



STS-128/ISS-17A MOD Flight Readiness Review

***JSC Mission Operations Directorate
Flight Director Office***

***DA8/H. Rarick, A. Ceccacci, R. Jones, C. McMillan
July 9, 2009***

Agenda Item 3

Agenda



- **DA8 COFR Requirements/Endorsements**
 - COFR Requirements/Endorsements Summary
 - New Operations – A/E Topics, Shuttle, ISS, MCC
 - Safety Status Review
 - Flight Rules (Generic Volumes A, B, C, D; STS-128/17A Annex)
 - FDF/ODF/SODF
 - Mission Staffing: Training/Certification/Work Guidelines Compliance
 - Non-Critical Processors/Applications (backup)
 - Emergency Mission Control Center (EMCC)/Backup Control Center (BCC) (backup)
 - Command Procedures (backup)
 - Contingency Shuttle Crew Support/Rescue Flight: STS-129 (LON vehicle) (backup)
 - Flight Techniques & Joint Operations Panels (backup)
 - Level II Actions
- **Standard Open Work (backup)**
- **Non-Standard Open Work**
- **Exceptions**
- **Items of Interest**
- **Flight Readiness Statement**

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DA8 COFR Requirements/Endorsements



REQUIREMENT (SHUTTLE)	FD	PI	Safety	SPAN	SMG	Team 4
Non-Crit Processors/Applications	G				G	
EMCC	G				G	G
Certified Flight Controllers	G			G	G	G
Flight Rules	G					
FDF	G	G				
FTP - New Ops	G					
Flight Anomaly Resolution	Y			G		
Anomaly - Procedure	G					
Exceptions/Action Items From Prior Readiness Reviews	G	G	G	G	G	G
CIL/Hazards	G		G			
No Constraints	G	G				
Level II (Program) Actions	G	G				
Mission Requirements	G					
Exception/Resolution	G	G				
Command Procedures	G					
Flt Prep Process Plan Requirements Met		G				
Contractor Process Insight		G				



Ready to Support Flight/Only Standard Open work



Non Standard Open work with expected resolution prior to flight.



Open work without expected resolution without assistance, prior to flight, or unavoidable constraint violation.



N/A



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Ascent/Entry Topics



Preliminary Launch Window Times for STS-128/17A



KSC Day Window Open	KSC Date	RNDZ Day	ET Photo Umbilical	ET Photo Handheld	Open (EDT)	Open (GMT)	In-Plane (GMT)	FD3 Close (GMT)	FD4 Close (GMT)
Tuesday	18-Aug	FD3	Dark	Daylight	4:18:08	8:18:08	8:23:08	8:28:08	
Wednesday	19-Aug	FD3	Dark	Daylight	3:55:37	7:55:37	8:00:37	8:05:37	
Thursday	20-Aug	FD3/FD4	Dark	Daylight	3:29:54	7:29:54	7:34:54	7:39:54	7:43:02
Friday	21-Aug	FD3	Dark	Daylight	3:07:23	7:07:23	7:12:23	7:17:23	
Saturday	22-Aug	FD3/FD4	Dark	Daylight	2:41:41	6:41:41	6:46:41	6:51:41	6:54:55
Sunday	23-Aug	FD3	Dark	Dark	2:19:09	6:19:09	6:24:09	6:29:09	
Monday	24-Aug	FD3/FD4	Dark	Dark	1:53:27	5:53:27	5:58:27	6:03:27	6:06:41
Tuesday	25-Aug	FD3	Dark	Dark	1:30:55	5:30:55	5:35:55	5:40:55	
Wednesday	26-Aug	FD3/FD4	Dark	Dark	1:05:13	5:05:13	5:10:13	5:15:13	5:18:27
Thursday	27-Aug	FD3	Dark	Dark	0:42:41	4:42:41	4:47:41	4:52:41	
Friday	28-Aug	FD3/FD4	Dark	Dark	0:16:59	4:16:59	4:21:59	4:26:59	4:30:13
Friday	28-Aug	FD3	Dark	Dark	23:54:27	3:54:27	3:59:27	4:04:27	
Saturday	29-Aug	FD3/FD4	Dark	Dark	23:28:45	3:28:45	3:33:45	3:38:45	3:41:58
Sunday	30-Aug	FD3	Dark	Dark	23:06:13	3:06:13	3:11:13	3:16:13	

NOTES:

- 1) Assumes 2.2 m/s ISS reboost on July 31
- 2) The FD4 window on August 18 may be viable if Ascent Performance Margin supports its use
- 3) Dark launch through September 8
- 4) Partial Daylight ET Hand-held Photography lighting on August 21 and 22
- 5) ET Umbilical camera flash is available and +X manuever will be performed on all days
- 6) FD3/FD4 are days where both a FD3 and a FD4 pane may be utilized to extend the launch window

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Ascent/Entry Topics



- **Low Ascent Performance Margin**
 - Numerous APM mitigation steps implemented by Shuttle Program
 - N2 & CRYO Offloads
 - 3-minute Launch Window
 - 188 nm Rendezvous Altitude
 - Projected APM above a 3-minute launch window is ~100 lb (does not include 700 lb day-of-launch hold-back)
- **Boundary Layer Transition DTO, Flight 2**
 - Second flight of DTO will gather data during entry regarding the aerothermal effects caused by the boundary layer transitioning from laminar flow to turbulent flow at a high Mach number
 - Changes from STS-119
 - Protuberance height increased to 0.35 inches
 - Boundary layer trip at Mach ~18
 - Temperature-sensitive, catalytic coating applied to 2 downstream tiles
 - Thermocouple relocations based on STS-119 postflight data
 - One downstream tile replacement with higher heat load capacity
 - Baselined at 5/7/09 PRCB (S115128F) and 6/4/09 PRCB (S115128G)



Ascent/Entry Topics



- **DOLILU Modifications**
 - Flight-derived dispersion trajectory knockdown updates
 - Follow-up from MPS Inventory update implemented on STS-127
 - Based on 30 flight reconstructions going back to STS-95
 - No significant impacts to launch probability, DOLILU loads, aeroheating, rules evaluations
 - Approved at 5/5/09 SICB (CR084799AW)
 - Minor modifications to the DOLILU Operations Support Plan (DOSP)
 - PMBT prediction due on L-4 to support L-2 MMT readiness report
 - Ops notes incorporation into the DOSP
- **Post Landing Convoy Commander Voice Issues**
 - NCC Convoy Commander hearing clipped transmissions from Flight Director
 - Same issue encountered during STS-126 and STS-125
 - Failure likely isolated to NCC van headset/handheld network interference
 - Expect similar issue if EDW landing required



Ascent/Entry Topics



- **OV-103 FA4 and FF4 Anomalies**
 - Secondary port on FA4 (lot 7501) showed attenuated waveform during oscilloscope testing performed while in OPF
 - Removed and replaced FA4 with available spare
 - Spare FA4 MDM contains retrofitted MIA cards on both Primary & Secondary ports, not from suspect lots 7715 & 7535
 - Primary port on FF4 bypassed during OPF power-up
 - Removed and replaced FF4 with available spare
 - Spare FF4 MDM has no suspect lot concerns
 - Will fly STS-128 string 4 on primary ports
- **STS-128 will fly with STS-125 flow control valves**
 - Eddy current NDE technique confirms no cracks are present
 - S/N 1007, 1022, 1002
 - No elbow doubler modification is installed



Ascent/Entry Topics



- **COLA Cutouts**

- Air Force Instruction (directive memo) from the 14'th Air Force “may” modify COLA cutout methodology starting with STS-128
 - Launch window screened against all “Active” satellites instead of only “mannable” satellites
 - Impacts to launch window expected to be minimal
 - DM working to mitigate impacts by asking Air Force to screen against shuttle-specific launch insertion box



New Operations: Shuttle



- **First flight of OI-34**
 - Enhancements made to BFS HUD to make performance more similar to PASS HUD
 - Bodyflap warning message added to HUD
 - Runway overlay uses landing site table data for correct length
 - HUD high-g limit (flashing NZ value) added
 - Decel command restored and is usable
 - Remaining OI-34 changes are related to memory efficiencies, minor DR fixes, removal of unused code, and documentation-only CRs



New Operations: Shuttle



- **O2 Crossover Valve Position Indication**
 - STS-126 crossover valve failure resulted in this modification
 - MO10W wiring modification provides position indication for system 1 & 2 crossover valves
 - Simplifies prelaunch and on-orbit troubleshooting
 - Ground-only insight /monitoring for the position indications
 - Corresponding LCC modification approved at the Noon Board on 06/23/09



New Operations: Shuttle



- **Weather Flight Rule Modification**

- KSC/45'th Weather authoring LCC modification to decrease launch trajectory standoff distances from electrified anvil clouds
- AEFTP #248 (4/30/09) reviewed Lightning Advisory Panel findings that identified the additional standoff distance margin
- SMG authoring corresponding modification to Vol A Landing Site Weather Criteria
 - Update targeted for Annex Flight Rules Final on Aug. 10



New Operations: ISS



- **ATA R&R (EVA 1 and EVA 2)**
 - NH3 vent on FD1 / FD2
 - ATA will be isolated from EATCS loop
 - On-orbit test provided assurance that the EATCS loop could function without the ATA
 - Vent to be performed using momentum management in TEA
 - No recontact issues identified
 - IP and Shuttle Program to confirm via chit
 - Contamination issues will be minimized with off-pointing, if required
 - N2 vent on FD5 using Shuttle attitude control will be done prior to EVA
 - Use of CMG attitude control is being analyzed (ECD 7/17)
 - After R&R (EVA 2), ATA Tank 1 will be integrated but not ATA Tank 2
 - Recommendation of EATCS Engineering and THOR
 - Minimizes N2 to pressurize system and loss of NH3 if leak occurs



New Operations: ISS



- **Shuttle Condensate Transfer**

- Two options exist to transfer Shuttle condensate to ISS
 1. Direct transfer requires new hardware (not on manifest)
 - Procedures and crew training not complete
 2. Use CWC's (same as 2JA plan)
- Recommending not to transfer shuttle condensate during 17A
 - ISS has a 66 CTBE stowage shortfall for 17A docked ops
 - Condensate can be dumped post-undock unlike 2JA with deployables
 - Clear direction of “mandatory water transfer” not yet provided
 - Will resolve at 17A JOP #8 (7/14)

- **Shuttle Condensate Processing**

- New pump is required to process 2JA Shuttle condensate (3 CWCs)
 - Pump is not currently manifested
 - If pump is flown, MOD recommendation is to process condensate during stage ops (ECD 7/14)



New Operations: ISS



- **Crew Quarter Installation**

- CQ 3 will be installed during 17A (JEM1F3 temp location)

- Minimize time that the crew does not have a sleep station and minimize stowage impacts; Crew will be without sleep station for less than 2 days

- No crew issues with this plan

- Minimum configuration was considered but will not be pursued due to short stage time prior to HTV; non-critical checkout steps will be performed during stage ops

- Two drag through cables will be used and will require NCR's per ISSP direction



New Operations: ISS



- **FIR Installation**

- FIR will be transferred to LAB1S4 during 17A (was ChECS location)
- Modifications to LAB1S4 are required for installation during 17A
 - Regen ECLSS mod kit will need to be removed
 - Original ISPR (ARIS) data cables and ground strap to be reinstalled
 - Draft procedures in review (ECD 7/21)
- Software work required prior to activation during 17A stage
 - New PPL needed for INTSYS (ECD 8/3)
 - Lower AAA fan speed C&W limit (voltage)
 - LSYS will require a patch or operational workaround
 - ASCB will decide forward plan (7/15)
 - Operational workaround will require update to LA3 MDM power cycle and re-init procedures (load PPL v2 to EEPROM for AAA functionality in WRS rack (D4) and then load PPL v1 to DRAM for FIR (S4)).



New Operations: ISS



- **T2 Installation**
 - T2 will be transferred to NOD2D5 (temp location) during 17A
 - Installation is planned for 17A stage or later (post-HTV)
 - Forward work required for activation
 - Acoustical limit exceedance is expected
 - NCR 20261 states T2 will not meet acoustic limits (< 85 dB).
 - Per Flight Rule B13-152, crew will be required to wear hearing protection for a minimum of 2 weeks during T2 activation/checkout and analysis of onboard acoustics (GJOP #321, 6/24/09).
 - Due to late identification of T2 temp location in Node 2, forward work is required to address rack smoke detector and power switch functionality (commands, telemetry, rack powerdown for fire response and PCS display)
 - ASCB (7/15) will finalize forward plan



New Operations: ISS



- **Node 1/Node 3 Feedthrough Installation (IVA get ahead for ULF3)**
 - PMA 3 heater cables will be installed during EVA 3
 - PMA 3 can be pressurized at any time (with leak check)
 - Once pressurized, THOR will perform manual heater ops to avoid condensation
 - MOD recommends PMA 3 to be pressurized during docked ops
 - Requires 2 hrs of crew time and ~ 13 lbs of air
 - Also requires PTCS analysis for mated attitudes (1 week of work)
 - Will resolve at 17A JOP #8 (7/14)
 - Once pressurized, Node 1 feedthroughs can be installed during 17A stage
 - Additional leak check required
 - If large leak found, PMA 3 will remain pressurized until ULF3
 - Assumes ULD does not find leak
 - Bell jar leak check tool (NFLCK) will be flown on ULF3, if needed



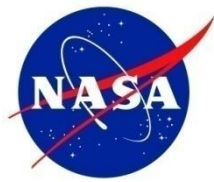
New Operations: MCC



- **MCC Software**
 - Mercury 1.1.1 Baseline and OS 4.7.1 will be utilized for STS-128
 - Utilized during STS-128/17A Long Sim (7/3-4) with no problems reported
 - (see “Items of Interest” for Motif Window Manager (MWM) AR)
- **MCC Houston Gateway Web Application**
 - JEDI 3.0 (Joint Execute Package Development and Integration)
 - Source code replaced due to age and supportability of original code
 - New features added for joint messaging and searches



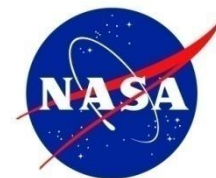
Ops Safety Issues



- **ISS Flight Unique Safety Analysis and Review (Behind)**
 - Most issues identified and resolved on previous missions
 - Expect delta analysis constraints to be small
 - Operational nuisance issues likely
 - Only meeting so far was 4/20/09
 - Currently scheduled meetings are 7/20 and 7/27
- **Positive Plasma**
 - 17A EVA tasks remain inboard of SARJ
 - Long-term concern remains
 - XA assessments to electrically isolate MWS from EMU did not identify any near-term viable options of significant benefit
 - Safety preference is to fly YVV for Stage EVAs (outbd of SARJ)
 - ViPER products requested to support feasibility of this as a generic capability



Non-Standard Open Work: Safety



- **FRAM mechanism redundancy (EuTEF)**
 - FRAM Primary arm drive jammed during acceptance vibe tests
 - Contingency pin minimum turn count definition discrepancies
 - SRP Review of FRAM NCR scheduled for 7/7
- **JAXA ICS Ka-band radiation**
 - Field strength and reflected radiation analysis pending (7/9)
 - For SSRMS, interim OCADs proposed until SSRMS susceptibility assessment completed (Oct 2009)
 - NASA OCAD proposed to constrain MSS parking position
 - JAXA OCAD to mask other sensitive equipment (to be identified based on reflected emissions analysis)
 - JAXA agreed that ICS will be powered off for Docking and EVAs
 - Associated NCR, hazard report updates due 7/21
- **Drag-thru cable NCRs – ECD TBD**
 - Do not expect this to impact nominal planning



Non-Standard Open Work: Shuttle and ISS



Shuttle IFA Status

- **STS-126-D-006: MPLM TELEMETRY PARAMETERS**
 - 3-flight Interim Disposition expires after STS-127
 - IFA closure rationale for STS-128 in-work by DD.
- **STS-119-D-001: INADVERTENT ABORT LIGHT COMMAND SENT FROM FDO WORKSTATION**
 - 2-flight Interim Disposition expires after STS-127
 - IFA closure rationale for STS-128 in-work by DA8 and DD; ECD TBD

ISS

- **Flight Rules pending completion of open Safety work**



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, Joint Operations Panels, and the Flight Rules Control Board**
- **The following generic publications are applicable for STS-128/ISS-17A**
 - Volume A (STS), Final, PCN-10 dated 5/21/09
 - Volume B (ISS), Final, PCN-11 dated 6/25/09
 - Volume C (Joint), Final, PCN-5 dated 5/18/09
 - Volume D (Soyuz/Progress), Final, PCN-6, dated 5/4/09
- **STS-128/ISS-17A flight rules annex**
 - Final, targeted for JPRCB approval on 8/10/09
 - PCN-1 TBD (may be required due to late changes to mission objectives and late analysis (potential impacts from 2JA))



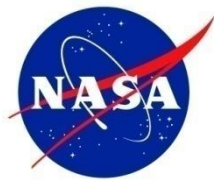
FDF/ODF/SODF



- **DA8 has participated in FDF/ODF/SODF processes and procedure reviews as required**
- **FDF/ODF will be ready to support STS-128/ISS-17A**
- **New US procedures are primarily for:**
 - Robotics, EVA and ATA tasks



Flight Director Mission Staffing

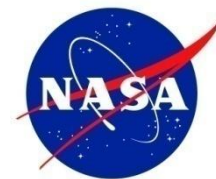


- All STS-128/ISS-17A Flight Directors are certified per Flight Director Certification Guide (DA8-00010), Final, dated May 22, 2009
- Additional certified Flight Directors are available to support Team 4, EMCC, and STS-129/LON flight, as required
- MOD Work Guidelines are met
- Flight-specific certifications are expected to be complete by Aug 5, 2009

Shuttle Flight Directors		ISS Flight Directors	
Tony Ceccacci	Lead/Orbit 1	Ron Spencer	Orbit 1
Kwatsi Alibaruho	Orbit 2	Heather Rarick	Lead/Orbit 2
Gary Horlacher	Planning	Royce Renfrew	Orbit 3
Richard Jones	Ascent/Entry		



Level II Actions



- None



Exceptions



- **None identified**





Items of Interest



- **MCC Baseline Mercury 1.1**

- AR written against Mercury 1.1 and OS 4.7.1 for problems seen during STS-128 Ascent simulation
 - Problem originally AR'd (AR081083) during Generic Sim on 6/24/09 using Same Baseline and Operating System
 - Problem identified with Motif Window Manager (MWM)
 - MWM fix was incorporated into Mercury 1.1.1 and a successful SRT completed on 6/30/09
 - Mercury 1.1.1 was used for STS-128/17A Long sim (7/2-3) and no problems identified





Items of Interest



- **GIVUS Failure**
 - New GIVUS should arrive on 34P with R&R soon afterwards
 - Expect acceptable rate data by 17A
 - EVA 3 safing for RPCM S01A R&R will power off RGA 1 and RGA 2
R&R will power off RGA 2
 - ISS will be dependent on GIVUS and [OPT] for rate data
 - If GIVUS is not operational, MOD will consider using RGA 2 during EVA and spacing RPCM and RGA R&R's to maintain a rate source





Items of Interest



- **ATA Contingency Operations**

- ATA mass does not allow for tie down anywhere other than P1, LMC or POA
- For contingencies of the ATA or its hardware, ATA can be stowed on the POA
- For abort EVA cases during SSRMS translations (to/from P1 and the payload bay), jettison is the only option since tiedown plan is not available
 - Jettison of ATA will violate jettison policy, will require a reboost to avoid recontact and may pose a recontact threat up to 2 years



Flight Readiness Statement



- 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-128/ISS-17A mission and ISS-17A stage
- All standard/non-standard open work will be closed out or have a closure plan prior to SSP FRR (8/4/09) with no exceptions
- ISSP SORR will be conducted on 7/30/09; closeout for non-standard open work will be reported to ISSP prior to Level 1 FRR (8/11/09)



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BACKUP



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Spaceflight Meteorology Group



- All forecasters required to support STS-128 meet requirements listed in SMG Training & Certification plan.
- System Changes:
 - **AWIPS: Server upgrade completed 24 June 2009.**
 - **MIDDs: None.**
 - **GOES-12 (East) station-keeping maneuver scheduled for Aug 10th. GOES-11 (West) station keeping maneuver scheduled for Aug 18th.**

The undersigned certifies that the Spaceflight Meteorology Group is ready to support the STS-128 flight.

/s/ Frank C. Brody

Frank C. Brody

Chief, Spaceflight Meteorology Group

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Ascent/Entry Topics



119 FDO Workstation & pre-launch Abort command via H/W push button

- Inadvertent Abort Light Command sent from MCC FDO console to the vehicle, at approx. L-5:35.
 - Button not actuated by FDO or TRAJ.
 - Standard pre-launch FDO and Flight Director abort light command checks to the Orbiter had been successfully performed ~ 4 hours earlier.
 - Root cause has not been determined.
 - No record of previous inadvertent abort light commands from MCC consoles.
- The MCC abort light command illuminates the cockpit abort light and DOES NOT command abort initiation.
- Per Flight Rule A2-58, Abort Light, the crew requires 2 cues before initiating an abort. The abort light in the cockpit can be one of those cues.
- The STS-128/17A Crew has been briefed on this anomaly.
- Other MCC command push buttons that could be affected if a generic failure exists with these PBI's.
 - GNC Controllability light – requires confirmation from MCC in addition to the light command for action to be taken by the ROCC.
 - INCO command panel – critical commands are two stage.



EMCC/BCC



- **No changes to EMCC procedures since STS-119/15A**
 - Personnel are identified to support EMCC, if required
- **Backup Control Center (BCC)**
 - BCC-HOSC is prime for BCC/BAT.
 - Facilities and personnel are ready to support.
 - Checkout occurred and included all Partner Control Centers.
 - June 1, 2009 included HOSC, POIC, JAXA, ESA.
 - July 8, 2009 included MCC-M.
 - BCC updates now provide cmd/tlm connectivity to MCC-M, COL-CC and SSIPC.



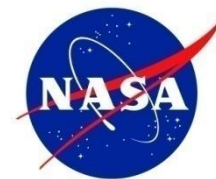
Command Procedures



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



Non-Critical Processors/Applications



- **No changes to Flight Director applications for STS-128/ ISS-17A**



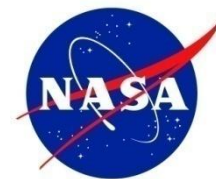
STANDARD OPEN WORK



- **INDEPENDENT SAFETY VERIFICATION REVIEW**
 - SHUTTLE ISVR REPORT (ECD: L-2 wk)
 - ISS ISVR REPORT (ECD: L-2 wk)



GUCP Hazard Report Liens



- **ET S.06: Hydrogen Leaks (IMPS-09 Cause E)**
 - Cause 1c: Leaks at the GH2 vent disconnect located at the ground umbilical carrier assembly are prevented by design
- **ET P.05: GUCA Separation Malfunction (ISPR-02 Cause G)**
 - Hazardous Condition Description: Premature separation of the Ground Umbilical Carrier Assembly (GUCA) could cause arcing at electrical connections in the presence of vented hydrogen, resulting in fire or explosion. In the event of failure to terminate electrical circuits routed through the GUCA, the potential for fire/explosion would exist during separation at T-0. Failure of the GUCA to separate at T-0 could possibly cause the GUCA to strike the ET or SRB.
 - Causes: 5 / 6 / 7 Failure to Separate



OPEN NASA OCADs



- **BME (1)**
 - HPK battery change-out (1)
- **CIO (1)**
 - T61p mate/de-mate constraint (1)
- **EVA (5)**
 - NASDA-0011: Prevent inadvertent mechanical release (1)
 - SEDA-AP payload constraints (2)
 - Ammonia venting keep-out constraint (1)
 - VV tether constraint (1)
- **ODIN (2)**
 - T61p laptop constraints (2)
- **OSO (1)**
 - IFM Parts Kit stowage constraint (1)
- **ROBO (7)**
 - DOUG T61p laptop constraint (1)
 - MSS6.1/SPDM constraints (6)

•* OCAD not yet submitted



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ISS OPEN HAZARD REPORTS



ISS/17A reports:

- C&T-1103
- COL-1002
- EPS-0207
- EPS-0503
- EVA-0312
- GNC-0701
- MCH-0109
- MCH-0113
- STD-ISP-0001
- ISS-ATA-FSE-MECH-109
- ISS-OSE-FGB-MCH-0109-17A

HTV reports:

- COL-1004
- HTV-0008
- HTV-0014
- HTV-0007
- HTV-0010
- HTV-0020
- HTV-0011

- * Pre-verified



ISS OPEN NCRs



- **NCR-CMC-2009-RSP-01 Lack of Two Fault Tolerance for RSP Return**
- **CMC-NCR-FRAM-NCR-001 Two Fault Tolerance for Active FRAMs**
- **NCR-ISS-239 Loss of ISS Robotic Capability to Remove Payload from SRMS**
- **Stowage Constraint NCRs:**
 - NCR-ISS-COL-001 Columbus Nominal Translation Path
 - NCR-ISS-COL-002 Columbus Rack Worksite
 - NCR-ISS-JLP-001 JLP Nominal Translation Path
 - NCR-ISS-JPM-001 JPM Nominal Translation Path
 - NCR-ISS-JPM-002 JPM Rack Worksite
 - NCR-ISS-N1N2-001 N1 and N2 Fireports
 - NCR-ISS-N1N2-002 N1 and N2 Overhead Diffusers
 - NCR-ISS-N1N2-003 N1 and N2 Nominal Translation Path
- **Drag-thru cables NCRs**



GFE OPEN HAZARD REPORTS



- EVA
 - none
- STS
 - Hand Held LIDAR/ Night Scope Assembly
 - HHL is currently not certified for use on ISS, but has planned use for HTV1 berthing prox ops
 - Per SSPCB on 6/2/09, requirements for safety/certification are to be waived which may result in not having a Safety Data Package
 - ECD – 7/1/09
- ISS
 - none



PAYLOAD OPEN HAZARD REPORTS



- **STS**
 - none
- **ISS**
 - JEM Plant Experiment Unit (PEU)
 - Awaiting vibration test results
 - NLP Vaccine – 5
 - Awaiting submittal of Phase 3 SDP
 - Expected delivery on 06/26/09
 - SpaceDRUMS
 - Pending review of updated data submittals



CSCS Support/LON



- 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-128 Ascent/Entry Team will support STS-129/LON mission
- Personnel are available to support Orbit Operations as required



Remaining STS-128/17A Integrated Simulations



- **Ascent/Entry**
 - 7/14: FDO/BSE
 - 7/15: S0044 w/ KSC
 - 7/29: TCDT w/ KSC
 - 8/6: Entry #3
 - 8/12: Ascent #4
- **Orbit**
 - 8/3: Undock



Ascent/Entry Flight Techniques Panel



- **Four Ascent/Entry Flight Techniques Panel (A/E FTPs) were held with topics supporting STS-128/17A**
 - A/E FTP #236
 - Boundary Layer Transition DTO
 - A/E FTP #247
 - STS-119 Post Flight Review
 - FDO Abort Light anomaly
 - A/E FTP #248
 - Landing Site Weather Criteria Updates
 - A/E FTP #249
 - STS-125 Post Flight Review



Ascent/Entry FTP #236



- **Boundary Layer Transition DTO Review**
 - Operational Impacts
 - It is desirable to avoid roll reversals during mach numbers where boundary layer trip will occur
 - Orbit Adjust can be used to accomplish this goal
 - Difficult to balance all mission objectives with a single orbit adjust
 - AEFTP community agrees that orbit adjust for DTO should be low priority
 - Entry Trajectory techniques to mitigate ascent debris concerns
 - Ascent debris evaluations in the same tile areas near the protuberance are complicated
 - Lower surface inspection maps show critical damage size is the same whether the 0.25 inch protuberance is there or not
 - Entry GN&C evaluation
 - Conservative flight control stability analysis results were examined
 - No additional propellant budgeting is required to account for roll/yaw control increments induced by protuberances up to 0.75 inches
 - Overall conclusions
 - There are no significant operational impacts that preclude performing the BLT DTO
 - Risk balances between collecting data and mission success must be considered



Ascent/Entry FTP #247



- **STS-119 Post Flight Review**
 - Boundary Layer Transition DTO had no adverse impacts on ARCS propellant margins or controllability margins
- **FDO Abort Light Anomaly**
 - During STS-119, inadvertent Abort Light Command sent from MCC FDO console to the vehicle, at approx. L-5:35.
 - Button not actuated by FDO or TRAJ.
 - Standard pre-launch FDO and Flight Director abort light command checks to the Orbiter had been successfully performed ~ 4 hours earlier.
 - No record of previous inadvertent abort light commands from MCC consoles.
 - The MCC abort light command illuminates the cockpit abort light and DOES NOT command abort initiation.
 - Per Flight Rule A2-58, Abort Light, the crew requires 2 cues before initiating an abort. The abort light in the cockpit can be one of those cues.
 - Other MCC command push buttons that could be affected if a generic failure exists with these PBI's.
 - GNC Controllability light – requires confirmation from MCC in addition to the light command for action to be taken by the ROCC.
 - INCO command panel – critical commands are two stage.



Ascent/Entry FTP #248



- **Landing Site Weather Criteria Updates**
 - Lightning Advisory Panel (LAP) recently completed study clarifying available safety margins for anvil cloud weather systems
 - Reduced stand-off distances
 - Reduced lightning restrictions for parent thunderstorm
 - Enabler for these changes
 - Measurements of electric field versus distance from cloud edge confirm field strengths < 3 kV/m, a key threshold to define a hazardous condition



Ascent/Entry FTP #249



- **STS-125 Post Flight Review**
 - Jimsphere balloon tracking bias
 - L-2:30 balloon C-band radar track induced 300 – 400 ft altitude bias, which correlates to a ~10 fps wind magnitude error
 - 10 fps magnitude error still meets DOLILU accuracy requirements
 - Entry C-band Tracking anomaly
 - C-band radar acquisition delayed due to inaccurate entry ephemeris information received at the Western Range C-band radar sites (still under investigation)
 - Narrow C-band beam width contributed to delayed acquisition, coupled with actual vs. predicted orbiter position delta



STS-128/17A JOP



- **STS-128/17A JOP #1 – 11/13/2008**
- **STS-128/17A JOP #2– 1/13/09**
- **STS-128/17A JOP #3– 3/10/09**
- **STS-128/17A JOP #4– 4/15/09**
- **STS-128/17A JOP #5– 6/2/09**
- **STS-128/17A JOP #6– 6/16/09**
- **STS-128/17A JOP #7– 7/7/09**

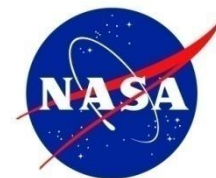


**Mission Operations Directorate
Flight Director Office**

Pre-decisional FOR INTERNAL USE ONLY

•DA8/Rarick, Ceccacci, Jones, McMillan 128/17A MOD FRR 7/9/09

IP Integration



- **STS-128/ISS-17A Briefings to Russian Teams**
 - RJOP (7/15/09)
 - ECD of L-1 Week
- **JOP Splinter w/ ESA (7/7)**
 - Reviewed EVA 1, stowage, flight rules and X2R8
- **JOP Splinter w/ JAXA**
 - Will be scheduled ~7/21



Standard Open Work



- **STS-128/ISS-17A Flight Rules Annex**
 - Final: JPRCB 08/10/09
 - PCN-1: Real time Flight Rules if required
- **FDF/SODF**
 - Final crew review 7/30/09
 - Final errata, L-2 days
- **Training**
 - Complete STS-128/ISS-17A Orbit Flight Specific simulations (8/03/09)
 - Complete STS-128/ISS-17A Ascent/Entry simulations (L-6 days)
 - Complete Flight Director flight specific certifications (ECD 8/5/09)



Standard Open Work



- **Stowage**
 - Agreements are in work through IMMT to support the reconfigurations necessary for 17A preparations. Agreements required to support 17A mission and stage stowage requirements will be coordinated through SSPCB by the end of July to support 17A and final prep for HTV.
- **Water transfer plan**
- **MCS data and constraints (flight rules and ODF updates)**
 - Engineering data to be provided by 7/13/09
- **Pressure profile**
 - Complete coordination of pressure management plan with MCC-M (ECD L-1wk)
- **Finalize solar array constraints and power profile plan for docked mission**
 - SACM (L-30 days)
 - Power Analysis (ECD L-1 wk)



Standard Open Work



- **Complete “Road To” Items and Prepack**

- 22-26 days between 2JA undock and 17A dock

- 34P Dock
- PMA 3 Relocate
- X2R8 and SM 8.03 software transitions
 - Uplink 17A MSS Recon Files
- Reboost, July 31
- Rack prep for 17A transfer
 - Includes ChECS decommissioning/xfer, regen-ECLSS mod kit removal, etc.
- HTV Prox Checkout #3 (5 days of ground commanding)
- Uplink 17A SODF to IPV (L – 4 wk)
- EVA Hardware / Tool Config (L – 1 wk)



SPAN Staffing



- ISS SPAN Support: Staffing provided by USA CAF Personnel
- ISS SPAN Systems: Staffing provided by DI plus support from DA8 and DA7 if required
- SSP SPAN Systems: Staffing provided by DS plus support from DA8 and DA7 if required
- SPAN DO: Staffing provided by DO
- SPAN DM: Staffing provided by DM
- SPAN DX: Staffing provided by DX
- SPAN Managers: Staffing provided by DM, DO, DX. Additional ad hoc support from DA8, DA7, DS, and DI

