for the GSFC Building 35 construction. Mr. Sanders replied that the construction is beginning and will be on-going for at least another year. Excavation work is being done, but there are no existing site utilities in the area. Power feeders have been extended to the location for the construction trailers. Mr. Calhoun reported that Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Calhoun stated that the NIC is ready to support STS-135.
- B. Flight Dynamics Facility (FDF). Mr. Warren Mitchell provided an FDF status. There have been no recent software changes. The routers and associated cabling to the FDF closed IONet will be upgraded after the STS-134 freeze ends. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements. FDF will not be staffed during the docked operations crew-sleep periods. Mr. Mitchell stated that FDF is ready to support STS-135.
- C. NISN/NASCOM. Mr. Randy Honeycutt provided a NISN/NASCOM status.
 1. Mr. Honeycutt discussed the operational changes.
 - (a) The GSA FTS-2001 Contract ended and services are being transitioned to the new GSA Network Contract.
 - (i) The Mission Critical Service Level Agreement (SLA) of 99.95% and the Time to Restore (TTR) of 2 hours will continue under new contract. Mr. Joe Aquino stated that it had been determined that the Dryden Flight Research Center (DFRC) and the PDL services could not meet the TTR of 2 hours, and he questioned whether the new contract should specify a TTR of 2 hours or 4 hours for these services. Ms. Vicki Stewart noted that a listing of the SLAs and TTRs is being developed for the sites under the new contract. She accepted an action item to provide the listing to Mr. Bangarter (**action item STS-135 ORR-03**).

- (ii) The existing HSF service that required a change in AT&T's equipment for monitoring capabilities was the GSFC/AGO T-1. The service transitioned on April 14, 2011 from Channel Service Unit (CSU) to channel bank for better visibility. No issues have been reported since the changeover.
 - (iii) Existing HSF services that will require a change from current carrier to AT&T with dates To Be Determined (TBD) are the GSFC/State Dept. voice, GSFC/White House voice, and WSC/Guam DS-3s. The carrier has completed testing of the new WSC/Guam interfaces and NISN is awaiting testing and acceptance from WSC. Once accepted, NISN will monitor and assist as necessary during transition of services to the new interfaces.
- (b) Mr. Honeycutt reviewed the software changes. Small Conversion Device (SCD) software release 6.2 H-I is planned to be deployed after STS-134 Weight On Wheels (WOW). Mr. Hudiburg asked if there is a greater risk of remaining on the current software or installing the new software with only one Space Shuttle mission remaining. Mr. Scott Douglas replied that software deployment is necessary to comply with security guidelines, and he does not believe there is any increased risk in proceeding with change. Mr. Bangerter noted that these types of upgrades have been completed between Space Shuttle missions in the past without any problems.
- (c) There have been no recent hardware changes.
- (d) Mr. Hudiburg noted that during a review of a recent Atlas support, there was a discussion regarding Mission Operations Voice Enhancement (MOVE) issues between GSFC, WSC, and FDF.
- (i) Mr. Bangerter noted that there have been some instances of low volume levels, but nothing significant.
 - (ii) Mr. Don Shinnars noted that WSC operations personnel are using new headsets now and MOVE appears to be working fine.
 - (iii) Mr. Honeycutt noted that the old headset only had volume controls on the receive side, while the new headsets have volume controls on the transmit and receive sides.
 - (iv) Mr. Mitchell stated that there was an incident during STS-134 between FDF and WSC on May 16. During the epoch read-out for the vector transmission, the FDF could not hear WSC's reply and had to request a second read-back. Mr. Shinnars accepted an action item to look into this incident (**action item STS-135 ORR-04**).
 - (v) Ms. Hoge accepted an action item to check into whether FDF is using the new headsets (**action item STS-135 ORR-05**).
 - (vi) Mr. Hudiburg stated that his concern is about the quality of voice communication during contingency situations when there are multiple activities occurring.
 - (vii) Mr. Bangerter stated that it is difficult to characterize the matter as a systemic issue, and he emphasized that everyone needs to keep abreast of any problems and incidents need to be reported immediately.
2. Mr. Honeycutt reiterated that the NICS Contract becomes effective June 1, 2011. The transition should be imperceptible to the HSF community. The incumbent companies are already in place.

3. There are no current open Problem Management Dispatch System (PMDS) items.
 4. Facilities are Green.
 5. Staffing is sufficient to meet all requirements.
 6. NISN will process all FERs during the mission in accordance with NISN SOP-002.
 7. Mr. Honeycutt stated that NISN is ready to support STS-135.
- D. WGS. Mr. Mark Harris provided a Wallops status. Mr. Harris reported that the Dewitt Monitor and Control software release Hwcntrl 6.4.5 is scheduled for the week of June 6, 2011. The Wallops Orbital Tracking Resource Scheduler (WOTIS) software release 9.3.13.8 was planned for installation the week of May 16, 2011. The WOTIS computer memory upgrade was planned for May 13, 2011. All of these changes will be delayed until after the SAC-D mission that is scheduled for June 9, 2011 with the intent of completing them before the STS-135 freeze. There are two DRs in work. Neither of these has had any impact on Space Shuttle operations in the past. Facilities are Green. Mr. Harris stated that the generator will be configured as prime for launch support and commercial power will be available in approximately 45 seconds if the generator fails. Commercial power will be prime for on-orbit support. Mr. Hudiburg asked what happens if there is a failover from the generator to commercial power and the antenna drive is not on UPS. Mr. Harris replied that the antenna will stop tracking while it is without power and resume tracking when power is returned. Mr. Hudiburg asked if power is lost for 45 seconds would contact with the Space Shuttle be loss and Mr. Harris replied yes. Mr. Hudiburg noted that WGS picked up the UHF A/G during STS-133 when it was dropped by MILA, and he asked if WGS noticed anything unusual. Mr. Harris replied that WGS did not. Staffing is sufficient to meet all requirements. Mr. Harris stated that WGS is ready to support STS-135.
- E. Wallops Range. Mr. Mark Lamberson provided a Wallops Range status. There have been no recent software changes. A remote weather station was installed at the WLPC Radar site on April 14, 2011. There are no open DRs. Mr. Lamberson reported that a DR was opened before the last STS-134 test due to a 200 millisecond time bias in the low speed tracking data. The problem was traced to the Time Code Generator and corrected. The DR was closed on May 5. Facilities are Green. Mr. Lamberson stated that the Wallops Range uses the same commercial power that the WGS does. Wallops Range will also be on generator for the launch and on commercial power for on-orbit support. Staffing is sufficient to meet requirements. Mr. Lamberson stated that the Wallops Range is ready to support STS-135.
- F. AGO. Mr. Luis Goni provided an AGO status. There have been no recent hardware or software changes. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Goni stated that AGO is ready to support STS-135.
- G. MILA/PDL. Mr. Boatwright provided a MILA/PDL status. There have been no recent hardware or software changes. There are three open DRs, which were previously discussed with the STS-134 anomalies and issues. The PDL Generator #1 issue (CDS #25959) is expected to be closed on May 17. The Quad Helix UHF (CDS #259597) and TELTRAC UHF (CDS #259599) issues remain under investigation. Facilities are Green with the exception of the PDL Generator #1. Staffing is sufficient to meet all requirements. Mr. Boatwright stated that MILA/PDL is ready to support STS-135.
- H. SN. Mr. Glasscock provided a SN Status.

1. The 25-Mbps software delivery was scheduled on the STGT Data Interface System (DIS) for May 25, 2011, but will slip due to STS-134. The same delivery is scheduled for the WSGT DIS on June 2, 2011.
 2. MOVE has replaced the Multi-Conference Digital Switch (MDS) system at STGT and WSGT. Guam Remote Ground Terminal (GRGT) remains on the legacy system.
 3. The antenna Sub-System Controllers (SSC) replacement was completed at STGT on March 20, 2011.
 4. Mr. Glasscock reviewed the DRs. There are five open DRs. Three of the DRs, #40275, #50046, and #50323, have impact to mission operations. Workarounds are in place for all of the open DRs.
 5. Mr. Glasscock reviewed the status of the TDRSS fleet.
 - (a) TDRS-4 (TDS) Power System Degradation. Mr. Bangerter stated that NASA Headquarters (HQ) has approved the plan to replace TDRS-4 with TDRS-3. Mr. Shinnars stated that the transition should be completed by mid-June 2011 before the eclipse season. Mr. Bangerter stated that he will ensure that JSC receives detailed information regarding the swap of TDRS-4 with TDRS-3.
 - (b) TDRS-4 (TDS) K-band Single Access (KSA)-2 Forward Power. The power is below specification. A spare TWTA is available.
 - (c) TDRS-3 is positioned at 49° west in storage. It can replace TDRS-4 within 24 hours, if required.
 6. Facilities are Green.
 7. Staffing is sufficient to meet all requirements.
 8. Mr. Glasscock stated that the SN is ready to support STS-135.
- I. KSC Communications Data and Switching Center (CD&SC). Ms. Monique McLamb provided a CD&SC status. There have been no recent hardware or software upgrades. Ms. McLamb reported that there was a Greenwich Mean Time (GMT) issue on the downlink for STS-134 and the issue is under investigation. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements. Ms. McLamb stated that KSC CD&SC is ready to support STS-135. Mr. Morse asked about the plans for the Kennedy Forward/Return Link (KFRL). Mr. John Steffes reported that a meeting was held the week of May 9 and it was decided to support STS-134 with the legacy system due to data losses experienced with the KFRL. Information is being collected to perform an analysis of the KFRL issue and a report is due on May 24. NASA engineers will decide if the legacy or KFRL will be used for STS-135. Mr. Morse stated that in the interim, MILA will continue to provide PM2 data. Ms. McLamb and Mr. Steffes accepted an action item to provide Mr. Bangerter a summary status on this item for distribution to the Review Board (**action item STS-135 ORR-06**).
- J. NASA/DoD C-bands (Eastern Range) ER. Mr. Jerry Wolfe provided the ER resources status.
1. DoD radars (includes ER, Western Range [WR], White Sands Missile Range [WSMR], and Jonathan Dickinson Missile Tracking Annex [JDMTA]). There have been no recent operational changes. A Kwajalein Information Assurance (IA) Waiver has been requested for STS-135. There are no open DRs (Morrell Operations Center [MOC] only). Facilities are Green. Staffing is sufficient to meet all requirements.

2. NASA Radars (DFRC and WLPS). There have been no recent operational changes. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements.
 3. Readiness. Mr. Wolfe stated that ER resources are ready to support STS-135.
- K. DFRC. Mr. Bob Guere provided a DFRC status. There have been no recent software changes. The COMM 3 system is being upgraded to an 18-foot parabolic dish. There is one open DR and one open Configuration Change Requests (CCR). Each of these items relates to the COMM 3 upgrade and workarounds are in place for both. Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Guere stated that DFRC is ready to support STS-135.
- L. WSSH. Mr. Pat O'Donnell was not available and Ms. Blizzard provided the WSSH status. There have been no recent operational changes. There are no open DRs. Ms. Blizzard stated that a DR may be opened for a status on the backup UHF circuit. Facilities are Green. Staffing is sufficient to meet all requirements. Ms. Blizzard stated that WSSH is ready to support STS-135.

INTEGRATED NETWORK SUMMARY

- A. Freeze Plan for STS-135. Ms. Blizzard reviewed the freeze plan which listed the IN elements and the freeze period for each element. Ms. Blizzard stated that the Network Director (ND) coordinates all freeze waivers for necessary work in accordance with the *Configuration Management Freeze Policy*.
- B. Testing Overview. Ms. Blizzard reviewed the testing overview for STS-135. The SN and Ground Network (GN) are verified using a standard sequence of tests. Some of the tests may not be performed due to the short turnaround between STS-134 and STS-135.
- C. Network Test Plan and Service Requirements/Test Matrix. Ms. Blizzard stated that these illustrate the testing needed to ensure that requirements are met. Test dates have not been confirmed at this time due to the anticipated slip of STS-135.
- D. Risks. Ms. Blizzard reviewed the network risk. There is one risk. TDRS Spacecraft Naming Convention. If TDZ is down and JSC space Shuttle Scheduler is unable to load TD-171 into the Shuttle Table, then there is a communications safety risk. The short-term mitigation is to ensure that the name of the satellite and/or the location of the satellite when used is clearly defined and communicated. The long-term mitigation is to change the TDRS spacecraft names to reflect the location or another unilaterally agreeable identifier. Space Shuttle continues to fly with workarounds. Mr. Morse asked if this risk ends with the termination of the Space Shuttle Program. Mr. Bangerter replied that it will as it only pertains to the Space Shuttle.

REVIEW BOARD CERTIFICATION

The STS-135 ORR Review Board signed the Certificate of Flight Projects Directorate Networks Readiness certifying that, with successful completion of flight readiness preparations and closure of associated action items, all integrated network elements are ready to support the STS-135 flight. All board members stated that the IN was ready to support with the closure of the open items.

Mr. Lehtonen thanked the Review Board for their participation with the Space Shuttle ORRs.

Mr. Bangerter reiterated that this is the last SSP ORR, and he thanked everyone for their participation and support.

RFA REVIEW

No RFAs were assigned at the may 17, 2011, STS-135 ORR.

ACTION ITEM REVIEW

The following action item was assigned at the may 17, 2011, STS-135 ORR.

<i>Action Item Number</i>	<i>Assignee(s)</i>	<i>Action</i>	<i>Due Date</i>
STS-135 ORR-01	Jim Bangerter/ GSFC/NASA/ HSF ND, Melissa Blizzard/ GSFC/ITT/HSF	Look into making the PSS available to MILA to assist with the testing of the TELTRAC UHF issue Response: 5/24/11 – MILA found the problem to be procedural and not a hardware problem therefore the PSS is not required for testing. This action item is closed	
STS-135 ORR-02	Melissa Blizzard/ GSFC/ITT/HSF	Follow-up with WSSH on the issue with the backup UHF A/G circuit on May 16 Response: The report received during the ORR that the problem could be attributed to looping plugs blocking the circuit was incorrect. The level on the circuit is too low and fails keying checks. A software change at WSC in the MOVE system is required to correct this problem. Change to be implemented post STS-134. This action item is closed.	
STS-135 ORR-03	Vicki Stewart/ GSFC/NASA	Provide Mr. Jim Bangerter with a listing of the SLAs and TTRs being developed for the sites under the new contract.	
STS-135 ORR-04	Don Shinnars/ WSC/NASA	Check into the communication incident that occurred on May 16 between FDF and WSC during the epoch read-out for the vector transmission	
STS-135 ORR-05	Sue Hoge/ GSFC/NASA/FDF	Check into whether FDF is using the new headsets for MOVE	
STS-133 ORR-06	Monique McLamb/ KSC/NASA, John Steffes/KSC	Provide Mr. Jim Bangerter with a summary status on the KFRL item for distribution to the Review Board	

(Original Approved By)
Ken Lehtonen
GSFC/NASA/301

Jim Bangerter
GSFC/NASA/HSF ND