

SUBJECT: STS-134 Operational Readiness Review (ORR) Minutes

DATE: February 17, 2011

PLACE: GSFC, Building 3 Auditorium

TIME CONVENED: 9:00 a.m. TIME ADJOURNED: 11:00 p.m.

ATTENDANCE

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WELCOME/INTRODUCTION

Mr. Jim Bangerter convened the February 17, 2011, STS-134 Operational Readiness Review (ORR) to assess the readiness of the Integrated Network (IN) to satisfy the requirements for the STS-134 mission (refer to the presentation package, *STS-134/ULF6 GSFC Operational Readiness Review*).

Mr. Bangerter noted that STS-134 was to be the last mission, but STS-135 has been added to the manifest. The actual launch of STS-135 is pending budget decisions, but the agency has given direction to plan and work to the launch of STS-135.

The STS-134 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 L. Hoge, GSFC, Code 595, Navigation and Mission Design Branch.
- Mr. Bradford Torain, 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. Stephen F. Currier, GSFC, Code 453, Ground Network Project.
- Mr. Donald W. Shinnars, 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 Space Shuttle mission preparation reviews: there are three other 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); 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.

STS-134 MISSION OVERVIEW

Ms. Melissa Blizzard provided an STS-134 Mission Overview.

- A. Mission Highlights. Ms. Blizzard reviewed the mission highlights. The launch is currently scheduled for April 19, 2011. This is a 51.6-degree inclination launch. The primary payloads are the Alpha Magnetic Spectrometer (AMS) and an EXPRESS Logistics Carrier (ELC3). 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 May 3, 2011. This is a 14 + 1 + 2 day mission.
- B. International Space Station (ISS) Assembly Sequence. Ms. Blizzard reviewed the ISS assembly sequence. This is Utilization/Logistics Flight (ULF)-6.

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. John Hudiburg asked if there were no changes and did the diagram include the changes for dual TDRS support on ascent. Ms. Blizzard stated that Tracking and Data Relay Satellite (TDRS) support is documented in the chart and was documented previously.
- B. IN Coverage Chart. Ms. Blizzard reviewed the IN network coverage chart. The diagram includes the timeline for the STS-134 Extra Vehicular Activities (EVA). Four EVAs are planned.
- C. Significant STS-133 Anomalies. There are no significant network In-Flight Anomalies (IFA) pending the STS-133 flight.
- D. Significant Issues noted during STS-133. There are no issues pending the flight of STS-133.
- E. Program Requirements Document (PRD) Changes. The Payloads - Volume III AMS-02 annex has been updated to include Operational Intercommunications System (OIS) channels. Mr. Sylvia Segura stated that channel numbers are correct, but Kennedy Space Center (KSC) will provide the correct channel descriptions. Mr. Hudiburg asked what the OIS channels are in support of and Ms. Blizzard replied that the channels support the AMS payload. Payloads - Volume III-02 Annex SBY has two additions. Both are in support of pad End-to-end (ETE) testing. Payloads – Volume II Launch and Landing (Annex LLP) has five changes. All changes except the Hanger AE requirement for Calibrated Ancillary Data (CAS) are payload related. CAS data is no longer required.
- F. Network Changes for STS-133. Ms. Blizzard reviewed network changes for STS-134.
 - (a) There is one major change, the transition from the Near Earth Networks Services (NENS) contract to the Space Communications Network Services (SCNS) contract. The transition is scheduled to occur on April 9, 2011. GSFC Mission Integration and Operations (MI&O) areas affected are the Human Spaceflight (HSF) Team, Ground Network (GN) Operations Managers (GNOM), Spaceflight Mission Managers (SMM), and Advanced Mission Planning, Human Spaceflight (HSF) documentation, and Network Integration Center (NIC). Others affected include Merritt Island Launch Annex (MILA), PDL, Wallops Ground Site (WGS), and White Sands Complex (WSC).
 - (b) Mr. Hudiburg asked if there are any special activities taking place that will provide a level of comfort to the board that the new contract is ready to support the missions. This review is being conducted by the current contractor, but the flight will be supported by the new contractor.
 - (c) Mr. Bangerter stated that he is constant contact with SCNS management and they have been informed of the key positions. Mr. Gary Morse stated that the same is going on at the other sites/centers. Weekly briefings are being conducted. Mr. Bangerter stated that the Task Orders (TO) have been sent to SCNS. He has received the TIP for the Space Shuttle work back and is reviewing the TIPs. Mr. Morse stated that all the TOs are being responded to and responses reviewed for impacts (e.g., capture rates), which may be different for different sites (e.g., MILA

- and WSC). Mr. Don Shinnars stated that WSC intends to pick up all the operations personnel.
- (d) Mr. Hudiburg asked if the time with the Agency FRR will allow Mr. Bangerter to report that he has confidence that the missions can be supported. Mr. Bangerter stated that if the transition is not going well, he will carry a risk and report it at the FRR. He noted that he has briefed the JSC Flight Director's (FD) office. Mr. Jim Bangerter accepted an action item to provide a contract transition update to the Review Board reporting on ND's confidence in the transition efforts to support STS-134/135 (action item STS-134 ORR-01).
 - (e) Mr. Scott Greatorex stated that a risk should be developed now and that the risk can be reduced or increased over the next months. The question was raised as to whether this was a Networks Integration Management Office (NIMO) or network risk. Mr. Greatorex stated that it should be a network risk. Mr. Jim Bangerter accepted an action item to develop an IN risk for NENS – SCNS contract transition (STS-134 ORR-02).
 - (f) Mr. Morse commented that there are two risks at MILA (IT Infrastructure and Capture Rate). The IT risk has been mitigated and the capture rate is 99 percent. The outgoing and incoming contractors have been cooperating very well.
- 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. Mr. Hudiburg asked if the Contingency Action Plan (CAP) has been updated to include the network changes in TDRS ascent support. Mr. Bangerter stated that the document has been updated and is scheduled for publication by the end of the week. Mr. Hudiburg asked if the 453-HNDK-GN is the most recent version. Ms. Blizzard stated that the document list is scrubbed prior to each mission. Mr. Bangerter agreed, but stated that an action should be carried as the board has several specific questions pertaining to documentation. Ms. Melissa Blizzard accepted an action item to review the documentation status list to ensure the latest versions are listed and update as necessary (action item STS-134 ORR-03). (Editor's Note: Mr. Mark Harris stated that he would check the 453-HNDK-GN status. He later reported that the document as listed is current.)
- H. Potential Launch and Scheduling Conflicts. Ms. Blizzard stated that there is one Expendable Launch Vehicle (ELV) launch during the STS-134 timeframe (Soyuz Progress-42P on April 27, 2011). SN resource conflicts are addressed according to the SN Priority List. 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. He reported that there was a commercial power metering failure the morning of February 17 which was an isolated issue and impacted billing processes. Mr. Bangerter asked that he be kept up to date on the repairs. Mr. Todd Sanders accepted an action item to provide GSFC Base Facilities updates to Mr. Jim Bangerter (e.g., billing issues) (action item STS-133 ORR-04). The West campus chiller 8 is back in service, but chiller 5 remains down. There is no impact to mission support. There are no issues at Building 28 and Mr. Sanders will provide an update to the presentation. East campus is all

GREEN. Mr. Hudiburg asked when the diesels were last run. Mr. Sanders replied that the diesels had been run the morning of the 17th and came online as they should. The system is automated and the diesels shut down automatically. Ms. Sue Hoge asked if the fuel levels have been checked and Mr. Sanders replied that the levels have been checked. Mr. Hudiburg asked if there are any construction freezes. Mr. Sanders stated that they follow the NASA integrated Services Network (NISN) and HSF Freeze Exemption Request (FER) processes. Mr. Greatorex asked if the FERs are listed and Ms. Blizzard replied that they are listed in the NIC portion of the ORR presentation. Mr. Sanders stated that GSFC base utilities and mission support facilities are ready to support STS-134.

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 software changes since STS-133. The NIC replaced two hubs with a single smart switch to improve X-terminal connectivity. There are no open Discrepancy Reports (DR). The DRs were closed due to the software installations. There are three FERs. Mr. Hudiburg asked the status of the fire alarm FER. Mr. Calhoun stated that the installation is on schedule. Mr. Bangerter stated that if the schedule were to be pushed out, a new FER would be submitted. Mr. Greatorex asked if critical periods are covered in the FERs and Mr. Bangerter replied that critical periods are covered. Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Hudiburg stated that the presentation stated that staffing is sufficient, but are there any vacancies and how do we know if the staffing is only minimal while sufficient to meet requirements. Mr. Bangerter answered that there are five NOMs and five SMMs with two Radio Frequency (RF) Simulations Operations Center (SOC) engineers available as backups. The mission can be supported without additional staffing. Mr. Calhoun stated that the NIC is ready to support STS-134.
- B. Flight Dynamics Facility (FDF). Mr. Pepper Powers provided an FDF status. There have been no software or hardware changes since STS-133. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements. FDF will not staff during the docked operations crew-sleep periods. Mr. Hudiburg stated that it has been reported that the FDF is modernizing its infrastructure. Mr. Powers stated that the changes would be implemented post Space Shuttle. Mr. Hudiburg stated that there are many 'Nones' reported by the FDF and asked if they were confident the systems are that stable. Ms. Hoge replied that the systems are very stable. Mr. Hudiburg stated that there is the FDF products server and that the IDMax system has come online and asked if the FDF were up to date. Ms. Hoge replied that the FDF implemented IDMax several months ago. Mr. Powers stated that FDF is ready to support STS-134.
- C. NASA/DoD C-bands Eastern Range (ER). Mr. Mike Gawel provided the ER resources status.
 1. DoD radars (includes Eastern Range [ER], Western Range [WR], White Sands Missile Range [WSMR], and Jonathan Dickinson Missile Tracking Annex [JDMTA]). There have been no operational changes since STS-133. The Kwajalein Information Assurance (IA) Waiver is in place for STS-133 and has been requested for STS-134/135. 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 operational changes since STS-133. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements.
 3. Mr. Hudiburg asked if there has been any major PMs. maintenance level depot work, or systems level upgrades. Mr. Gawel replied that there has not. Work is scheduled post launch, but will not impact the radars or network supporting the mission.
 4. Readiness. Mr. Gawel stated that ER resources are ready to support STS-134.
- D. NISN/NASCOM. Ms. Sharon Damiano provided a NISN/NASCOM status.
1. Ms. Damiano discussed the operational changes.
 - (a) The GSA FTS-2001 contract has ended and services are transitioning to the new GSA Network contract.
 - (b) Existing HSF services that will require a change in AT&T's equipment for monitoring capabilities is the GSFC/Santiago (AGO) T-1. GSFC will move from Channel Service Unit (CSU) to channel bank for better visibility. AGO will move from CSU to channel bank for better visibility. The dates are To Be Determined (TBD). The move was scheduled for January but the local AGO carrier was not ready. This will be done prior to STS-134, but after STS-133. Mr. Greatorex asked when the contact ended. Ms. Vicki Stewart stated that the contract is extended through June and a 6-month extension after that is in work. AGO will be transitioned under the old contract.
 - (c) Existing HSF services that will require a change from current carrier to AT&T with dates TBD are the GSFC/State Dept. voice, GSFC/White House voice, and WSC/Guam DS-3s. The Guam work is waiting on the completion of an Engineering Change (EC). Mr. Bangerter stated that there is an action on this from the STS-133 ORR. He stated that he is directing that the STS-133 action be closed and a new action item opened for STS-134. Ms. Vicki Stewart concurred and the action was reopened (Provide a copy of the NISN Guam DS3 schedule and transition plan, action item STS-134 ORR-05). Mr. Hudiburg asked the rationale for closing and reopening the action item. Mr. Bangerter stated that the action will not be completed until after STS-133 and should be open for STS-134.
 - (d) Ms. Damiano reviewed the software changes. Small Conversion Device (SCD) software release 6.2 H – I will be deployed. Mr. Hudiburg asked if there were any DRs issued against the software. Ms. Hoge asked what type of testing was conducted. Ms. Damiano stated that she would have to gather that data. Ms. Sharon Damiano accepted an action item to provide SCD 6.2 H-I software testing information (review of testing conducted and status of any DRs assigned) (action item STS-134 ORR-06).
 - (e) Ms. Damiano reviewed the hardware changes. The OC-12 upgrades to support HSF requirements have been upgraded between GSFC/WSC, JSC/WSC, and GSFC/Marshall Space flight Center (MSFC). The OC12s have been transitioned. Mr. Hudiburg asked if simulations have been conducted on the new circuits. Mr. Bangerter stated that there have been no issues.
 - (f) Mr. Morse asked if there had been any discussion on the Ponce de Leon (PDL) T-1 timing and RAD issue.
 - (1) Mr. Randy Honeycutt stated that this is not a NISN issue. The RADs were taking timing from the voice switch vice the network. When intercenter

checks were conducted, the RAD timing was impacted and the service went down. The nodes were 'tweaked' at MILA and PDL. This improved recovery times. An engineering change has been recommended for after Weight on Wheels (WOW).

- (2) There will be an ISI in place for STS-133. If there is an incident, NISN will work with the MILA and the JSC Ground Controller (GC) to get permission to work the problem.
 - (3) Ms. Stewart stated that Mr. Vic Colaluca has provided a post mission plan.
 - (4) Mr. Morse stated that this is work in progress and that there will be a change after STS-133 that impacts STS-134.
 - (5) Mr. Terry Alvarado stated that this issue was discussed at the STS-133 Pre Mission Telecon (PMT) as well as with the engineers prior to the PMT. In the past, it was necessary to go to PDL to perform resets. Now, with an administrative change to the TMS, the nodes are re-synced at MILA and the KSC Communications Data and Switching Center (CD&SC). It is not necessary to go to PDL. The recovery times have been verified. The actual recovery took less than 2 minutes; it is the database recovery at CD&SC that takes approximately 15 minutes (this is a non-intrusive activity).
 - (6) Mr. Morse asked if the security video is still good and Mr. Alvarado stated that it is. The recovery is a great improvement from before.
 - (7) Mr. Morse asked how long the problem may have existed before it was discovered. Mr. Alvarado stated that it may have existed prior to before the installation of the RADs, but is now understood. MILA can perform check the data immediately to know if it is good data.
 - (8) Mr. Morse stated that he was still disturbed that no one was responsible for the problem. Mr. Scott Douglas stated NISN does not own or manage the TMS. NISN does take ownership to work with the network to correct the problem. Mr. Morse stated that the ORRs are conducted to report problems and if no one owns a problem, who will be responsible for reporting it. Mr. Roderick Thornton stated that this was a KSC problem and KSC is responsible.
 - (g) Mr. Greatorix stated that there were voice system outages prior to the holidays and asked if these have been addressed. Ms. Stewart stated that there is a failure review board working the issues. Corrective actions are being put in place. Budget packages are being submitted for long-term fix recommendations. NISN now also has a more robust Emergency Mission Control Center (EMCC). The root cause was that when the power went out, it was thought the backup generators were coming online. However, it is necessary for two people to come out and turn the generators on. Through attrition, there was only one facilities person on console. Mr. Bangerter asked if a Local Operating Procedure (LOP) has been written. Ms. Stewart stated that the board is submitting a number of recommendations and NISN is working with Mr. Sanders to document the procedure. Mr. Douglas state that now that the cause is it known, it will not happen again.
2. There are no current open Problem Management Dispatch System (PMDS) items.
 3. Facilities are Green.

4. Staffing is sufficient to meet all requirements.
 5. NISN will process all FERs during the mission in accordance with NISN SOP-002.
 6. Ms. Damiano stated that NISN is ready to support STS-134.
- E. WGS. Mr. Mark Harris provided a WGS status. There have been no software changes since STS-133. An X-band downconverter in support of SubTec-4 will be installed on March 14, 2011. The Mission Operations Voice Enhancement (MOVE) legacy system will be removed post STS-133. There are two DRs in work. There is a manual workaround for DR 54755. This workaround is documented. It is believed that the implementation of the Wallops Orbital Tracking Information System (WOTIS) resolves this issue, but more testing is required to confirm that. DR 58470 is on the 11M Antenna Control Unit (ACU) failures. The last failure was April 2010. The system is rebooted daily during Space Shuttle missions. Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Harris stated that WGS is ready to support STS-134.
- F. Wallops Range. Mr. Mark Lamberson provided a Wallops Range status. There have been no software operational changes since STS-133. The legacy MOVE equipment will be removed post STS-133. There are no open DRs. Facilities are Green. Staffing is sufficient to meet requirements. Mr. Hurley stated that the Wallops Range is ready to support STS-134.
- G. AGO. Mr. Jaime Arancibia provided an AGO status. There have been no changes since STS-133. Mr. Greatorex asked about the AGO data delivery problems since the earth quake. Mr. Arancibia stated that the problems were not due to the earth quake and have been resolved. Mr. Harry Schenk stated that there was a T-1 outage which was a CSU issue. The problem was corrected. Ms. Blizzard stated that there was a Space Shuttle simulation on February 16 and there were no problems. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Arancibia stated that AGO is ready to support STS-134.
- H. MILA/PDL. Mr. Terry Alvarado provided a MILA/PDL status. There have been no software changes since STS-133. The 9M-1 antenna failed X-axis phase detector relay was replaced. The part was obsolete and replaced with a made-to-order relay. Mr. Alvarado was asked to update the presentation with the PDL T-1 outage mitigation. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements. MILA has conducted training for its technicians; enhancing training with course work and proficiency simulations. Mr. Morse introduced Mr. Martyn Thomas, the new MILA Station Manager. Mr. Alvarado stated that MILA/PDL is ready to support STS-134.
- I. SN. Mr. Ben Smith provided an SN Status.
1. Mr. Smith stated that there will be an incremental software release prior to STS-134 to correct problems with the last delivery. The presentation will be updated.
 2. MOVE will replace the Multi-Conference Digital Switch (MDS) system at WSC. Second TDRSS Ground Terminal (STGT) is on MOVE with the MDS as backup. White Sands Ground Terminal (WSGT) and Guam Remote Ground Terminal (GRGT) remain on the legacy system.
 3. The antenna Sub-System Controllers (SSC) are being replaced. The STGT installation will be complete March 2011.
 4. Five DRs remain open. None present any major issues. The maneuver planning DR is being worked. Mr. Bangerter stated that if it is not ready prior to STS-133, he will

- not approve a FER. There is a workaround in place. Mr. Shinnars stated that the same problem has existed on the Space to Ground Link Terminal (SGLT) for 6 months. Mr. Bangerter stated that he has only recently become aware of the issue. Mr. Aquino stated that a delivery should not be made prior to STS-133 and Mr. Shinnars stated that a delivery is not planned. DR 55265 – support can be provided with matrix B. A manual patch can be performed if needed. DR 40275 – this has been worked out with the customers and the problem is monitored.
5. Mr. Smith provided a TDRS fleet status.
 - (a) TDRS-4 (TDS) Power System Degradation. SAC1 has been turned off. It will not be available until after the eclipse season.
 - (b) TDRS-4 Telemetry Errors. TDRS-4 downlink has been experiencing irregular, apparently random telemetry errors. A spare Traveling Wave Tube Amplifier (TWTA) is available. The SN continues to work to conserve the TWTAs.
 - (c) TDRS-4 (TDS) K-band Single Access (KSA)-2 Forward Power. The power is below specification. A spare TWTA is available. Mr. Hudiburg asked if there are procedures in place should there be a KSA failure now that the Air Force Satellite Control Network (AFSCN) is no longer available. Mr. Bangerter stated that the Air Force supported launch and landing and a second TDRS as backup is in place. If one link is lost, procedures are in place to switch to the other link. This has been fully tested. ISIs are in place. If TDS goes down 24 hours prior to launch, TD3 could be activated. If TDS goes down within the 24 hour window prior to launch, we would launch without TDRS. This has been discussed with the FDs. If the K-band were lost onorbit, there is DFRC, Wallops, MILA, and AGO to support data dumps. JSC can manage the onboard recorders. There is no connectivity to the Air Force. Mr. Foster stated that JSC has conducted simulations with the loss of TDZ. JSC is prepared for that data loss. Data would be dumped after docking. Mr. Schenk stated that AGO could be used full time when in view.
 6. Facilities are GREEN.
 7. Staffing is sufficient to meet all requirements.
 8. Mr. Smith stated that the SN is ready to support STS-134.
 - J. KSC CD&SC. Mr. Roderick Thornton provided a CD&SC status. There have been no software operational changes since STS-133. Kennedy Forward/Return Link (KFRL) will be prime for Solid State Recorder (SSR) data dumps to the Record and Playback System (RPS). There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Thornton stated that KSC CD&SC is ready to support STS-134.
 - K. Dryden Flight Research Center (DFRC). Mr. Tracy Ackeret provided a DFRC status. There have been no operational changes since STS-133. There is one open DR. Long Range Optics (LRO) boards are due the week of February 21. The boards should be in place for STS-133. A workaround is in place if the boards are not installed. There are no open Configuration Change Requests (CCR). Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Ackeret stated that DFRC is ready to support STS-134.
 - L. WSSH. Mr. Tom Beck provided a WSSH status. There have been no operational changes since STS-133. There are no open DRs. Facilities are Green. Staffing is sufficient to meet all requirements. Mr. Beck stated that WSSH is ready to support STS-134.

INTEGRATED NETWORK SUMMARY

- A. Freeze Plan for STS-134. Ms. Blizzard reviewed the freeze plan which listed the IN elements and the freeze period for each element. The freeze plan is unchanged from the previous mission.
- B. Testing Overview. Ms. Blizzard reviewed the testing overview for STS-134. The SN and GN are verified using a standard sequence of tests. Mr. Hudiburg asked if additional testing had been conducted for the TDRS ascent configuration. Ms. Blizzard stated that special testing for that configuration was reported at the last ORR. Steps have been added to the SN Ver/Val.
- C. Network Test Plan and Service Requirements/Test Matrix. Ms. Blizzard stated that these illustrate the testing needed to ensure that requirements are met.
- D. Risks. Ms. Blizzard reviewed the network risks. There are two risks.
 - 1. 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. Hudiburg asked if there has ever been a close call and Mr. foster stated that he is not aware of one. It is not likely that this will change prior to the end of the Space Shuttle program.
 - 2. MILA – Increased Risk of Operator Errors. If MILA experiences a significant loss of certified operations personnel before the planned end of the Space Shuttle program, then OEs and loss of real-time data may occur. This item has been decreased to Watch. MILA personnel are trained and certified. MILA continues training and cross training. MILA continues proficiency training. Mr. Morse state that an agreement has been reached with the employer of two employees that left to allow them to return to support Space Shuttle missions (including STS-135).
 - 3. New Risk. Mr. Hudiburg stated that a risk should be added for the SCNS transition (as had been discussed earlier).
 - 4. Mr. Hudiburg stated that he was concerned about other attrition problems such as the facilities engineer. The ORR presentation states that there is sufficient staffing. Mr. Bangerter stated that he is kept aware of staffing other than the Air Force (they will not release that data). Mr. Hudiburg stated that with the transition, can Mr. Bangerter be sure that there are no issues. Mr. Bangerter stated that he is aware and the sites do keep him informed. Mr. Morse stated that if there are any issues with STS-135, the issues will be known soon. Mr. Bangerter stated that the ER and DFRC are not part of the contract transition. These sites support other programs as well. Mr. Morse stated that he does not know if the launch services program is carrying any attrition risks.

REVIEW BOARD CERTIFICATION

The STS-134 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-134 flight. All board members stated that the IN was ready to support with the closure of the open items.

RFA REVIEW

No RFAs were assigned at the February 17, 2011, STS-134 ORR.

ACTION ITEM REVIEW

The following action items were assigned at the February 17, 2011, STS-134 ORR.

AI No.	Assignee	Action	Response
STS-134 ORR-01	Jim Bangerter/ GSFC/NASA/HSF ND	Provide a contract transition update to the Review Board reporting on ND's confidence in the transition efforts to support STS-134/135.	
STS-134 ORR-02	Jim Bangerter/ GSFC/NASA/HSF ND	Develop an IN risk for NENS – SCNS contract transition.	
STS-134 ORR-03	Melissa Blizzard/ GSFC/HSF	Review the documentation status list to ensure the latest versions are listed and update as necessary.	
STS-134 ORR-04	Todd Sanders/ GSFC	Provide GSFC Base Facilities updates to Mr. Jim Bangerter (e.g., billing issues).	
STS-134 ORR-05	Vicki Stewart/ GSFC/NASA/ NISN	Provide a copy of the NISN Guam DS3 schedule and transition plan.	Update 02/15/2011: the CSU's will be installed at STGT, and probably not until Mid March. They're writing an EC for the installation which much be approved prior to installation, Ray Gardea at White Sands is supporting that task and indicated that it probably wouldn't be approved until after STS-133 WOW.
STS-134 ORR-06	Sharon Damiano/ GSFC/NISN	Provide SCD 6.2 H-I software testing information (review of testing conducted and status of any DRs assigned).	

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

Jim Bangerter
GSFC/NASA/HSF ND