



STS-122/1E Flight Readiness Review



**JSC Mission Operations Directorate
Flight Director Office**

**DA8/S. Davis, M. Sarafin, N. Knight
November 5, 2007**



**Mission Operations Directorate
Flight Director Office**

Agenda



- DA8 COFR Requirements/Endorsements
 - COFR Requirements/Endorsements Summary
 - New Operations - Flight Techniques & Joint Operations Panels
 - Space Flight Meteorology Group (SMG)
 - Flight Rules (Generic Volumes A, B, C, D; STS-120/10A Annex)
 - FDF/ODF/SODF
 - Mission Staffing: Training/Certification/Work Guidelines Compliance
 - Non-Critical Processors/Applications
 - Emergency Mission Control Center (EMCC)/Backup Control Center (BCC)
 - Safety Status Review
 - Command Procedures
 - Contingency Shuttle Crew Support/Rescue Flight (STS-320)
 - Level II Actions
- Standard Open Work
- Non-Standard Open Work
- Exceptions
- Flight Readiness Summary





DA8 COFR Requirements/Endorsements Summary



DA8 COFR Requirements/Endorsements



REQUIREMENT (SHUTTLE)	Flight Director	Program Integration	Ops Safety	SPAN	Space Flight Meteorology	Team 4						
Non-Crit Processors/Applications	G				G		G	Ready to Support Flight/Only Standard Open work				
EMCC	G				G	G						
Certified Flight Controllers	G			G	G	G						
Flight Rules	Y											
FDF	G	G*										
FTP - New Ops	G						Y	Non Standard Open work with expected resolution prior to flight.				
Flight Anomaly Resolution	G			G								
Anomaly - Procedure	G											
Exceptions/Action Items From Prior Readiness Reviews	G	G	G	G	G	G						
CIL/Hazards	G		G				R	Open work without expected resolution without assistance, prior to flight, or unavoidable constraint violation.				
No Constraints	G	G										
Level II (Program) Actions	G	G										
Mission Requirements	G											
Exception/Resolution	G	G										
Command Procedures	G											
Fit Prep Process Plan Requirements Met		G						N/A				
Contractor Process Insight		G										

* FCOH



DA8 COFR Requirements/Endorsements



REQUIREMENT (STATION)	Flight Director	Program Integration	Ops Safety	SPAN	Team 4								
Non-Crit Processors/Applications	G							G	Ready to Support Flight/Only Standard Open work				
BCC	G				G								
Certified Flight Controllers	G			G	G								
Flight Rules	Y												
ODF/SODF	G												
JOP - New Ops	G							Y	Non Standard Open work with expected resolution prior to flight.				
Flight Anomaly Resolution	G			G									
Anomaly - Procedure	G												
Exceptions/Action Items From Prior Readiness Reviews	G	G	G	G	G								
CIL/Hazards	G		Y					R	Open work without expected resolution without assistance, prior to flight, or unavoidable constraint violation.				
No Constraints	G	G											
Level II (Program) Actions	G	G											
Flight/Increment Planning (Mission Requirements)	G												
Exception/Resolution	G	G											
Command Procedures	G								N/A				
Contractor Process Insight		G											





New Operations

(FTP and JOP Summaries in Backup Charts)



Ascent/Entry Agenda



- ET Photography/Launch Window
- New Operations
- Spaceflight Meteorology Group (SMG)



ET Photography/Launch Window Summary



- Launch Period is officially December 6th – December 13th.
 - Constrained by Beta Angle.
 - Currently no Range conflicts during this launch period.
 - Next available launch period is Dec 30th through May 9th.
- ISS Reboost Plan will provide FD 3 Rendezvous from December 6th through December 13.
 - 0.5 m/s reboost maneuver on Nov 28th for sequential FD3 opportunities.
 - Have Dec 14th as a FD3 opportunity if available.
 - Will work to schedule additional ISS reboost for launch delays as required.
- Launch Date Summary
 - Daylight launch dates are Dec 6th through Dec 13th.
 - Daylight ET Umbilical Photography: Dec 6th through Jan 2nd.
 - » Optimal ET Umbilical Photography is Dec 12th through Dec 17th.
 - Daylight ET Crew Handheld Photography: Dec 8th through Jan 5th.
 - » Optimal Crew Handheld Photography Lighting from Dec 25th through Jan 3rd.



ET Photography/Launch Window Summary



Preliminary Launch Window Times For The STS-122/1E December 6th Launch

Day	KSC Date	RNDZ Day	ET Photo Umbilical	ET Photo Handheld	Open (EDT)	Open (GMT)	In-Plane (GMT)	FD 3 Close (GMT)	FD 4 Close (GMT)
Thursday	6-Dec	FD3/FD4	Daylight	Dark	16:26:38	21:26:38	21:31:38	21:36:38	21:39:52
Friday	7-Dec	FD3	Daylight	Dark	16:04:06	21:04:06	21:09:06	21:14:06	
Saturday	8-Dec	FD3/FD4	Daylight	Daylight	15:38:24	20:38:24	20:43:24	20:48:24	20:51:39
Sunday	9-Dec	FD3	Daylight	Daylight	15:15:52	20:15:52	20:20:52	20:25:52	
Monday	10-Dec	FD3/FD4	Daylight	Daylight	14:50:10	19:50:10	19:55:10	20:00:10	20:03:25
Tuesday	11-Dec	FD3	Daylight	Daylight	14:27:39	19:27:39	19:32:39	19:37:39	
Wednesday	12-Dec	FD3/DF4	Daylight	Daylight	14:01:57	19:01:57	19:06:57	19:11:57	19:15:12
Thursday	13-Dec	FD3	Daylight	Daylight	13:39:25	18:39:25	18:44:25	18:49:25	
Friday	14-Dec	FD3/FD4	Daylight	Daylight	13:13:42	18:13:42	18:18:42	18:23:42	18:26:59

NOTES:

- 1) Daylight launch dates between Dec 6th and Dec 14th
- 2) Launch Window shown at 10 minutes but may be less on launch day due to limited APM.
- 3) A 0.5 m/sec ISS Phasing burn is planned for November 28th.
- 4) Launch period December 6th - December 13th (Beta < 65 deg)
- 5) Optimal ET Umbilical lighting does not occur until Dec 12th.
- 6) Optimal ET Handheld lighting occurs Dec 25th through Jan 3rd.
- 7) FD3/FD4 are days where both a FD3 and FD4 pane may be utilized to extend the launch window.
- 8) Next launch period is Dec 30th through May 9th.



New Operations



- Trajectory Server on Linux Platform
 - Trajectory server moved from the DEC Alpha Unix platform to the Linux Platform
 - Linux Trajectory Server operationally transparent to users
 - » Identical procedures for operation and recovery
 - » Identical recon and facility configuration procedures
 - » Identical source code for applications running on this server
 - Abort Region Determinator, Radar Tracking, NAV processing, etc..
 - Rigorous test procedures employed to certify that software and hardware provided identical outputs as compared to the DEC Alpha bases server.
 - » Also verified that new Server functions as expected in an integrated MCC environment.
 - Linux server used for STS-118 & 120 flight following, STS-122 flight specific simulations, and numerous Ascent/Entry/Orbit simulations with no issues noted.



Spaceflight Meteorology Group (SMG)



- All NWS/SMG software used to create mission critical products or required for mission support is ready for STS-122/1E.
- All SMG forecasters required to support STS-122/1E meet currency requirements listed in SMG Training & Certification plan.
- No non-standard open work or exceptions.
- Topics of Interest
 - ZZA HANDAR high wind speed bias noted during STS-120 TCDT.
 - » KSC/USA (Nav aids) re-uploaded correct software configuration file prior to STS-120 launch.
 - » SMG continues to monitor the data to guarantee it's integrity.
 - Spanish Weather service continues their radar network upgrade.
 - » ZZA radar is out of service until early December 2007, however, surrounding area radars provide full volume scan radar data for the majority of the 20 nm constraint.
 - » MRN radar should be available in early November 2007.
 - » May impact the use of rain shower exception flight rule for launch in the Southern portion of ZZA and nearly all of MRN.

The undersigned certifies that the Spaceflight Meteorology Group is ready to support the STS-122/1E flight.

/s/ Frank C. Brody

Frank C. Brody

Chief, Spaceflight Meteorology Group

**Mission Operations Directorate
Flight Director Office**



New Operations – Welcome ESA IP



- European JOP has been incorporating ESA into Flight Operations over many years
- Details of the EJOP's accomplishments on Flight Rules, OIPs, simulations, voice loop configurations, and procedures are in the backup slides
- This is the first time we have incorporated a new IP in a long time. All aspects of flight operations execution will be new to them and to us –
 - New Module/New Hardware – expect things to not go perfectly
 - New Flight Control Team
 - New Control Center
 - New Engineering Support Team
 - New Program Office
 - New Procedures
 - New Processes
 - New Priorities
 - New Politics



New Operations – Columbus Unique



- Must stow shuttle Ku band prior to Columbus activities for clearance
- Columbus/SOLAR/EUTEF Launch to Activation Thermal
 - Current analysis provides good ops margin for all elements
 - Heater power to ICC will be reapplied between SOLAR and EUTEF install to ensure good thermal environment, though hours of margin exist
- Must Install the PDGF before installing Columbus
 - Nominal PDGF is stowed on PLB sidewall carrier
 - Contingency plan is to retrieve PDGF from P6, if required
- Columbus Reberthing to Node 2
 - Once clear of V-guides, Columbus will be installed on Node 2
 - If berthing/IVA leak kit repair does not result in good mate/seal, will attempt unberth/reberth on Node 2
 - Contingency procedures have been developed and trained by the crew
- SOLAR/EUTEF Alternate Location Installation
 - Alternate EPF location will provide survival and operational power only to each experiment
 - The LAN data interface can be connected, but not the 1553 bus
 - Priority will be given to installing SOLAR in alternate location instead of starting to work on EUTEF



New Operations – Columbus Unique



- Columbus Outfitting and Commissioning
 - Requirements to work on Columbus are more than will fit into docked mission
 - Stage 1E is very crowded also with visiting vehicles and higher priority assembly tasks
 - Much work has been done to maximize time available for Columbus outfitting and commissioning during the docked mission
 - Extra day would be very beneficial to accomplish all that needs to be done
- Dual ops during EVA – EVA execution from MCC-H and Columbus outfitting and commissioning from Col-CC.
 - Because of large number of outfitting and commissioning hours required in the Columbus module, the crew cannot wait until the EVA is complete to talk to Col-CC
 - Simultaneous operations results in an alternate S/G configuration –
 - » EVA on the “The Big Loop”
 - » Robotics on A/G-2
 - » Columbus Outfitting on S/G-2
 - CapComs and Eurocomms have coordinated extensively on this subject
 - This configuration was practiced during the final 1E JMST
 - No showstoppers have been identified



New Operations – Focused Inspection Plan



- Focused Inspection is scheduled in the Flight Plan
 - 3 hours of time on FD5 is dedicated for Focused Inspection, if required
 - Dependent on receipt of requirement for Focused Inspection by the end of FD3 (as documented in Flight Rule 1E_C2-18, FOCUSED INSPECTION SCHEDULING)
 - If Focused Inspection is not required, the crew time will be replaced with transfer ops
- FD5 provides sufficient time to protect repair/CSCS options
 - FD6 – EVA2 conducted, as planned, while FI analysis is performed
 - FD7 – Repair Decision
 - FD 8, 9 or subs EVA 3 would be used for repair operations, depending on the extent of the repairs
 - Content for the remainder of the mission would be refined based on the extent of damage and required repairs
- If +1 day is realized, it can be used for additional inspection above the 3 hours or repair preparation or implementation, if required, or to complete additional docked IVA payload mission objectives



New Operations – EMU Gloves



- Flight Rule (1E_C15-9) in the STS-122 annex addresses EVA termination for vectran damage
 - Rule rationale will be updated to address specific STS-122 EVA tasks
- STS-118 and STS-120 techniques for glove inspections will be implemented on STS-122
 - Glove inspections will be performed at the end of a task or set of tasks at a given worksite, and also checked after the crew works in an area of interest such as the S0 face 1 or on CETA carts.
 - XA and Safety have concurred with our plan
 - Still forward work to include any decisions or recommendations coming out of the post-STS-120 APFR handling/glove cut correlation discussions. At this point we are still assuming no overglove implementation requirements
- Glove photos
 - Both EVA crewmembers gloves will be photographed as part of the Post EVA procedure and crew will provide a verbal assessment of glove condition
 - Photos will be downlinked and glove condition will be assessed after each EVA
 - The crew has been trained, and the timeline accommodates this activity
- Spare gloves
 - EV1 (Walheim) will have an additional pair of gloves (three pairs total).
 - EV2 (Schlegel) and EV 3 (Love) will have two pairs each.



New Operations - Postflight and JOP Topics



- Lesson Learned/Anomaly resolution from STS-120/10A will be reviewed for inclusion in the STS-122/1E plan in the normal postflight process
 - Thermal constraints for SRMS in pre-cradle
 - LiOH Dust
 - Joint Airlock ATU 6 anomalous signature
 - EMU Glove Cut related to APFR operations
 - P6 4B operations constraints
 - Starboard SARJ operations constraints
 - Starboard SARJ inspection/repair options
- Unique topics discussed at the STS-122/1E JOP include
 - First Docking and Undocking to Node 2, including changes in redundancy to ACS moding (now single string for both)
 - CO2 Removal plans
 - » Manifested 4 additional LiOH cans (to 35 total)
 - » Will install a new can every evening
 - » Cryo margins allow operating the Shuttle Airlock booster fan
 - Node 2 O2 line purge implementation and success criteria
 - First Module Ingress Flight Rules and Procedures Updates
 - Undocking with OBSS installed on SRMS



Flight Rules



- All required generic volume A, B, C, and D flight rules have been developed, reviewed, and approved by the appropriate Flight Techniques Panels, JOPs, and the FRCB
- The following generic publications are applicable for STS-122/1E
 - Volume A, Final PCN-8 dated 5/24/06
 - Volume B, Final PCN-6, dated 10/01/07*
 - Volume C, Final PCN-3, dated 10/18/07
 - Volume D, Final PCN-4, dated 9/18/07
- STS-122/1E flight rule annex
 - Final version is scheduled for presentation at the 11/5/07 JPRCB
 - PCN-1 targeted for presentation at the 11/26/07 JPRCB
- Numerous Volume B rules incorporating ESA into Flight Operations have completed the Flight Rules process

* Volume B, Final PCN-7 will be presented to the JPRCB on 11/27/07



FDF/ODF/SODF



- DA8 has participated in FDF/ODF/SODF processes and procedure reviews as required
- FDF/ODF will be ready to support STS-122/1E
 - New procedures are for a new module – Columbus
 - » Ingress
 - » Rack outfitting
 - » Payload commissioning (EODF)
 - » Caution, Warning, and Emergency Books, as well as Load Shed Table philosophy
 - » All other core and ancillary systems interfacing with the Columbus systems – EPS, Thermal, Structures and Mechanisms, C&DH, Communications, ECLSS, and Ops LAN



Flight Director Mission Staffing: Training/Certification/Work Guideline Compliance



- All STS-122/1E Flight Directors are certified per Flight Director Certification Guide (DA8-00010), Final, dated February 2, 2007
- Additional certified Flight Directors are available to support Team 4, EMCC, and STS-323, as required
- All MOD Work Guidelines are met.

Flight Director	Position	Flight Specific Cert Status
Mike Sarafin	Shuttle Lead, Orbit 1	Anticipated Nov 16, 2007
Norm Knight	Ascent	Anticipated Nov 16, 2007
Tony Ceccacci	Shuttle Orbit 2	Anticipated Nov 16, 2007
Paul Dye	Shuttle Planning	Anticipated Nov 16, 2007
Bryan Lunney	Entry	Anticipated Nov 16, 2007
Sally Davis	Station Lead, Orbit 2	Anticipated Nov 16, 2007
Bob Dempsey	Station Orbit 1	Anticipated Nov 16, 2007
Ron Spencer	Station Planning	Anticipated Nov 16, 2007



SPAN Mission Staffing: Training/Work Guideline Compliance



- Sufficient personnel will be provided by the Organizations to properly staff all SPAN positions without violating Work Guidelines
 - Reduced SPAN Manning will be in effect for this mission (began with STS-120/10A)
 - » STS-120/10A support resulted in no issues.



Non-Critical Processors/Applications



- All DA8 Non-Critical Applications certified
- No application changes since STS-120/10A



EMCC/BCC



- No changes to EMCC procedures since STS-120
- Personnel identified to support EMCC

- No changes to BCC procedures since 10A
- Personnel identified to support BCC



SAFETY ISSUES



- Stbd SARJ bearing problem and P6 4B torn panel
 - Expect complex and very constraining Solar Array constraints
 - Implications to Power Margins and Critical Redundancy
 - » Safety assessment for ability to maintain critical redundancy is pending
 - Both existing and new constraints have not been analyzed
- Stopping the port SARJ will saturate the CMGs (post-P6 install)
 - Contributes to solar array constraints complexity



Command Procedures



- Personnel are prepared and ready to execute the command procedures as documented per MOD Command Policy/Flight Rules.



Contingency Shuttle Crew Support/STS-323



- Contingency Shuttle Crew Support (CSCS) /Rescue Flight Resource Book is located at http://mod.jsc.nasa.gov/da8/rules/CSCS_Rescue_Flight_Resource_Book/cover.htm
- STS-122 Ascent/Entry Team will support STS-323
- STS-122/123 Teams will support Orbit Operations as required



Level II (Program) Actions



- As of 11/5/07, there are no Space Shuttle Program “Open Actions/Constraints to Flight” assigned to MOD for STS-122/1E
- As of 11/5/07, there are no Space Station Program “Open Actions/Constraints to Flight” assigned to MOD for STS-122/1E





Standard Open Work



Standard Open Work



- ISS reboost on November 28th to set up sequential FD 3 rendezvous for the December launch period.
- A/E FTP Post Flight Discussion for STS-120.
 - Scheduled for Nov 16th.
 - No significant Ascent issues being worked.
 - » Prelaunch conjunction screening protocol continues to evolve based on some minor problems encountered during STS-120
 - Electronic vector transfer failed.
 - JSpOC computers failed on launch day.
 - Entry issues are TBD.



Standard Open Work



- Shuttle will be above 60° Beta for docked ops for a launch on or after December 14th and for EOM +2 for launch on or after December 11th.
 - Potential for thermal conditioning of the orbiter during docked ops and/or prior to deorbit
 - Flight specific thermal analysis is in work by ES
 - If thermal conditioning required:
 - » Swap between –XVV and +XVV, while docked
 - » Up to 12 hours of PTC, post undocking prior to D/O Prep
 - » Prop has been budgeted for PTC post undocking in support of flying over 60 beta. This prop will become margin if not needed.
 - » Docked maneuvers will be taken out of margin.



Remaining STS-122/1E Integrated Sims



- Ascent/Entry
 - 11/13: Deorbit Prep
 - 11/15: Post Insertion
 - 11/20: TCDT with KSC
 - 11/21: Ascent #3
 - 11/29: Entry #3
 - 11/30: Ascent #4
- Orbit
 - None
 - One very limited participation voice protocol sim will be held with the Col-CC on November 14th. This simulation is to better train the Operations Controller (OC) personnel for the very payload commanding-intensive FD 9 timeframe. Details are in discussion with the ESA training team.



Standard Open Work



- Flight Rules
 - STS-122/1E flight rule annex
 - » Final version schedule for the 11/5/07 JPRCB
 - » PCN-1 targeted for presentation at 11/26/07 JPRCB
 - » No significant issues expected; some open CRs are dependent on analysis that will not be complete in time for the Final
- FDF/SODF
 - Final FDF updates
 - Final SODF updates
- Training
 - Complete STS-122 Ascent/Entry and Orbit integrated simulations (11/30E)
 - Complete Flight Director flight specific certifications (11/16E)



Standard Open Work



- Finalize pressure management plan for docked mission
- Finalize power profile plan and solar array constraints for docked mission
- Finalize analysis on docked loads constraints
- Complete “Road To” items
- Finalize “TBDs” in Flight Rules



STANDARD OPEN WORK



- MOD INTEGRATED CARGO HAZARD ASSESSMENT (ICHA)
 - **STS-122 VERIFICATION TRACKING LOG (ECD: 11/16/07)**
- MOD INTEGRATED EXPERIMENT HAZARD ASSESSMENT (IEHA)
 - **ISS FLT 1E VERIFICATION TRACKING LOG (ECD: 11/16/07)**
- INDEPENDENT SAFETY VERIFICATION REVIEW
 - **SHUTTLE ISVR REPORT (ECD: 11/30/07)**
- INDEPENDENT SAFETY VERIFICATION REVIEW
 - **ISS ISVR REPORT (ECD: 11/30/07)**





Non-standard Open Work



Non-standard Open Work



- Solar Array Constraints late changes due to current vehicle anomalies
 - Starboard SARJ vibrations which may drive directed position or other constraints which will change array management and powerdown/powerup plans
 - P6 tear/repair may drive additional constraints
 - ECD Launch minus 2 weeks
- IFHX Leak Limit Rule and SPN flowdown (procedure changes)
 - DI charts will discuss details of condition
 - EJOP discussions ongoing with operations, engineering, and software personnel
 - ECD 11/9/07



Exceptions



- None



Flight Readiness Summary



- Pending completion of all standard and non-standard open work, the Flight Director Office and Space Flight Meteorology Group are ready to support the STS-122/1E mission
- All standard/non-standard open work will be closed out or have a closure plan prior to **ISSP SORR (TBD)** and **SSP FRR (11/13-14/2007)**





Backup





Ascent/Entry Flight Techniques Topics Applicable to 122/1E



Ascent/Entry Flight Techniques Panel (AEFTP)



- **One Ascent/Entry Flight Techniques Panel will be held in support of STS-122.**
 - A/E FTP #236 on 10/16/07
 - » STS-120 Post Flight Review for Ascent and Entry.
 - No operational changes between STS-120 and STS-122.
 - » Previous AEFTP meetings held in support of STS-120 are applicable to STS-122.
- **A/E FTP community ready to support STS-120 pending final disposition of any significant STS-120 Post Flight Issues.**
 - No significant Ascent post flight issues.
 - Entry issues TBD and will be dispositioned at AEFTP #236 on Nov 16th.





Orbit Flight Techniques and Generic JOP Topics Applicable to 122/1E



OFTP/JOP



- The OFTP/GJOP #275 on 10/18/07 approved the STS-122/1E Joint Expedited Undock and Separate (JEUS) procedure.
- STS-120/10A/15S SORR Action Item 10A15SSORR - 010: “Review Ops Requirements for Emergency Repress during Campout” was briefed at GJOP #274 on 10/4/07.
 - No hardware, software, or product modifications were suggested for STS-120/10A at that time.
 - Since then, new analysis for the installation of the -2 IMV Cap on the Node 1 Stbd Fwd IMV valve has been performed and installation of the cap may be considered.
 - This topic will be readdressed at GJOP #278 in November.





- The Orbit Flight Techniques Panel (OFTP) and Generic Joint Operations Panel (GJOP) conducted an STS-118/13A.1 Post-Flight Review on TBD. Three actions were assigned that required forward work:
 - **AI-GJOP-271A-001**: Inform the MOD ECLSS community that there is still confusion on who will introduce Oxygen into the airlock during campout operations and have the STS-120/10A and STS-122/1E MOD ECLSS leads bring a forward plan to the flight specific JOPs. Long-term, bring a MOD ECLSS/CB proposal to the Generic JOP on who will introduce Oxygen into the airlock during campout operations.
 - » Due Date: The Flight specific actions should be accomplished prior to the respective MOD FRRs. The long-term action should be closed by January 31, 2008.
 - » Status: The STS-122/1E MOD ECLSS lead discussed this issue with the flight specific team (crew, BME, Surgeon, EVA). The teams agreed that the crew would introduce oxygen using the "mask burp" method. The 1E JOP discussed this topic at JOP #13:
 - » DECISION 1E-13-13: The JOP agreed to use an EVA prebreathe protocol that safely minimized prebreathe during, including the option to "burp" prebreathe masks to introduce O₂ into the airlock atmosphere. This assumes the EVA IPT and Flight Surgeons agree with the approach and risks discussed at the JOP.
 - » ACTION 1E-13-14: Lead Surgeon/Jim Locke, Lead BME/David Bach and Lead Safety Rep to work with the EVA IPT and Flight Surgeon office to gain concurrence with the planned STS-122/1E EVA prebreathe protocol.



- **AI-GJOP-271A-002:** Inform the MOD ECLSS community that the crews are still reporting CO2 symptoms post flight and have the STS-120/10A and STS-122/1E MOD ECLSS leads discuss at the flight specific JOPs the need for the crews to immediately identify CO2 symptoms. Long-term, bring a MOD ECLSS proposal for mitigating CO2 symptoms during and after major events in the US segment where all 10 crew members are in close proximity.
 - » Due Date: The Flight specific actions should be accomplished prior to the respective MOD FRRs. The long-term action should be closed by January 31, 2008.
 - » Status: The STS-122/1E MOD ECLSS lead discussed this issue with the flight specific team. The STS-122/1E timeline is currently under review to identify potential "increased CO2 symptom activities" (final timeline inputs are due 11/5). Appropriate mitigation will be taken for those activities (additional portable ventilation setup, increased CDRA fan speed, etc.). Long term methods are still under discussion. In addition, the Booster Fan will be activated during the 1E mission, which will help with general atmosphere mixing.





- **AI-GJOP-271A-003:** Review the “stop motion” and “all stop” protocols and re-educate the MCC teams on the use and the background. Long-term, MOD ROBO should bring a review of the protocols to the Canadian JOP.
 - » Status: CLOSED: The currently-documented All-Stop protocol is valid as written, and is reserved for use during emergency situations involving immediate hazards. If there is any doubt, however, PDRS and ROBO should err on the side of using "all-stop" in order to ensure protection of the crew and the vehicle. Non-emergency calls to stop motion should be made using standard communication techniques, and use of the words "stop motion" is encouraged, along with a concise explanation (if appropriate and if time permits). In any case, any call made by PDRS or ROBO to stop motion of a robotics system (emergency or non-emergency) must be passed on to the flight crew immediately, without delay. The STS-122/1E team will be briefed.





STS-122/1E Joint Operations Panel Topics



STS-122/1E JOP Additional Topics



- Node 2/Columbus vestibule gross and fine leak checks
- EVA timeline development and training driven changes to the timeline
- Mission duration driven changes to priorities and execution of Columbus outfitting and commissioning
- Columbus ITCS system degassing requirements
- Columbus procedures verification runs
- Columbus ground operations efficiency limitations
- Shuttle waste water dump constraints on SOLAR and EUTEF while in the PLB
- Road to 1E
- ODF Status, including the development of the PODF (EODF), Impact, and Warning procedures
- Implementation of a high priority VIPPAO event with a German official at the earliest opportunity after Columbus activation
- O2 management plan during EMU prebreathe





Russian Joint Operations Panel Topics Applicable to 122/1E



RJOP Topics



- Standard Open Work:

- Flight Rules Integration – Russian JOP working to incorporate outstanding technical inputs from the Russian Teams into Flight Specific Annex.
- This is standard ongoing work. No significant technical issues have been identified.
- No significant technical issues are being worked associated with any of the US / Russian operations.
- STS-122/1E Briefings to Russian Teams
 - » In work and expected to be completed by launch minus 1 week





European Joint Operations Panel Topics Applicable to 122/1E



ESA Applicable Flight Rules



Volume B:

- 15 Approved
- 19 In Final Edit
- 7 Incorporated
- 125 Published
- 28 Open

Approximately 23 rules are to be reviewed at the November FRCB plus approximately 5 that need an “[E]” added to the rule.



COL-CC JMSTs Prior to 1E Launch



- 1E FS JMSTs - 8, including FD 9 Paper Sim on 11/14
- 1J/A FS JMSTs - 3 Supported Prior to 1E Flight
- 1E Generic JMSTs - 1
- Early Gen and Act JMSTs -10 Occurred Prior to 1E FOR



EJOP Status - OIPs



- Vol D OIP – NASA/ESA Columbus
 - 80 approved procedures
 - 4 New Procedures Identified – to be written
- Generic OIP
 - 18 ESA approved procedures at EJOP
 - 12 CRs open
 - 25 CRs pending, to be opened (all in DCCS)
 - 1 New Procedure Identified
 - » LSOS config
 - Per GEN OIP Appendix C
 - » 15 procedures to be revised pre 1E (not in DCCS yet)
 - » 1 procedure to be revised post 1E (not in DCCS yet)



EJOP Status - OIPs



- All CRs due into DCCS by Nov 9th.
- All CRs for Generic OIP approved by Nov 21st
 - Working on new agreement with all IPs that CRs not approved 30 days after submitted to Public review are classified “approved”
- All CRs Implemented into Generic OIP by Nov 30th.



FCOHs Converted to OIPs



• 15 Converted and Pending Review/Approval/Submission

- | | |
|---|--------------------------------------|
| – R/T Flight Rule CR Process | In Review and Pending Approval |
| – R/T SODF CR Process | In Review and Pending Approval |
| – Anomaly Report Process | Drafted. Requires Submission |
| – CHIT Processing | Drafted. Requires Submission |
| – BCC Activation | Drafted. Will be submitted for 2008 |
| – BCC Deactivation | Drafted. Will be submitted for 2008 |
| – Loss of Services Via The EIS | In Review and Pending Approval |
| – ISS HAZMAT Coordination | Drafted. Requires Submission |
| – Personal File Downlink Capability for ISS | Drafted. Requires Submission |
| – OCA Overview for Station | Drafted. Requires Submission |
| – Remote Site Videocon. via Biomed OCA PC | Drafted. Requires Submission |
| – OCA Process for Uplink and Downlink | Drafted. Requires Submission |
| – ISS On-Orbit Electronic Mail | Drafted. Requires Submission |
| – OCA Config for Ku Ops | Drafted. Requires Submission |
| – ISS Operations Video and Audio Operations | Submitted. Being Reviewed Internally |

• 1 FCOH Still Requiring Conversion

- Yellow Tag Process



NASA/ESA Voice Loops



- 1E mission (no issues)
 - 35 loops defined in Voice Loop baseline
 - » Loops available all the time regardless of format
 - 11 Flight Specific Loops added for 1E docked mission
 - » Reduced to ~6 for future docked missions post 1E
- Joint NASA/ESA-COL Simulations
 - 23 required for Joint Sim support post 1E
 - » Loop routing via MSFC is still being assessed
- LSOS:
 - MSFC routes all but 1 JSC loop to ESA
 - Add 8 Additional LSOS Loops Routed via MSFC
 - » MSFC routes 16 JSC Loops for nominal LSOS swings
 - » For a BCC Activation, 3 additional JSC Loops are distributed to ESA



Voice Loop Forward Work



- Define JSC simulation loops to be routed through MSFC
- Revise Voice Loops requirements OIP
- Clearly define ESA voice formats with new constraints/requirements
 - Formats will include the Baseline Requirements + one or more of the following:
 - » ATV JIS and ATV Real-time Ops
 - » ORT/Testing
 - » Post 1E JMSTs/Cadre Sims for POIC and MCC-H with COL-CC
- Develop new OIPs for scheduling voice loops and LSOS swings
- MSOC to Implement SR to complete LSOS reconfiguration
 - MSOC/MSFC finalizing configurations and implementation prior to stage 1E
- Present Voice Loop Configuration Requirements and Constraints to MOD/ISS Program



ESA SPN Implementation Planning



- For all ESA SPNs approved until 01.Nov.07:
 - Analysis of impacted OPS Products until: 09.Nov.07
 - Update of OPS Product until: 21.Nov.07
- For ESA SPN available until 09.Nov.07:
 - Analysis of SPNs until: 15.Nov.07
 - Approval Telecon on the: 16.Nov.07
 - For approved SPNs analysis of impacted OPS Products until: 23.Nov.07
 - For approved SPNs update of OPS Product until: 04.Dec.07
- For all ESA SPNs not approved on 16.Nov.07, the SPNs have to be worked after the 1E mission.
- Next COL OPS SPN Working Group Telecon planned for Tuesday, 06.Nov.07 / 16:00 Bremen Time / 09:00 Houston Time



SPAN Manning



- ISS SPAN Support: Manning provided by USA CAF Personnel
- ISS SPAN Systems: Manning provided by DI plus support from DA8 and DA7 if required
- SSP SPAN Support: Manning **POSITION DELETED WITH 120/10A**
- SSP SPAN Systems: Manning provided by DS plus support from DA8 and DA7 if required
- SPAN DO: Manning provided by DO **SUPPORT REDUCED with 120/10A**
- SPAN DM: Manning provided by DM **SUPPORT REDUCED with 120/10A**
- SPAN DX: Manning provided by DX **SUPPORT REDUCED with 120/10A**
- SPAN Managers: Manning provided by DM, DO, DX. Additional ad hoc support from DA8, DA7, DS, and DI.



OPEN NASA OCADs



- PHALCON ()
 - TBS
- EVA ()
 - TBS
- OSO ()
 - TBS
- ACO ()
 - TBS
- ECLSS ()
 - TBS
- THOR ()
 - TBS
- ADCO ()
 - TBS
- ROBO ()
 - TBS



OPEN ESA OCADs



- TBS

- Payloads ()
 - TBS



SHUTTLE OPEN HAZARD REPORTS



None

ISS OPEN HAZARD REPORTS



- COL-1002
- COL-1003
- COL-1006
- EME-0602*
- EPS-0309*
- EPS-0503*
- EVA-0312
- GNC-0701
- MCH-0109
- STR-0108*
- STR-0907*
- STR-1009*
- SWC IP-STR-108*
- TCS-0062*
- TCS-0066
- TCS-1210
- SDTO-10A

* Pre-verified



ISS OPEN NCRS



NCR-ISS-211	Lack of MSS Operability Failure Tolerance
NCR-ISS-203-B	Lack of Two-Fault Tolerance to EVA Plasma Shock Hazard
NCR-ISS-212	Lack of RTAS Failure Tolerance for Removal of P6 from Z1
NCR-ISS-TBD	Lack of Two-Fault Tolerance for Moding at Undock
NCR-ISS-208	Pins on the Powered Side of the Connector during Mate/Demate
NCR-ISS-TBD	Lack of Two Failure Tolerance to Exceeding Structural Loads if SSRMS Safes during P6 Install
NCR-TBD	SARJ Locking Constraints Risk (not a constraint to launch)



GFE OPEN HAZARD REPORTS



- STS

- 90 Degree Camera Autotrac
- RCC Plug Repair (ECD – 09/28/07)
- Medical Accessory Kit (MAK) (ECD – 08/30/07)
- Pan Tilt Unit (OBSS) (PTU) (ECD- TBD)
- Wing Leading Edge (WLE) Enhanced Wide-Band Micro-Triaxial Accelerometer Unit (EWBMTAU) (ECD – TBD)
- Wet/Dry Vacuum Cleaner (ECD – TBD)
- Lens, Fisheye, Nikon 8mm (ECD – 09/18/07)
- Trajectory Control Sensor Flight Kit (TCS) (ECD – 10/02/07)
 - » OCAD not submitted as of 09/12/07
- T-RAD DTO (ECD – 9/17/07)



GFE OPEN HAZARD REPORTS



- ISS
 - EVA Digital Camera (ECD – TBD)
- EVA
 - Solar Array Contingency Taped Tools (ECD – TBD)
 - Plug Installation and Verification Tool (PIVT) (ECD –TBD)
 - EVA Thermal Sensor (w/Goose Neck Probe) (ECD – TBD)
 - On-Orbit Installed Gap Spanner (ECD – 09/07/07)
 - Primary Life Support System (PLSS) (ECD – 09/31/07)



PAYLOAD OPEN HAZARD REPORTS



- Shuttle
 - None
- ISS
 - HDTV Camera Lens (ECD: 10/01/07)
 - MSG / InSPACE-2 Integrated (ECD: 9/19/07)
 - Spore
 - » ESA PSRP reviewed payload
 - » Late manifest, awaiting hazard reports from ESA (ECD: TBD)
 - SSLM (ECD: 9/24/07)

