



SPACE SHUTTLE PROGRAM
Space Shuttle KSC Integration Office
NASA Kennedy Space Center, Florida



STS-128 Launch Site Flow Review

Presenter Kenneth Nowak

Date 01-29-2009

Program Freeze Point

PRCB Presentation

S115128B



STS-128 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-29-2009**

Baseline the STS-128 Mission Specific Requirements and Flow Plans.
 The STS-128 Integrated Launch Site Requirements were established by PRCBD S115128 dated 08-14-08. This CR and the Associated Data Package were reviewed at the 01-26-09 FRWG.

Flight Management*	MO3/USA-PI
Payload/Cargo Engineering*	USA-PI
Orbiter Engineering*	USA-OE
Shuttle Processing	PH-B2

Status in BackUp

KSC Integration	MK-SIO
Flight Software	USA-FSW
EVA	XA
KSC ISS and Payload Processing	UB-R3

Orbiter GFE	<u>Status at DLSFR</u>	MV5
SSME	<u>Status at DLSFR</u>	MP21



STS-128/17A

Launch Site Flow Review (LSFR)

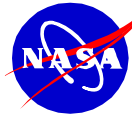
Flight Requirements Status

PRCB January 29, 2009

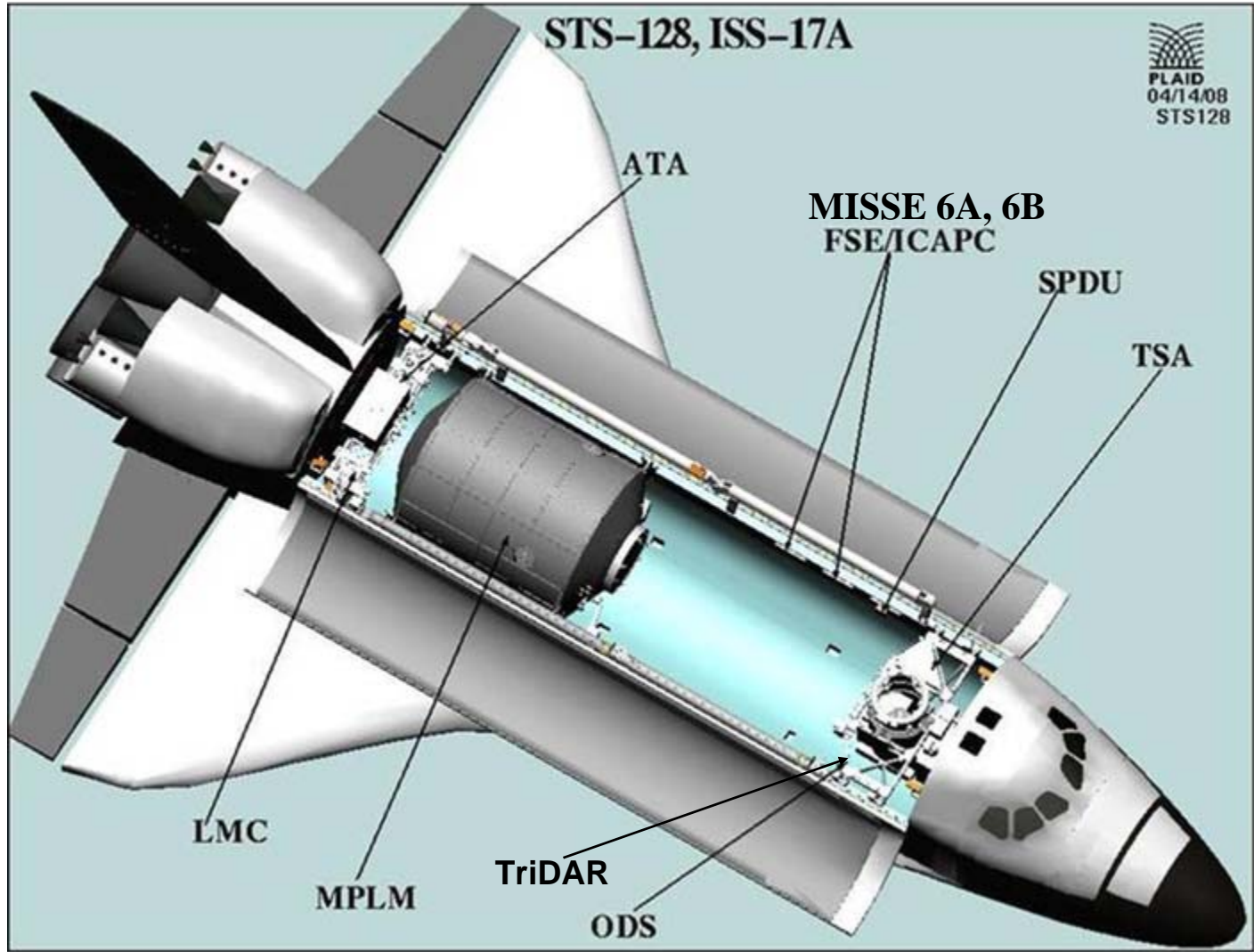
Shelby Lawson, STS-128 MIM

Frank Richmond, USA Flight Mgr.

Adam Richards/Boeing Mass Properties



STS-128 LAUNCH SITE FLOW REVIEW		Presenter MO3/Shelby Lawson
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LAUNCH

08/06/09
 39A/ MLP 2
 CREW SIZE: 7UP/7DN (One crew rotation)

ORBIT

51.6 DEG
 122 NM
 DIRECT INSERTION (190 NM altitude)
 DURATION: 13 + 1 + 2 DAYS (3 EVAs)

CONFIGURATION

OV-103 (37)
 LP01: RP03
 ET-132
 BI-139
 RSRM-107
 (1) TBD (2) TBD (3) TBD
 OI-34
 SRMS, OBSS, ODS, SSPTS

CONSUMABLES

CRYO TANK SETS 5 (450# O2 OFFLOAD)
 GN2 TANKS 6 (FULL)
 FWD RCS 1912# (OFFLOAD)
 AFT RCS 4970# (FULL)
 OMS 22760# (FULL) – COPV offload

PAYLOAD

ISS-17A (MPLM, LMC), MISSE 6,
 TriDAR AR&D Sensor DTO-701A,
 ISS-17A: MAUI, SEITE, SIMPLEX

LANDING

SITE KSC
 TAL ZARAGOZA
 ALT. TAL MORON & ISTRES
 SCA 905

Notes:

- Rescue Flight for STS-127
- Unique flight requirements include possible MPLM late load at the pad.
- DTOs supporting post-SSP activities; DTO 854 (BLT), DTO 900 (RSRB Data), DTO 695 (Thrust Oscillation Seat) and DTO 701A (TriDAR)



STS-128 LAUNCH SITE FLOW REVIEW		Presenter MO3/Shelby Lawson
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PERFORMANCE MARGIN

• SIMULATION MARGIN (OCFAF128)			+1775
• WEIGHT CHANGES SINCE SIMULATION			
• PAYLOAD		+453	
• OPERATOR		+353	
• ORBITER		+520	
• NPC		-384	
• CREW COMPARTMENT		<u>-427</u>	
TOTAL WEIGHT CHANGES		+515	-515
• OTHER PERFORMANCE PROJECTIONS			
• PROTECTION FOR DOL DISPERSIONS			- 700
• 08/06/09 LAUNCH DATE (PMBT&ATMOS)			+140
• SRB – M.P. UPDATES			- 63
• SRB – BR / 1.55 MIL HIGHER THAN 0.3705 AVG			+310
• PROJ TO 5 MIN WINDOW FROM INPLANE			- 600
• PERFORMANCE CHANGES ADJUSTMENT			<u>+36</u>
• CURRENT BASELINED APM (01/27/09)			+383
• IPT PROJECTIONS			
• REMOVE AFT WVS ANTENNA		-3	+3
• IPT N2 OFFLOAD		- 47	+44
• IPT ADJUST OMS TIMER		+75	<u>-70</u>
• IPT PROJECTED APM (01/27/09)			+360

VOLUME III: ASCENT PERFORMANCE MANAGER'S RESERVE GUIDELINE AT FPSR/CIR IS 800 LBS, LSRR is 400 lbs.



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		Date 01/29/09	Page 5

FLIGHT MASS PROPERTIES
WEIGHTS AND CG'S ARE WITHIN ACCEPTABLE LIMITS

<u>CASE</u>	TOUCHDOWN	MACH 3.5
	<u>WEIGHT pounds (LIMIT)</u>	<u>X C.G. inches (LIMIT)</u>
NOMINAL	225853 (233000)	1087.6 (1075.2)
RTLS	240117 (245000)	1087.5 (1076.7)
TAL	238736 (244000)	1087.6 (1076.7)
AOA	235041 (242000)	1085.3 (1075.2)
CONT RTRN*	205045 (233000)	1084.1 (1075.2)

**CONT RTRN Case is No MPLM, LMC empty, Full Middeck, Fwd CG*

**NOTE: RTLS INCLUDES 185 SEC ARCS DUMP, 25 SEC FRCS DUMP
 TAL INCLUDES 120 SEC ARCS DUMP, 65 SEC FRCS DUMP
 104 LBS AFT BALLAST (BOXES ONLY)**

ESTIMATES BASED ON OCFAF128 AND MODIFIED FOR WEIGHT CHANGES THRU 01/27/09.

**(MPLM, LMC and MISSE 6 A&B Ret.)
DTO-TriDAR**

**LAUNCH SITE FLOW REVIEW
(LSFR)**

PAYLOAD CARGO ENGINEERING STATUS

**Abbas Elsabagh
Cargo Mission Manager
281-212-6186
January 29, 2009**

STS-128 LSFR

Engineering Flight Product Status

<u>Drawing No</u>	<u>Title</u>	<u>Rev</u>	<u>EO</u>	<u>Released</u>
V072-200208	Early MECSLSI	A	A01	01/12/09

Engineering Open Work

- **Final Reconfiguration Engineering Drawings (FRED)** **02/23/09**
 - VA72-200208 Cargo Arrangement
 - VD72-200208 Avionics Diagram
 - VS72-200208 Integrated Schematic
 - VS70-540335 Retention Schematic
 - All mission unique T.O.

Non-Standard Work (Chits)

- **J(TBD): MPLM measurement includes the Aft Port Scuff Plate to MPM**
- **Decision on the aft bulkhead winch and WVS antenna removal or DPA measurement if required**

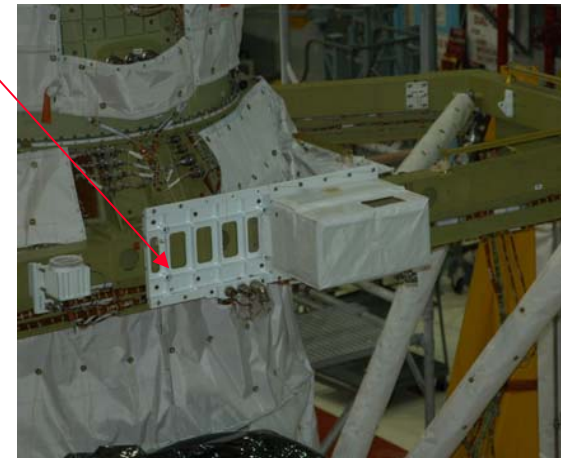
STS-128 LSFR

TriDAR DTO 701A

Description

- NEPTEC is one of two leading candidates that combines 3D Triangulation and LIDAR in a single optical path
 - Largely based on OBSS LCS flight hardware
 - Immune to lighting conditions
- For STS-128, TriDAR DTO 701A assembly mounts to the existing Trajectory Control System (TCS) Carrier Assembly on the Orbiter Docking System (ODS) in the Stbd location, with the TCS-2 mounted in the Port location

TriDAR will be installed next to TCS



Documentation

- NSTS 21547: TriDAR DTO 701A Integration Plan
- ICD-A-21342: Shuttle Orbiter/ODS-ISS Cargo Element ICD
 - Documents avionics interfaces
- ICD-3-0071-01: Orbiter Level III ICD
 - Documents mechanical interfaces



STS-128 LSFR

TriDAR DTO 701A - Concluded

Engineering

- V072-200208: MECSLSI update with TriDAR related tech orders will be released on 02/23/09
 - M072-730021: TCS Tech Order for Mechanical Installation of TriDAR into Orbiter
 - M072-710728: Payload Bay Wiring Tech Order Installation to the wire tray
 - M072-794746: Orbiter Tech Order to install wiring from wire tray to TriDAR
- VA72-200208: Cargo Arrangement expected 02/23/09

Testing

- Pre mate test will be covered by OMRS F2 V4
- Post mate will be covered by a chit and will be developed by NEPTEC and Orbiter

Hardware Deliveries

- Cable Harnesses – 46P77983 (New), 46P77W121 (MOD), 46P77W349 (Re-Make)
 - Hardware delivery date: 02/20/2009
 - Certification approval date: 03/28/2009

STS-128 LSFR

Cargo Close Clearance Process

- The following Close Clearance areas have been identified as standard close clearance for MPLM flights and will require as installed measurements:
 - MPLM Scuff Plate to MPM ECD: DLSFR

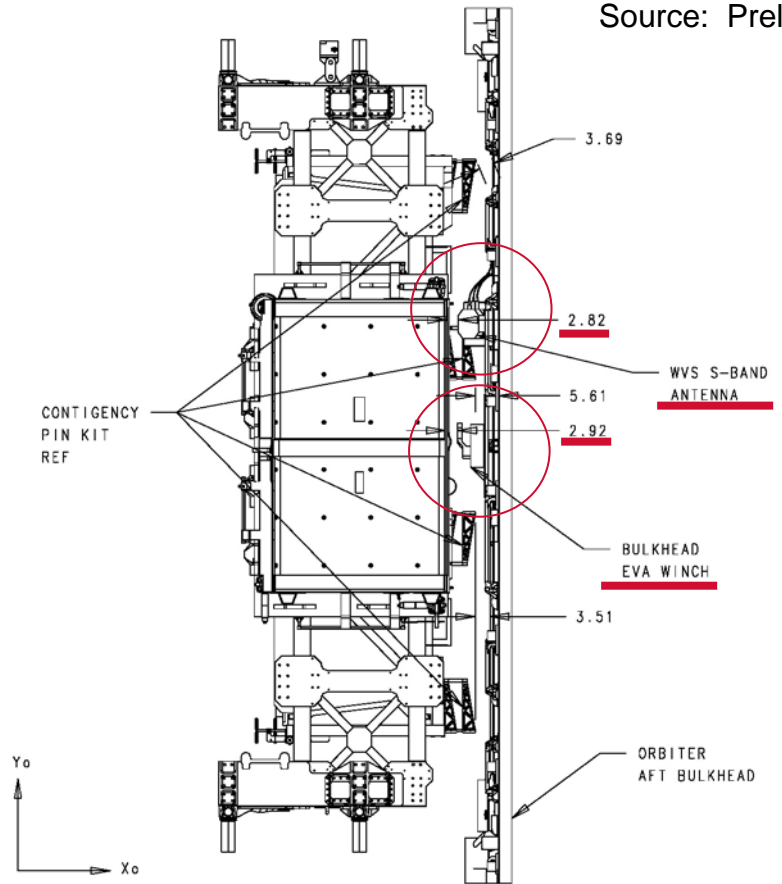
Close Clearance Identified During the CIR

- Potential Measurement of LMC
 - Clearance issue identified between the ATA on LMC to aft bulkhead EVA winch and WVS Antenna
 - Clearances <1" are at liftoff and landing (transient data)
 - To fly the hardware, the following must be completed:
 - ISS CAD will be requested to DPA the ATA on the LMC
 - Chit will be written to get as-installed measurements if feasible
 - KSC determine feasibility ECD: DLSFR
 - Working to possible removal of the aft bulkhead winch and WVS antenna
- Issues and Concerns
 - Measurements will not be applicable to returning ATA
 - Will need to request full tolerance stack-up to assess returning ATA
 - Deflections based on motion at LMC and not ATA specific point
 - May get better or worse with VLA data

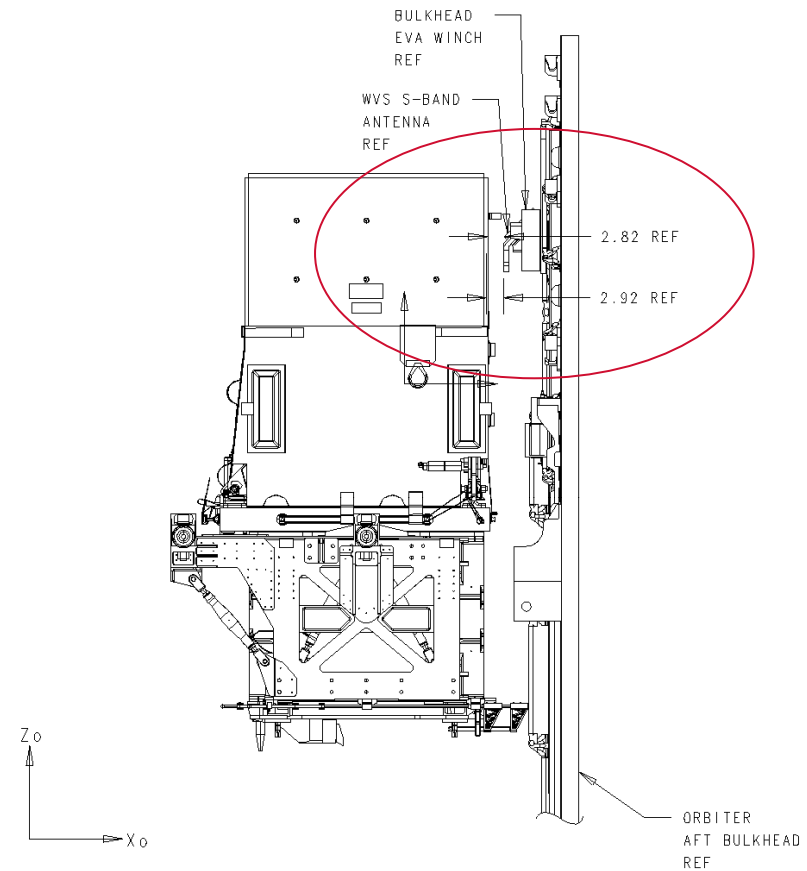
STS-128 LSFR

Potential Close Clearance Points on LMC for STS-128

Source: Preliminary draft of PIRN A05665



VIEW LOOKING DOWN
LAUNCH CONFIGURATION
SELECT AFT BULKHEAD HARDWARE OMITTED FOR CLARITY



VIEW LOOKING INBOARD
LAUNCH CONFIGURATION
SELECT AFT BULKHEAD HARDWARE OMITTED FOR CLARITY

STS-128 LSFR
OV-103 FLIGHT 37

Belinda Soublet
USA Orbiter Element

January 29, 2009



STS-128 OV-103 Flight 37 – Orbiter LSFR Updates

Modifications To Be Baselined at LSFR for OV-103 Flight 37

- No mandatory modifications to be base-lined

TPS Priorities list – Updates

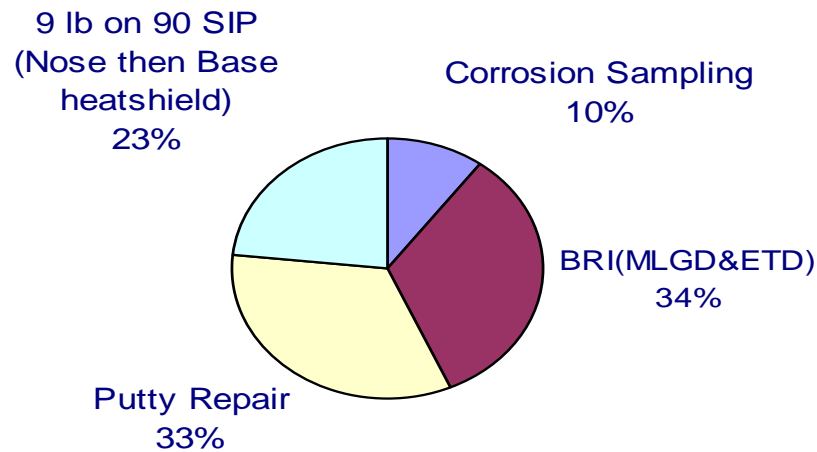
Chit list - Updates

Backup

- Previously base-lined modifications (info only)
- Potential / pending modifications (info only)
- Engineering, Hardware and Certification Status
- Mod Record/MECSLSI Updates (info only)

Allocation Breakdown for OV-103

TPS Priorities



- Orbiter's expectations for the work areas are shown on the pie chart for STS-128
 - Exact numbers are determined by the KSC Team based on vehicle configuration, access, and flow duration
 - Distribution provides data/risk reduction in all areas of the list
 - °Does not allocate all the resources in one area

OV-103 STR/TPS Priorities

Mandatory

- Flight damage, OMRS Rqmts/Chits, LRU access, & deferred work
 - Corrosion Sampling (10% of total tile allocation) **Chit J6275A**
 - Putty repairs, second set – 5 tiles remain on OV-103
 - Putty repairs in RCC & Window DTA Zones of influence (10 tiles) (**Chit pending**)
 - Continue G/F R & R on a best effort basis - zones 2B subset
 - Deferred work may be re-deferred with acceptable inspection

Prioritized Opportunity

1. BRI-18 Tile - MLGD (28 Tile) - **Complete**
1st subset – FWD and O/B corner – 14/door
 2. BRI-18 Tile - MLGD FWD Edge (22 Tile) - **Complete**
2nd subset – fwd & O/B sides – 11/door
 3. BRI-18 Tile - MLGD O/B Side (18 Tile) - **Complete**
3rd subset – O/B sides – 9/door outboard side
 4. BRI-18 Tile - STR side of ET Doors (20 Tile) - **Complete**
4th subset – ET Doors – 10/door
 5. BRI-18 Tile – LESS Carrier Panels 8-10 (24 Tile) – **Complete**
5th Subset – LESS Hot Panels – 12/side
-



OV-103 STR/TPS Priorities (cont)

6. BRI-18 Tile – STR side of ET Doors Inboard side – AFT 4 Tiles (8 Tile) – **Complete**
7. Inboard Elevon “Hub” Tile Modification – (both sides) – 4 Tiles – **Complete**
8. I/B Elevon 9lb/90 SIP Upgrade to FRCI-12 – 34 Tiles (17/side) – **Complete**
9. O/B Elevon 9lb/90 SIP Upgrade to FRCI-12 – 6 Tiles (3/side) – **Complete**
10. MLGD – Outboard Middle 1/3 - (6 Door/6 STR) – **None completed**
- 11. ET Door – Remaining STR side of door & leading edge on door – 40 tiles (24 STR/16 door) – **39 remaining**
12. MLGD – Outboard Aft (1/3 left) 6/door/6 STR)- 24 Tile – **None completed**
13. Nose Area 9lb/90 SIP Upgrade to FRCI-12 – 14 Tiles (7/side) – (103* 16 tiles, thruster) – **15 remaining**
14. Base Heat Shield Stinger 9lb/90 SIP Upgrade to FRCI-12 – 42 Tiles (32/stinger, 10/Box Attach point) – **34 remaining**

OV-103 STR/TPS Priorities (cont)

15. Gap fillers in Subset 2B (Line across MLGD edge) – **3 zones remaining**

16. BRI-18 Tile – Remaining MLGD (Top Priority)/ET Door/LESS carrier panels/NLGD

1. MLGD (Inboard forward edge working to AFT door edge) – **None Completed**

2. ET Door – **23 remaining**

3. LESS - panels 8, 9, 10, 7, 6, 5, 4, 3, 2, 1, 11, 12, 13 (in that order) – **61 tiles remaining**

3. NLGD (attrition – do leading edge first) – **111 tiles remaining**

17. Mod work LESS internal (WLE sneak flow, WLE Horsecollar Gap Fillers) – **6 locations remaining**

18. MADS Instrumentation Failures (placeholder)

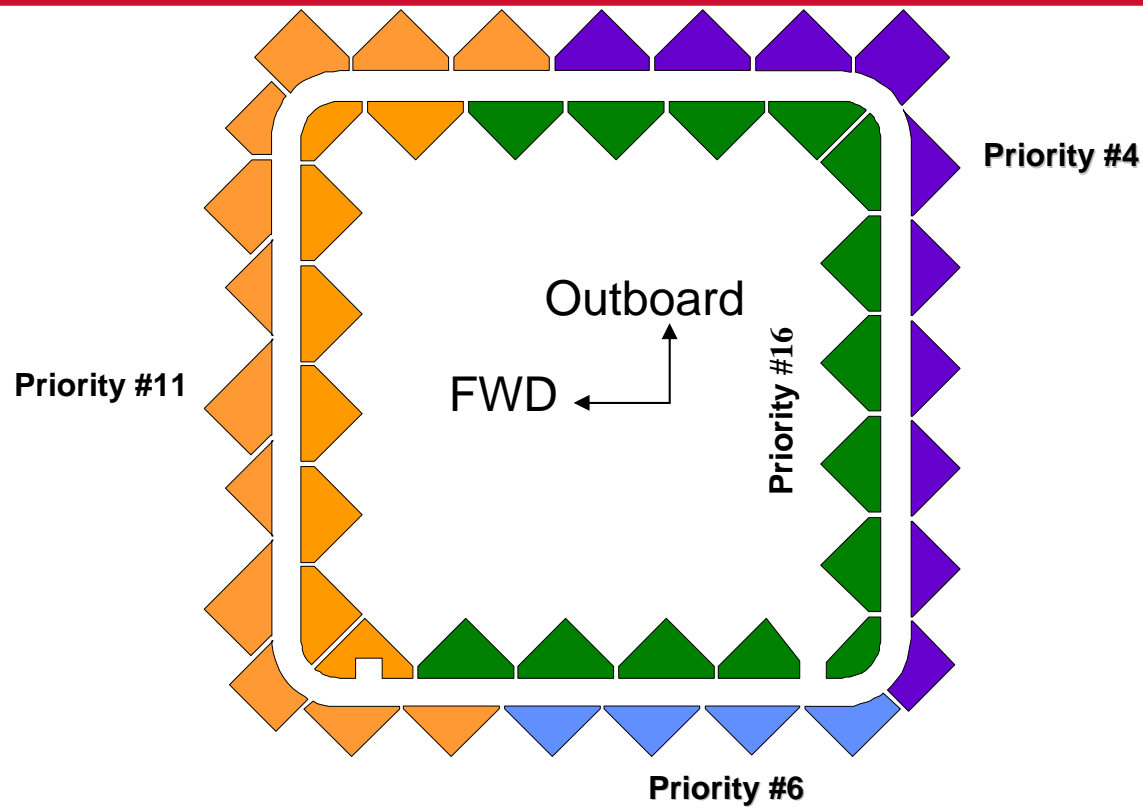
19. Remaining Gap Fillers & Window BRI-18 - **122 remaining**





Windows 2, 3, 4, & 5 Upper Carrier Panels (top priority)

STR/TPS Priorities Current Vehicle Status

Priority Number	Total	OV-103	OV-104	OV-105
1. BRI-18 Tile - MLGD FWD O/B Corner	28	complete	complete	complete
2. BRI-18 Tile - MLGD FWD Edge	22	complete	complete	complete
3. BRI-18 Tile - MLGD O/B Side	18	complete	complete	complete
4. BRI-18 Tile - STR side of ET Doors	20	complete	complete	complete
5. BRI-18 Tile – LESS Carrier Panels 8-10 (103 & 104)	24	complete	complete	n/a
6. BRI-18 Tile – STR side of ET Doors I/B	8	complete	1	complete
7. Inboard Elevon “Hub” Tile Mod	4	complete	2	complete
8. I/B Elevon 9lb/90 SIP	34	complete	20	complete
9. O/B Elevon 9lb/90 SIP	6	complete	complete	complete
10. MLGD – Outboard Middle 1/3	24	0	0	3
→ 11. ET Door remaining STR side	40	1	7	0
12. MLGD - Outboard AFT 1/3	24	0	1	1
13. Nose Area 9lb/90 SIP	14 (16 ^{OV-103})	1	0	0
14. Base Heat Shield 9lb/90 SIP	42	8	Complete	33
15. Gap fillers in Subset 2B	5 Zones	2	1	0
16. Remaining BRI-18 - MLGD (top priority) / ET / LESS carrier panels / NLGD	MLGD 100	MLGD 0	MLGD 1	MLGD 0
	NLGD 123	NLGD 12	NLGD 19	NLGD 26
	LESS 68 (90 ^{OV-105})	LESS 7	LESS 5	LESS 12
	ET Door 28	ET Door 5	ET Door 0	ET Door 0
17. Mod work LESS internal	44 locations	38	39	complete
19. Remaining Gap Fillers & Window BRI-18	124	2	2	18
Structural Corrosion Sampling Plan	See Special Chart			
2nd Subset Putty Repair Removals	11 / 6 / 5	6	complete	0

ET Door Rankings



-  **Priority 4 Aft STR side of door and outboard wrap around (10 tiles per door)**
-  **Priority 6 Inboard STR side of door (4 tiles per door)**
-  **Priority 11 leading edge and remainder of STR Side of perimeter. (20 tiles per door)**
-  **Priority 16 remaining BRI-18 (14 tiles per door)**

STS-128 Chits

Chit #	Title	Status
J6116	Ames Gap Filler R&R	Approved
J6163	OV-103 Body Flap Power Drive Unit Gearbox Fluid Level Inspection	Approved
J6275A	Orbiter Structure IMLSurface Corrosion Sampling Insp	Approved
J6341A	Evaluation of OMS Pod LI-900 Tile Installed on 0.90" SIP	Approved
J6384	BLT Tempilabel Assessment	Approved
J6392	Pre and Post Flight Optigo Scan of Protuberance Tile (Port Wing) to support the BLT Flight Experiment	Approved
J6402	Micro Inspection of Captive Gap Fillers	Approved
J6410	Aft Stub Cracked Tile Inspection	Approved
J6414A	Rudder Speed Brake thermal tab Inspection	Approved
J6434	OV-103 Putty Repair	Approved
J6443	Z-Scan of BLT Protuberance Tile	Approved
J6447	STS 126 Post Flight Inspection and Contamination Sampling of Laser Camera System & Orbiter Locations	Approved
J6453	NLGD Thermal Barrier Friction Test	Approved
J6466	OMS Pod Pillow Gap Filler Installations	Pending
J6467	OMS Pod Weighing	Pending

STS-128 Chits cont'd

Chit #	Title	Status
J6XXX	GPS MAGR Link-008 Software Update	Potential
J6XXX	PLBD C/L Actuator R&R	Potential
J6XXX	ET Door PDU R & R	Potential
J6XXX	Primary Thruster PC Tube Flush	Potential
J6XXX	BLT Protuberance Tile Removal	Potential
J6XXX	MDM FF4/FA4 R&R	Potential
J6XXX	LMC Close Clearance Measurements	Potential
J6XXX	MPLM Close Clearance Measurements	Potential
J6XXX	TriDAR optics and retest requirements	Potential
J6XXX	Putty repairs in RCC & Window DTA Zones of influence (10 tiles)	Potential

KSC Launch and Landing Project
STS-128
Launch Site Flow Review

January 29, 2009

Agenda

- OPF Resource Summary S.Stilson / NASA
- Milestone Interface Chart S. Stilson / NASA
- Flight Element Processing W.Bingham / USA



Multi Flow

S.Stilson

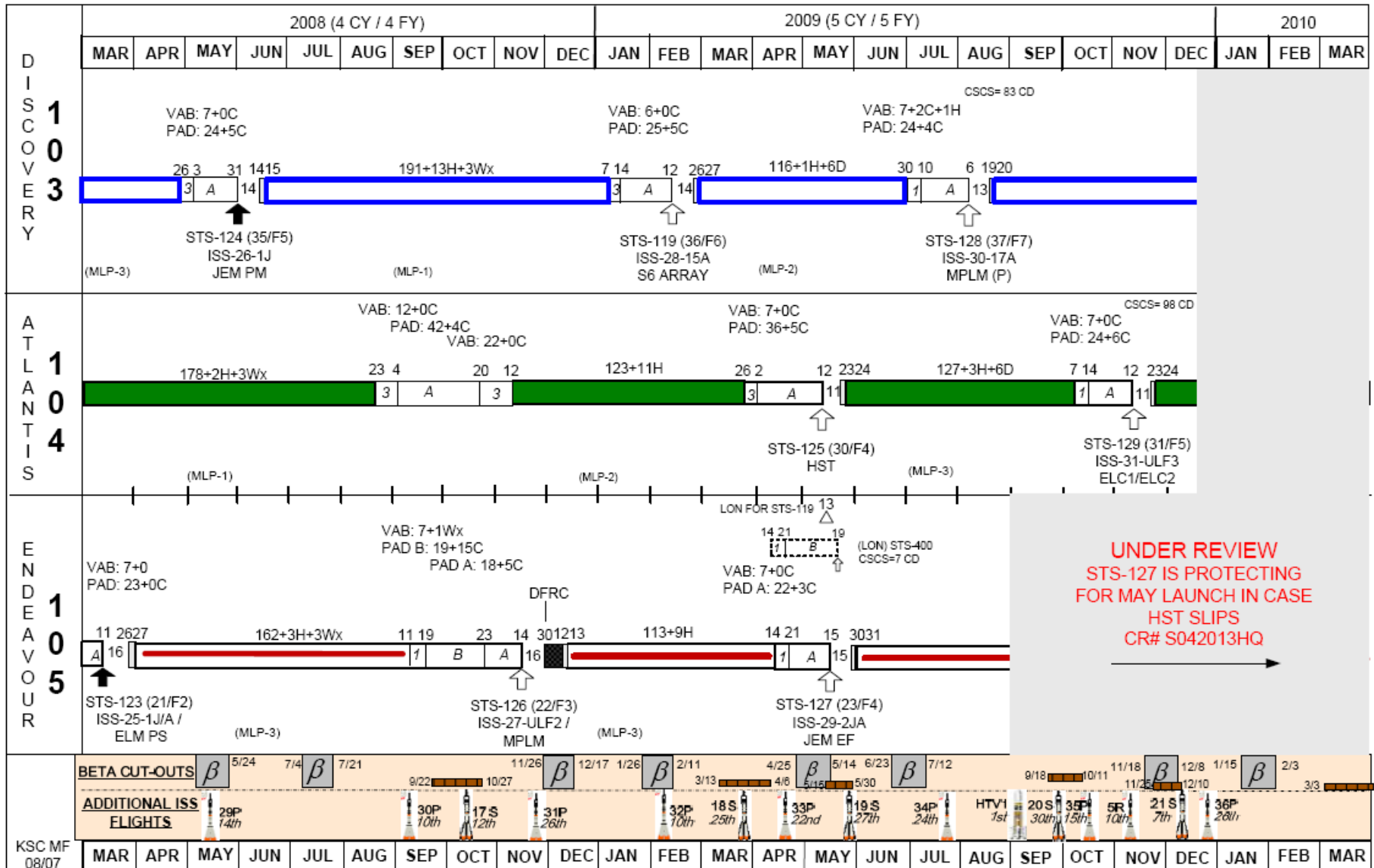
KSC ASSESSMENT / ORB MULTI-FLOW

◆ KSC ASSESSMENT (SLIP or OPTION)

SSP APPROVED MANIFEST (CR# S042013HQ)

* DENOTES CHANGES TO BASELINE MANIFEST

0800 EDT, 16 JAN 2009



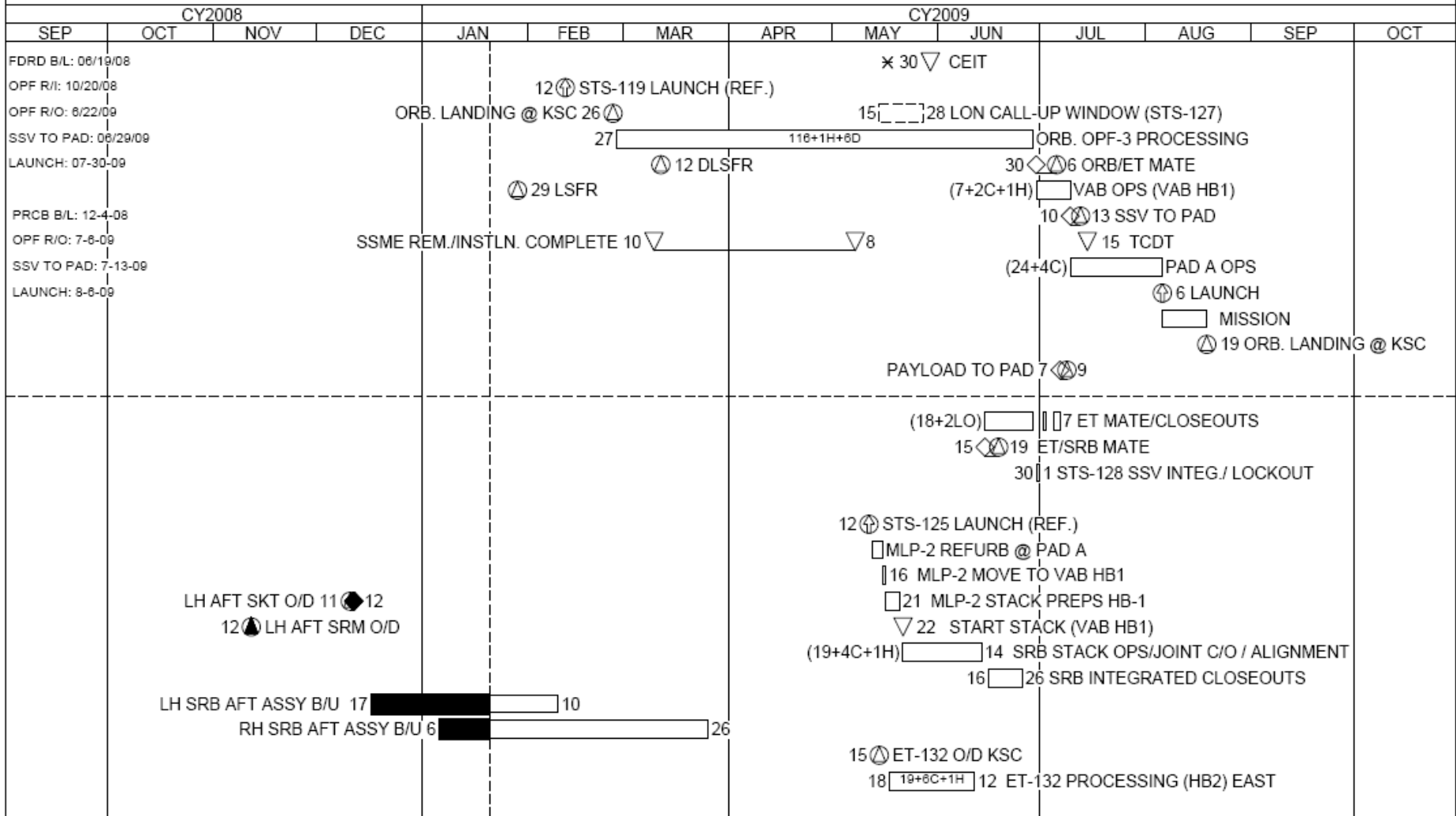
LEGEND H = HOLIDAY D = DRYDEN RESERVE C = PAD CONTINGENCY OFF-1 OFF-2 OFF-3 Vehicle out of service S = SOYUZ P = PROGRESS

STS-128 KSC Milestone Interface Chart

OPR: USA - R. GILLETTE, INTEG. OPS.
NASA - C. FORD, PH-O

OV-103/37/ ISS-30-17A / MPLM
CREW / DURATION: 7 / 13
ET 132 / B1139/ RSRM 107 / MLP-2 / PAD-A / VAB HB1

SSP APPROVED PRCB 12-4-08 (REF. CR# SO42013HQ)
Status as of:
01/21/2009



THREATS:

1. MLP-2 TURNAROUND
2. SRB STACKING IS CRITICAL PATH
3. ET/SRB INTEGRATED IN PARALLEL WITH FULL SRB INTEGRATED C/O's

NOTES: 1. THIRTIETH ISS/SSP FLIGHT

Flight Element Processing

W. Bingham

Flight Element Processing Overview

- **Milestone Summary** **To Be Presented**
- **Significant Processing Deltas** **To Be Presented**
- **TPS Status** **To Be Presented**
- **Issues and Concerns** **To Be Presented**

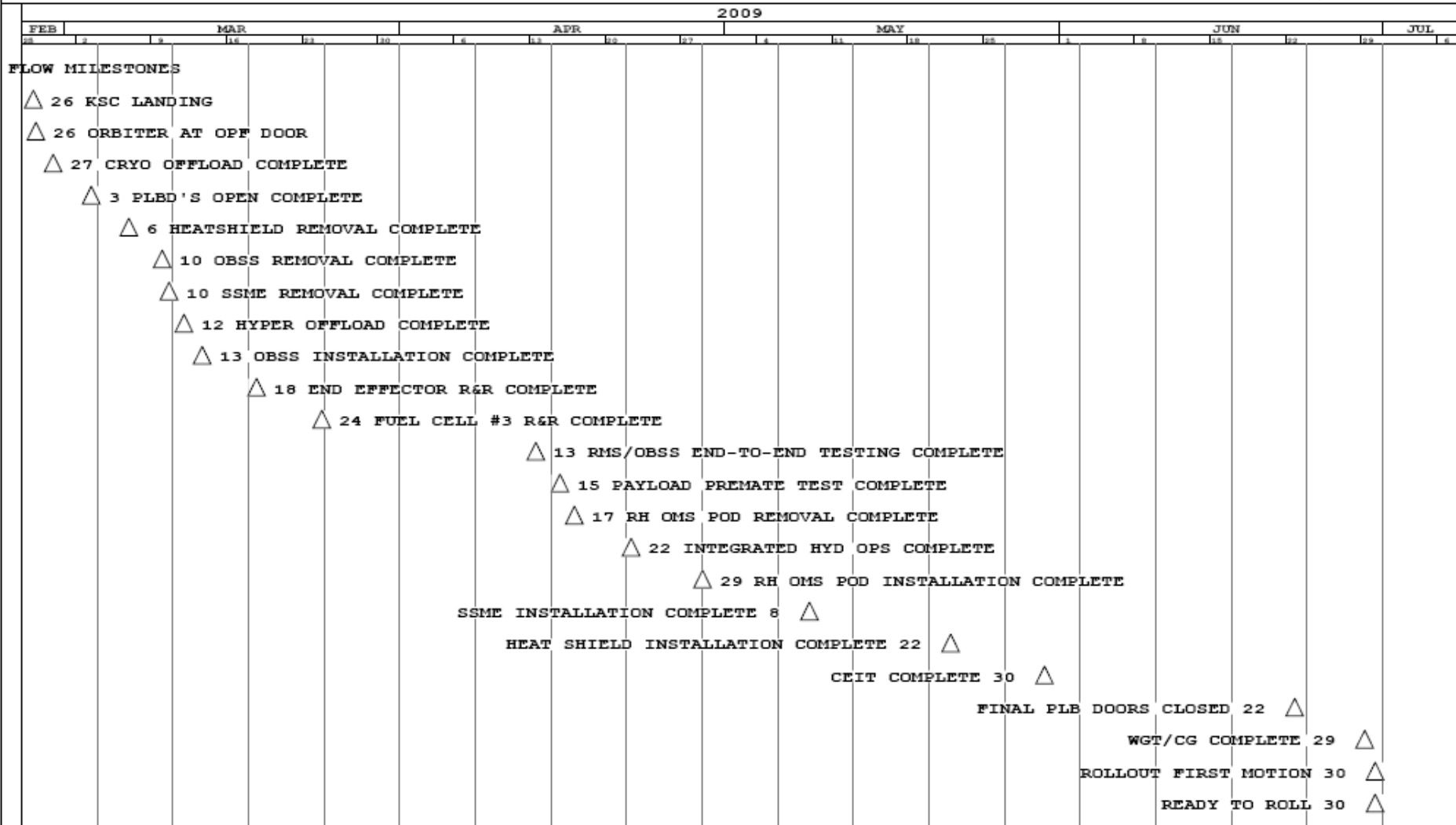
STATUS

USA	NASA
C	C
OPF00000	OPF00000

STS-128/OV-103 OFF FLOW MILESTONES
DOWN PAYLOAD: ISS-28-16A/ UP PAYLOAD: ISS-30-17A MPLM(P)

Creation Date: 29-SEP-2008
Revision Date: 14-JAN-2009
Revision : B

OPR:USA-BINGHAM, WAYNE W
NASA-STILSON, STEPHANIE S



△ PLAN/BASELINE ◇ DEVIATION FROM BASELINE ▲ ◆ ACTIVITY COMPLETED △ ACTIVITY CANCELED △-△ ACTIVITY DURATION **** SCHEDULE CHANGE

Significant Processing Deltas

- Major Components Removal / Replacements
 - R/H Pod Removal
 - OBSS Removal
 - Fuel Cell # 3 Removal and Replacement

- MODS
 - APU 3 GN2 Heater Mod
 - BLT Tile

STS-128 Preliminary Cavity Estimate

Projected TPS Removals

<u>Priority</u>	<u>Description</u>	<u>LSRR</u>
Mand	Deferred Tile/ Fib	16
Mand	In-Flight Damage	*25
Mand	Operational Damage	*20
Mand	BLT Mod (1-Trip Tile/1-Cover Tile)	2
Mand	Putty Repair/ Grindouts	*14
Mand	2 nd Subset Putty Repair removals (Chit J6434)	5
Mand	Additional Putty Removals (Chits)	*10
Mand	Corrosion Sampling	5
Prelim	Body-Flap Instrumentation (Pending Post Flt / Priorities)	2
Mandatory Total		*99
Risk Reduction:		
	Main Landing Gear BRI	24
Projected TPS CAVITIES TOTAL (Estimate)		*123

Issues and Concerns

- **APU 2 S/N 403 Exception**
- **Aft Starboard Radiator Retract Hose Flight Extension**
- **Diode Issues**
 - MDM FF 4**
 - MDM FA 4**
- **Freon Loop # 1 Moisture Issue---Sample and Re-defer**
- **Flow Control Valves---Hardware Deliverables**
- **GFE---Hardware Deliverables**
- **ET Door PDU Remove And Replace---Hardware Deliverables**
- **Payload Data Interleaver (Spare PDI) Comes from OV-104 or OV-105**

STATUS

OPR: USA - J. Taylor, INTEG FM (1-7420)
NASA - S. Stilson, PH-A (1-9103)

USA NASA

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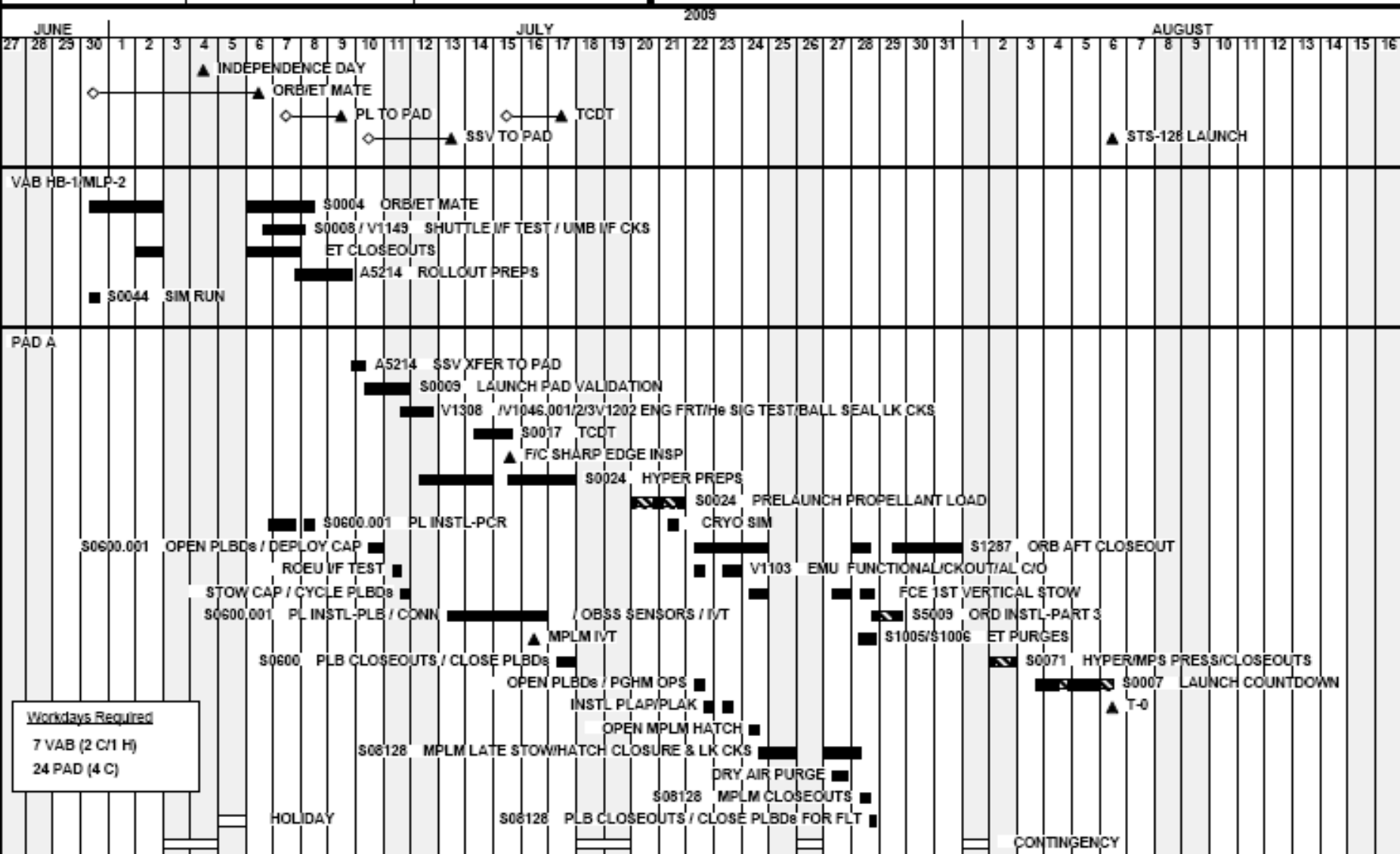
CONCUR

Creation Date: 18 NOV 08
Revision Date: 08 JAN 09
Revision: B-2

STS-128 / OV-103

Integrated Operations Assessment Summary

Payloads: ISS-30-17A MPLM (VERT)





STS-128 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-29-2009**

Backup Material

FRWG Presentation (With Minor Changes)



	Presenter MO3/Shelby Lawson	
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Flight Operations and Integration (FO&I)

Flight Requirements:
MIP, PIPs, CIP
FDRD
FRD

Backup Charts



STS-128/17A		Presenter MO3/Shelby Lawson
Mission Requirements Status		Date 01/29/09 Page 7

Documentation

ECD/Status

MIP – ISS 17A – NSTS 21546, Rev A, Chg 1-2 (9/25/08)

CR-0009: Mission Priorities Update	02/11/09
CR-0010: Update to Utilization Payloads: Appendix E	02/11/09
CR-0011: LiOH Update	02/11/09
CR-0012: TriDAR ICD Update	02/11/09
CR-0013: Define Section 9.0: Middeck Non-Utilization Hardware	02/11/09
CR-0014: Increase Crew Compartment Control Weight	02/11/09
CR-0015: Add ISS On-Orbit Configuration Figures	02/11/09
CR-0016: LMC Crew Aids Hardware Update	02/11/09

CIP- LMC, NSTS 21494, Rev B, Chg 1-12 (8/14/08) STS-128 Addendum

CR-0027: EuTEF Power Requirement Revision	02/11/09
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PIP – MPLM, NSTS 21499, Rev B, Chg 1-2 (12/7/07)

None Pending

PIP – MAUI, NSTS 21530, Basic, Chg 1-2 (5/5/08)

None Pending

PIP – SEITE, NSTS 21542, Basic (11/19/07)

None Pending

PIP – SIMPLEX, NSTS 21327, Rev A (6/16/08)

None Pending

PIP – MISSE 6a and 6b, NSTS 21537, Basic, Chg 1-3 (01/24/08)

None Pending

IP-DTO-701A TriDAR AR&D Sensor, NSTS 21547, Basic (06/05/08)

None Pending

IP– RMS Sideview Camera (RCS), NSTS 21418, Chg 1-3 (06/28/05)

None Pending

FDRD –

None Pending



STS-128/17A FRD Status		Presenter USA/Frank Richmond
Date 01/29/09	Page 8	

- **STS-128 Latest FRD Revision**
 - Revision 005: Dated, January 16, 2009 (<https://sspweb.jsc.nasa.gov/efrd>)
- **Approved CRs to be incorporated into next FRD Revision**
 - None
- **Open/Pending CRs**
 - **FRD17462-128-014 – Add SAFER to STS-128**
 - **ECD: 02/03/09**
 - **FRD17462-128-015 – Offload GN2 for STS-128**
 - **ECD: 02/03/09**
 - **FRD17462-128-016 – Add DSO 640 to STS-128 Flight Requirements Document**
 - **ECD: 02/03/09**
 - **FRD17462-128-xxx – Remove 5 MLE bag**
 - **FRD17462-128-xxx – Remove Aft EVA Winch**
 - **FRD17462-128-xxx – Remove Aft WVS Antenna**

Cargo Engineering Backup

STS-128 LSFR

OMRSD

- FII V2 (Post-Mate)
Baselined Files

- P350 Multi-Purpose Logistics Module (MPLM)
- P430 SL/ORB Generic I/F Requirements (LMC)

RCNs

- PP17785 P546 – ISS-17A Baseline

Release

09/25/08A

Baseline

01/23/09

- FII V4 (Pre-Mate)

RCNs

- DPS12547 Mission-Unique List
- DPS12548 FIII MUL
- TBD Adjacent Pin Test

Release

03/06/09

03/06/09

03/06/09

Baseline

03/27/09

03/27/09

03/27/09

- FII V6 (Shuttle Experiments)

- None

- Issues / Concerns

- None

STS-128 LSFR

ICD Status (* = Impact Flight Products)

Document	Title	ECD	Status
ICD-A-21342	ODS-ISS	05/24/96	Baselined
• A05689*	ODS Config 7 for TriDAR	01/23/09	In Review
ICD-A-21494	Lightweight MPRESS Carrier (LMC)	12/08/00	Baselined
• A05665*	Update Section 3 Struc/Mech Figures	01/15/09	In Review
• A05683*	Resistance between the LMC and the Y-LUG	02/09/09	In Review
• A05688	Add interface Loads Document on all flights	02/16/09	In development
ICD-A-21537	MISSE 6	07/10/07	Baselined
ICD-A-21350	MPLM	02/12/96	Baselined
• A05691*	Incorporate Latch Guide Section 20	02/26/09	In Development
• A05692	Incorporate IDD-ISS IRNs	02/23/09	In Development

STS-128 LSFR

ICD Status (* = Impact Flight Products)

<u>Document</u>	<u>Title</u>	<u>ECD</u>	<u>Status</u>
ICD-A-21429	DTV	03/10/99	Baselined
ICD-A-21449	MINICAM/Downlink	01/28/99	Baselined
ICD-A-21264	OIU	08/17/95	Baselined
ICD-A-21403	SSV	03/17/97	Baselined
ICD-A-21420	VPU	01/14/98	Baselined
ICD-A-21418	RSC	12/16/98	Baselined
ICD-A-21342	ODS-ISS	05/24/96	Baselined

STS-128 LSFR

Standardization

- **Mission Configuration does comply with Orbiter/Payload Integration Standardization Document NSTS 60523**

Rescue Flight Status

- **STS-328 Reconfiguration Engineering Products will be developed by the Engineering Order To Follow (EOTF) Process**

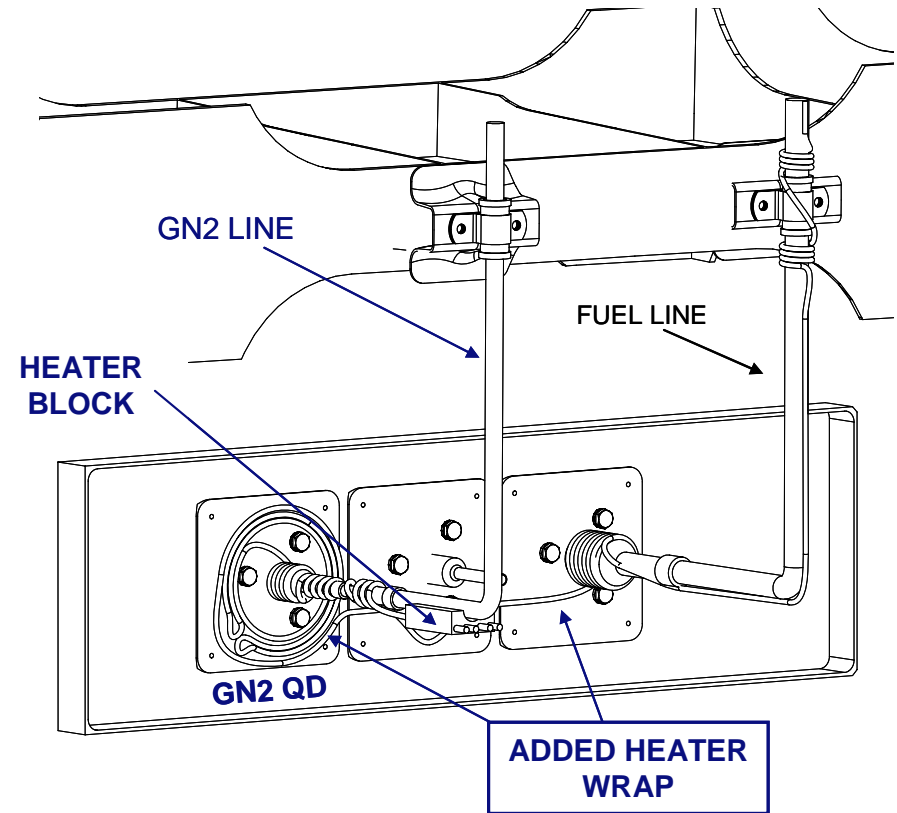
STS-128 LSFR BACKUP

- **Previously baselined modifications (info only)**
- **Potential / pending modifications (info only)**
- **Engineering, Hardware and Certification Status**
- **Mod Record and MECSLSI Updates (info only)**

STS-128 LSFR Previously Baselined Mod for OV-103 Flight 37

• TAD 30189 APU GN2 QD Heater Mod

- Completion of mod which adds heaters to APU GN2 QDs to mitigate the most likely cause of GN2 system pressure decay observed on previous flights
 - Increasing the temperature of the GN2 QD expected to mitigate leak potential
 - Heaters added to systems 1 and 2 QDs for STS-119 OV-103 Flt 36
- Heater mod will be installed on system 3 QD during the Flt 37 flow pending no performance issues during STS-119
 - Existing system 3 fuel fill line will be replaced with a longer heater and the extra length will be used to heat the system 3 GN2 QD
- Engineering is released
- Hardware required is in stock in logistics inventory



HEATER LAYOUT SYSTEM 3

TEST LINE NOT SHOWN FOR CLARITY

STS-128 Attrition Mod Pending Program Authorization

• TAD 30245 ET Door Pressure Seal Design Change

- Design change to allow 0.005" TFE coating on the ET Door pressure seals.
- The vendor (Kirkhill) is unable to manufacture ET Door Seals per current design with 0.010 coating, however can manufacture with 0.005" Teflon coating
 - There is an insufficient quantity of ET Door seals in Logistics inventory to meet end of program requirements – procurement of additional seals is required
- The new design will be Qual Tested (thermal only) to ensure the existing Certification requirement of no degradation over one mission is still met and will utilize M&P analysis supporting the change
- Implementation of this change is by attrition on all vehicles
 - OPO approved 1/12/09 OCCB
- Completion of certification activities and engineering release ~mid-March 2009



Potential Mods (Info Only)

The following are mods that are in development stages in Orbiter and may be brought forward at a future freeze point review:

- 30091 Boundary Layer Transition (BLT) DTO
 - Flight 2 - Increased protuberance height
 - Pending assessment of STS-119 (flight 36) data with 0.25” protuberance
- 30183 CEV TPS Materials (Catalytic Coating) DTO
- 30231 Rudder Speed Brake Thermal Clip Redesign
- TBD Tyvek Cover Design Enhancement
- TBD Flight Deck Soft Window Shade Redesign

The following mods are partially completed but not baselined for STS-128. These will be requested to be baselined OSB if opportunity / priority arises:

- 19735 WLE Spar “Sneak Flow” Protection (RH & LH panels 2-4)
- 19763 Lower WLE CP Horse Collar Gap Filler Redesign (RH & LH panels 2-4)
- 23227 Connector Saver (ME414-0630) Redesign (LH OMS Pod, Ku Band)

LON Requirements, if necessary

- 19798 LON Crew Rescue Recumbent Pallet System
- 19760 Recumbent Seat Kit (Seat 8) Rail Assembly

Engineering, Hardware and Certification Status – Baselined Mods

MCR NO.	MCR TITLE	Est. Engr Release (MM/DD/YY)	G.O. Engr Need (MM/DD/YY)	Est. Hdwe Delivery (MM/DD/YY)	G.O. Hdwe Need (MM/DD/YY)	MOD/CERT GO / NO-GO	CERT SUBMITTAL DATE	CERT APPROVAL DATE (ESTIMATE)	CERTIFICATION CR / CAR (BOEING)	REMARKS
Mods Authorized for STS-128										
30189 Antonios	APU QD Heater Modification APU system 1 experienced pressure decay on-orbit during STS-121 (OV-103) and STS-123 (OV-105) - pressure decay was not evident on the ground prior to launch. The GN2 QD was isolated as the most likely source for the leak. Tests of the two QDs which exhibited on-orbit leakage indicated that leakage occurred as a result of the effects of contamination (including hydrazine) on the QD poppet sealing surface and the cold environment of space. Replacement of the poppet and seal assembly following STS-121 resulted in no leakage during the 3 subsequent flights of OV-103. Testing has demonstrated that cold temperatures must be present for a leak to occur, therefore, increasing the temperature of the GN2 QD expected to eliminate the leak condition. Mod partially implemented during flight 36 flow - heaters added to system 1 and 2 GN2 QDs for STS-119. System 3 will be modified during the flight 37 flow (assuming no issues with STS-119 performance). Existing system 3 fuel fill line will be replaced with a longer heater and the extra length will be routed / used to heat the system 3 GN2 QD.	Released (a)	N/A	N/A (b)	N/A	Go (c)	1/15/09 A	1/20/09 P	CAR 01-09-000002-002Q	(a) APU and Wiring engineering is 100% released. (b) Parts available on site (c) No technical issues - pending successful performance of systems 1 and 2 during STS-119 Baselined at STS-128 LSRR

Engineering, Hardware and Certification Status – Mission Kit Mods

MCR NO.	MCR TITLE	Est. Engr Release (MM/DD/YY)	G.O. Engr Need (MM/DD/YY)	Est. Hdwe Delivery (MM/DD/YY)	G.O. Hdwe Need (MM/DD/YY)	MOD/CERT GO / NO-GO	CERT SUBMITTAL DATE	CERT APPROVAL DATE (ESTIMATE)	CERTIFICATION CR / CAR (BOEING)	REMARKS
Mission Kit Changes Authorized For STS-128										
30164 Antonios	TriDAR (DTO-701A) Installation The autonomous rendezvous and docking sensor (TriDAR) will be integrated into the Orbiter system to demonstrate technology for autonomous rendezvous and docking in Low Earth Orbit. The sensor will be mounted on the airlock truss next to the Trajectory Control Sensor (TCS) 2 in the TCS 1 location which is no longer used. Hardware furnished by GFE and installed by Boeing TCS tech order which will be updated to establish a unique TriDAR installation configuration	Released (d)	N/A	N/A (GFE) (e)	TBD	Go (f) TBD (GFE) (e)	1/15/09 A 1/15/09 A	2/27/09 P 2/27/09 P	CR 09-362000-001CK CAR 72-09-362000-001CK	(d) Tech order installation engineering is released – minor engineering cleanup may be required to transfer to OV-103 end item (originally issued for OV-104 installation) (e) Hardware delivery and LRU certification is GFE responsibility. Per 12/16/08 OCCB brief, delivery of TriDAR flight unit KSC ~L-4 months (target on-dock April 15, 2009) (f) Boeing certification for LRU & TCS thermal blanket installation Ref OCRD S165322 Baselined at STS-128 LSRR
17222 Kadni	RMS End Effector Change In response to an End Effector on-orbit anomaly (back up release stalled) on STS-103, two design mods are being incorporated during planned End Effector refurbishment. 1) The Spring Return Assembly was altered to improve the output torque drive efficiency and reliability. Background: The Back-up release mechanism does not deliver enough torque to overcome minor anomalies, such as debris in some gear passes. Gear ratios were modified on two gears to provide additional torque (2X) and material changes (nitride coating) were made to decrease wear due to mission vibration loads. 2) The Energy Absorber shaft material and processing were changed to reduce chipping of the nitride coating. Background: The Energy absorbers are deteriorating faster than expected, exacerbating wear of some gears. Energy absorber changed to a stronger material (AerMet 100) and coated with ion nitride. Boeing update to the Remote Manipulator Arm Tech Order Installation drawing (M072-544502) implemented to reflect this new -13 EE replacing the -11 EE configuration.	Released	N/A	Feb 2009 (g)	N/A (g)	N/A (g)	N/A	N/A	N/A	Ref M072-544502 C01 V082-000002 end item EO not released (g) Hardware delivery and certification is NASA GFE responsibility. Boeing certification not affected. Ref OCRD S165341 Placeholder Record authorized at LSRR. MECSLSI update previously picked up as part of CIR process.

Engineering, Hardware and Certification Status – Pending Attrition Mod (Info Only)

MCR NO.	MCR TITLE	Est. Engr Release (MM/DD/YY)	G.O. Engr Need (MM/DD/YY)	Est. Hdwe Delivery (MM/DD/YY)	G.O. Hdwe Need (MM/DD/YY)	MOD/CERT GO / NO-GO	CERT SUBMITTAL DATE	CERT APPROVAL DATE (ESTIMATE)	CERTIFICATION CR / CAR (BOEING)	REMARKS
Potential Mods										
30245 Billeter	ET Door Teflon Seal Design Change (Attrition) Design change to allow 0.005" TFE coating on the ET Door pressure seals. The vendor (Kirkhill) is unable to manufacture ET Door Seals per current design with 0.010 coating, however can manufacture with 0.005" teflon coating There is an insufficient quantity of ET Door seals in Logistics inventory to meet end of program requirements – procurement of additional seals is required, The new design will be Qual Tested (thermal only) to ensure the existing Certification requirement of no degradation over one mission is still met and will utilize M&P analysis supporting the change.	3/18/09	TBD	N/A (K)	TBD	No Go (J)	3/18/2009 P	4/29/09 P	06-03-352000-001E	(j) Completion of certification testing and engineering release ~mid-March 2009. Requires thermal certification testing / validation of the reduced Teflon coating thickness. (K) Hardware to be provided by Logistics by attrition Approved at 11/25/08 OCCB (OCD S165385 authorized 1/12/09) to proceed with certification testing and design change pending successful certification testing



Mod Record / MECSLSI Updates for Pending Attrition Mods (Info Only)

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION
<u>Potential Mods</u>		
30245 Billeter	<u>ET Door Teflon Seal Design Change (Attrition)</u> Design change to allow 0.005" TFE coating on the ET Door pressure seals. The vendor (Kirkhill) is unable to manufacture ET Door Seals per current design with 0.010 coating, however can manufacture with 0.005" teflon coating There is an insufficient quantity of ET Door seals in Logistics inventory to meet end of program requirements – procurement of additional seals is required, The new design will be Qual Tested (thermal only) to ensure the existing Certification requirement of no degradation over one mission is still met and will utilize M&P analysis supporting the change.	<u>Placeholder Record 030245,0103,0</u> - ET Door Teflon Seal Design Change (Attrition)



STS-128 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-29-2009**

Overview

- **SSP System Drawings** **No Issues***
- **SSP Authorized Modifications/Non Standard Work** **No Issues***
- **SSP OMRS Changes (RCNs)** **To Be Presented**



STS-128 Launch Site Flow Review	Presenter MK-SIO / A. Swift	
	Date 1-29-09	Page 1

Mandatory RCNs:

KV17849

V05 - ADD WCCS THERMAL FLOW TEST VERIFICATION

PRELIMINARY

Non-Mandatory Value Added RCNs:

None

STS-128

Launch Site Flow Review

Flight Software Overview

Tom Stansel

USA FSW

FRWG 01/26/09

PRCB 01/29/09

STS-128 LSFR (FSW)

- **STS-128/OV103 Flight Software (FSW) Versions**
 - **First Scheduled Flight of Operational Increment (OI) 34 Flight Software (SASCB SCR 98107A documents PASS and BFS OI-34 content)**
 - **First Scheduled Flight of MEDS IDP VI 07.00/MDUF VI 06.00 (SASCB SCR 98113 documents content)**
 - **Third Scheduled Flight of MAGRS-3S Link 613-996-008 Software (Link-008) (SASCB SCR 98115 documents content)**
- **STS-128/OV-103 Flight Software Payload Support:**
 - **ISS 17A**
 - **Orbiter Interface Unit (OIU)**
 - **Sequential Still Video (SSV)**
 - **Orbiter Docking System (ODS)**
 - **Trajectory Control System (TCS)**
 - **Multi-Purpose Logistics Module (MPLM)**
 - **ISS Caution and Warning (ISSCW)**
 - **Assembly Power Converter Units (APCUs) & Station to Shuttle Power Transfer System (SSPTS) (generic support for both configurations)**
- **Major New Flight Software Support Items:**
 - **None**

STS-128 LSFR (FSW)

- **STS-128 Source Changes/Edits for Primary Flight Software (Base)**
 - SCR 93211A Update of SSMEC Vehicle Data Table (VDT) for Enhanced Accelerometer
 - SCR 93262A Film ET Camera
 - SCR 93267A Removal of the Set and Reset to False Cmds For the RCS Tank Iso Valves
 - DR 126366 SM GPC Failure to Send GCIL Commands
- **STS-128 Patch Implementation for Primary Flight Software**
 - None
- **STS-128 Patch/Edit Implementation for Backup Flight Software (Base) (included on delivered Mass Memory)**
 - None
- **STS-128 Patch Implementation for Backup Flight Software**
 - None

STS-128 LSFR (FSW)

- **Products**

- **STS-128/OV-103 Base Cycle Product delivery schedule (available to field)**

FPSB

- **Shuttle Data Tape**
 - **Mass Memory Unit**

January 15, 2009A

February 09, 2009

- **Open Items**

- **None**

- **Concerns/Issues**

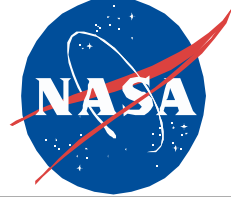
- **No issues or concerns with STS-128 at this time**



EVA Status

STS-128/Flight 17A Launch Site Flight Review

**XA/Maria Tullar
Johnson Space Center
January 29, 2009**



- **Bulkhead PFR – SED33105308-307**
 - Bulkhead PFR installation – Tech Order: M072-661568-029

- **Winches**
 - Forward Winch, SED33101570-327
 - Aft Winch removed

- **Port LWTSA**
 - Port LWTSA installation – Tech Order: M072-660850-005
 - Port LWTSA Tools installation – Tech Order: M072-660853-002

STS-128 Launch Site Flow Review



J.F. KENNEDY SPACE CENTER

17A **STS-128** **MPLM/LMC**

KSC ISS & Spacecraft Processing
Joseph T. Delai, NASA, KSC Mission Manager
Mike Kinslow, Boeing, KSC Flow Manager

Planned Processing Milestones



J.F. KENNEDY SPACE CENTER

PRE-SHUTTLE INTEGRATION ACTIVITIES

Space Station Processing Facility

- ULF-2
 - LMC/ORU Processing 11-03-08 to 06-19-09
 - MPLM Rack Integration 03-23-09 to 05-08-09
 - MPLM Internal/External Closeouts 05-22-08 to 06-09-09
 - MPLM/LMC ICD Walk down 05-22-09 to 06-05-09
 - Hatch Closure 06-18-09
 - Payload to Pad 07-07-09



Planned Processing Milestones

SHUTTLE INTEGRATION ACTIVITIES

Orbiter Processing Facility (U/R)

- Two MISSE FSE plates installation TBD

PAD (U/R)

- Payload to Pad 07/07/09
- Payload installed into Orbiter 07/13/09
- Payload IVT 07/16/09
- Late Stow Operations/Hatch Closeouts 07/24/09 – 07/28/09
- Payload Closeouts 07/28/09
- Launch 08/06/09

KSC/ISS Processing Summary



J.F. KENNEDY SPACE CENTER

Watch Items:

- None at this time

The KSC STS-128/17A - ISS Mission Processing Team is ready to proceed with processing the STS-128 Mission payload complement.



STS-128 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-29-2009**

Backup Material

- **SSP Systems Drawings** Attachment 1
- **SSP Authorized Modifications/Non-Standard Work** Attachment 2
- **SSP OMRS Waivers and Exceptions** Attachment 3
- **Launch Window** (Not Available)
- **Open Configuration Waivers** Attachment 4



STS-128 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-29-2009**

SSP System Drawings

The Drawings Baseline Was Released By PRCB S115128A on 09-29-08

- V072-000001-280 (Rev. VU) Space Shuttle System (Rel. 01-15-09)
 - V072-200208-003 (Rev. A) Mission Equipment Cargo Support (Rel. 01-12-09)
 - SGD32104451-301 (Rev. NC) Crew Compartment Configuration (Rel. TBD)
 - 302 Descent
 - V070-000001-003 Orbiter General Assembly
 - V070-410100-017 SSME Installation
 - 10100-0061-176 Integrated SRB General Assembly (BI-139)
 - 80901000000-530 External Tank Assembly (ET-132)

- STS-128 LSRR + 18 days Mission Configuration Product Plan (MCP) was last published on 01-05-09 and will be republished at ORR - 14 days on TBD.



STS-128 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-29-2009**

SSP System Drawings – (Continued)

Ferry Configuration

- V072-000001-281 (Rev. VU) Space Shuttle System Drawing (Rel. 01-15-09)
- V072-200208-004 (Rev. A) Mission Equipment Cargo Support (Rel. 01-12-09)
- SGD32104451-001 (Rev. NC) Crew Compartment Configuration (Rel. TBD)
- V072-300055-027 (Rev. BT) Ferry Flight Configuration (Rel. 12-11-08)

SCA 905

LW MAR

ML60B 6013 -310
PRIME C/L CAMERA
GFE TV CNTRLR

ML60E 0646 -TBD

PGSCS (6)
STS1=OCA
STS2=WINDECOM
STS3=KFX
STS4=WORLDMAP
STS5=RPOP
STS7=WLES
ACCESS PT ACCESSORIES
WLE CABIN RELAYS
☒ PCS LAPTOP
☒ PWR SPLY CD-ROM

ML60M 6014 -312
B/U C/L CAM
ULTRASONIC LEAK DETECTION

VOL B (MA4D/J) TBD

HYGIENE

VOL 3B (MA75/J) 7425 -326

QUICK DON MASKS(3)
CABIN AIR CLEANER
SPOT (FLASHLIGHT)
G1 CAMCDR/FLASH
D2X/400 MM LENS
12-24 MM LENS

A16 8706 -TBD

35MM CAMERA BAG
PILOT HAND CNTRL

CDR	FREDERICK STURCKOW
PLT	KEVIN A. FORD
M/S #1	PATRICK FORRESTER
M/S #2	JOSE M. HERNANDEZ
M/S #3	DANNY OLIVAS
M/S #4	CHRISTER FUGLESANG
M/S #5 (UP)	NICOLE STOTT
M/S #5 (DN)	TIM KOPRA

MIDDECK FORWARD

5962 -303 MF14E PRINTER TRAYS IODINE REMOVAL (GIRA) 6256-TBD	6269 -307 MF28E/G MOUSE DRAWER SYSTEM (MDS) ☒ (36 CFM/REAR BREATHER)	TBD -TBD
MF14G MDS SUPPORT EQUIPMENT CTB	MF28H IFM BREAKOUT BOX TURNBUCKLES AIR BOTTLES WWD FILTER RMS KIT ALTIMETER ON LOCKER DR.	5454 -327
6300 -337 MF14H IFM TOOLS 2163-302 2161-305 2162-307 MULTIMETER	6250 -345 MF28K POST INSERTION 1	6231 -TBD
MF14K POST INSERTION 2 * SDBI 1634 / (3) ACTIWATCH	MF28M MENU FOOD	2763 -304
MF14M COAS/BTA WORK LTS/LT SHADES/D2X AUDIO DOSIMETER	MF28O SHUTTLE CSA-CP SUPA (13)/FMK CONDENSATE HOSE/CWC DOCKING KIT/O-RINGS BRAYCOTE	7521 -TBD
MF14O AC VACUUM CLEANER (CTB)		

MODULAR LOCKER LAYOUT ASCENT

PANTRY FOOD 1622 -308	MF57A 1622 -308 PANTRY FOOD	PANTRY FOOD 1622 -302
-----------------------	--------------------------------	-----------------------

MF43C MENU FOOD MENU FOOD	MF57C FRESH FOOD FRESH FOOD	MF71C MENU FOOD MENU FOOD
MF43E HH LIDAR W/NIGHTSCOPE 2ND HHL (TRAD)/SSV	MF57E CDR CLOTHING	MF71E MENU FOOD MENU FOOD
MF43G CREW SUPPORT	MF57G ORBITER FDF SODF	MF71G M/S #5 UP CLOTHING M/S #5 DN CLOTHING
MF43H M/S #1 CLOTHING	MF57H ORBITER FDF	MF71H M/S #2 CLOTHING
MF43K MENU FOOD MENU FOOD	MF57K ISS RESERVE CTB	MF71K SODF CTB
MF43M M/S #3 CLOTHING	MF57M PLT CLOTHING	MF71M M/S #4 CLOTHING
MF43O MENU FOOD MENU FOOD	MF57O CREW PREF HCTB	MF71O MENU FOOD MENU FOOD

MIDDECK AFT

MA9D/F TRAD SPARE DTV VIP MUX/TOOLS DTV DSR 25	MA16D ISS SAMPLES ● DOUBLE COLD BAG
MA9G COLOR PRINTER CTB	MA16J SODF CREW CARE PKG ● HCTB
MA9J RCC COLD BAG (NOAX) ● DOUBLE COLD BAG	MA16L MED KITS MAK
MA9L STOW-N-GO CTB	MA16N SOMS RESUSCITATOR/ODOR BACTERIA FILTER

MA9N 7432-315
SOFT STWVG BAGS
PHKS 4980-309
BRKTS/CKK/RE-ENT LIGHT STICKS 8071-311
RSTRNTS/RE-ENT FIBERSCOPE 8070-302

WMC TOWELS AND RESUPPLY ITEMS WMC DISPENSER 1st DAY CLOTH SUPA (1) 1641-330	EXT AIRLOCK 2-EMUs EXT A/L FLOOR * SAFER EMU BATTERY/CCC (6) CRACK REPAIR PALLET (2) 85' TETHERS
--	--

MD CEIL (PORT 1) TBD
LATE INSPECTION REPAIR

MD CEIL (PORT 2) 9895 -302
RSK-7
ACES
G-SUITS

MD CEIL (STBD 1) 9022 -302
RCC REPAIR KIT
GEL BRUSH KITS
B/U EVA HDWR

MD CEIL (STBD 2) 8992 -301
RCC CRACK BAG

MD FLOOR (PORT 2) TBD
ENTRY GARMENTS
☒ ISS ITEMS
☒ ISS PHOTO/TV (CTB)
IPT RESERVE (2MLE)

MD FLOOR (PORT 1) TBD
TOOLS/EMU EQUIP
DIDB
* BRIEF WAIST ?

MD FLOOR (STBD 2) TBD
ISS RESERVE

MD FLOOR (STBD 1) TBD
☒ ISS ITEMS (TBD)

TOTAL LIOH (35)
LIOH BOX (7435-TBD):
29 LIOH IN LIOH BOX & 1 ATCO
2 INSTALLED
4 MPLM STOWED
6 G-SUITS TOP OF LIOH BOX

KSC C/D: TBD-301
JSC C/D: TBD-301
KSC P/D: TBD-301
JSC P/D: TBD-301
CEIT KIT: TBD-301
ISS KIT: TBD

WINDOW SHADE BAG - (5548-TBD)
1. WINDOW SHADES
2. IFM CABLES & HOSES (4259-344)
3. FILM CHG BAG (4828-303)
4. PANEL COVERS

L10A1: V10/AVIU/TAPES(6686-327)
L10A2: DTV
L11A1: PDI 2
L11A2:A3 OIU PANELS 1 & 2
L12A1: SSP 1
L12A2: SSP 2
L12A3: PDI 1
L12A1: VPU
R12A2: OBSS/OPP/SPAS

* NOT APPROVED
● L-24 LATE LOAD
☒ TRANSFER HARDWARE
CTB CARGO TRANSFER BAG
☒ SWAP
HCTB HALF CARGO TRANSFER BAG

DWG NO. SGD32104451

CCMM: DELLA WYLIN (281) 483-9790

/USR/DWGS/LOCKER/STS128

NOTE: LOCKER LAYOUTS ARE FOR REFERENCE ONLY & ARE NOT RELEASED DWGS. FOR RELEASED DRAWING, PLEASE REFER TO THE CREW COMPARTMENT CONFIGURATION DRAWING FOR THIS FLIGHT (SGD32104451)



STS-128 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-29-2009**

Modification Impact Report

- **Mission Equipment Modifications and Orbiter Modifications analyzed for impacts to OMRSD, LCC, ICD, EMI, Software, and GSE.**
- **A total of 3 MCRs have been approved and/or pending mods**
- **Current MCR impact status:**
- **No impacts for all six disciplines** **1**
- **One or more disciplines with impacts, documentation approved and/or pending approval** **0**



STS-128 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-29-2009**

Modification Impact Report – (Continued)

- Possible impacts still under review 2
 - MCR 30189 is being reviewed for OMRSD, LCC, S/W, and GSE impacts
 - MCR 17222 is being reviewed for ICD, EMI, S/W, and GSE impacts

MCR/ECP	STAT SITE	ITEM/KIT NUMBER TCTI NUMBER	SEQ EISN NO.	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
017222	AUTH KSC	017222	0103 006	RMS END EFFECTOR MOD ADDED FOR STS-128, OV-103/37 LSRR	S115128C 2009-01-06	037
030164	AUTH KSC	030164	0103 000	AUTONOMOUS RENDEZVOUS AND DOCKING SENSOR - TRIDAR ADDED FOR STS-128, OV-103/37 LSRR	S115128C 2009-01-06	037
TOTAL MODS =		2				

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
	AUTH KSC	J6275A	0103 SPAR	002 ORBITER STRUCTURE IML SURFACE CORROSION SAMPLING INSPECTION CORROSION SAMPLING CAPABILITIES WILL BE PROJECTED AT LSFR, AND FINALIZED AT DLSFR FOR EACH FLOW.	S-J6275A 2008-02-26	MAND 037
	AUTH KSC	J6341A	0103 SPAR	001 EVALUATION OF OMS POD LI-900 TILE INSTALLED ON 0.090" SIP LI-900 TILE INSTLD ON .090 SIP WILL BE INSPD FOR DEFECTS PER CHIT ON NEAR TERM FLOWS UNTIL RCN IS	S-J6341A 2008-04-09	MAND 037
	AUTH KSC	J6384	0103 SPAR	000 BLT TEMPILABEL ASSESSMENT BLT TEMPILABEL READINGS WILL BE RECORDED POST STS-119 NIB TO OPF PROCESSING.	S-J6384 2008-08-11	MAND 037
	AUTH KSC	J6392	0103 SPAR	001 PRE & POST FLT OPTIGO SCAN OF PROTUBERANCE TILE (PORT WING) TO SUPPORT THE BOUNDARY LAYER TRANSITION (BLT) FLIGHT EXPERIMENT	S-J6392 2008-07-28	MAND 037
	AUTH KSC	J6402	0103 SPAR	001 MICRO INSPECTION OF CAPTIVE GAP FILLERS CHIT DOCUMENTS MICRO INSPECTION OF SPECIFIC CAPTIV E GAP FILLERS DUE TO OBSERVED FLT DEGRADATION.	S-J6402 2008-08-08	MAND 037
	AUTH KSC	J6410	0103 SPAR	001 AFT STUB CRACKED TILE INSPECTION	S-J6410 2008-09-18	MAND 037
	AUTH KSC	J6414A	0103 SPAR	001 RUDDER SPEED BRAKE THERMAL TAB INSPECTION	S-J6414A 2008-12-19	KSC 037
	AUTH KSC	J6434	0103 SPAR	001 OV-103 PUTTY REPAIR TPS REPLACEMENT WILL BE ON AN OPPORTUNITY BASIS FOR STS-119 WITH COMPLETION DURING STS-129.	S-J6434 2008-10-28	MAND 037
	AUTH KSC	J6443	0103 SPAR	001 Z-SCAN OF BLT PROTUBERNANCE TILE	S-J6443 2008-11-19	MAND 037
	AUTH KSC	J6447	0103 SPAR	000 STS-126 POST FLT INSP AND CONTAMINATION SAMPLING	S-J6447 2008-12-19	MAND 037
030189	AUTH KSC	TCTIV4630189REF NOT REQUIRED	0103 001	APU QD HEATING MOD, SYSTEM 3 ADDED BY EDS I/F & V070-465433 F04, 465002 Y06. RE PLACES 030189,0103,1	S115128C 2009-01-06	037

TOTAL MODS = 11

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIOR
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
008844	APPD	TCTIM7108844REF	0001 000	ADDITIONAL WIRE HARNESS HARDWARE TO SUPPORT TRIDAR ADDED PER V782-000002 C06 & -714721 A02	NOT REQD	037
	KSC					

TOTAL MODS = 1

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIOR
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
	AUTH	CR S063944A	B139 000	TCTI FOR IMPLEMENTATION OF THE IPT AT KSC	S063944A	
	KAS				2008-11-26	
	AUTH	FEC A-10358A	B139 000	EDAS SENSOR INSTALLATION SUPPLEMENT FOR BI138 & BI139	S084539LR2	
	KAS				2009-01-09	
	AUTH	FEC A-10361A	B139 000	SUPPLEMENTAL EDAS INSTALLATION FOR BI138 AND BI139	S084539LR2	
	KAS				2009-01-09	
	AUTH	FEC A-10362	B139 000	ADD ALTERNATE FWD AND AFT INTEGRATED ELECTRONIC ASSY (IEA)	S090912Y	
	KAS				2009-01-15	

TOTAL MODS = 4

Approved STS-128 OMRS Waivers and Exceptions

WVR EXC	ELEMENT PROJECT	PRCBD NUMBER	ABSTRACT RAS REQUIREMENTS	EISN PAYLOAD	STS	BEG	END
		WAIVER# (STAT) (INITIAL STS)					
+	E	ORB	S053299DT EV10602-A (A)	OMRSD EXCEPTION REQUEST - WING LEADING EDGE SPAR STRUCTURAL SAMPL INGDEFERRAL (EV10602)	103	035	999
	RCS		S053296YK EK10327 (A)	OMRSD EXCEPTION REQUEST - RIGHT RC SOXIDIZER B-LEG PAD REGULATOR L OCKUPPRESSURE (EK10327)	0023	032	040
			S053297WA EK10452 (A)	OMRSD EXCEPTION REQUEST - RRCS FUEL GHE TANK P1 TRANSDUCER ACCURA CY (EK10452)	0023	032	039
	W	ET	S053293FZ WK03850R1 (A) (STS-093)	L02/LH2 TANK PRESSURE MONITOR FOR MOVE	ET	099	999
	OMS		S053296UM WK10299 (A)	OMRSD WAIVER REQUEST - RP03 TK302 DYNATUBE LEAK RATE (WK10299)	0023	032	040
	ORB		S053297NZ WK10415 (A)	OMRSD WAIVER REQUEST - MADS FDM CALIBRATION MANUAL MODE (WK10415)	103	031	038
			S053298VM WK10557R1 (A)	OMRSD WAIVER REQUEST - FUEL CELL POWERPLANT 3 OXYGEN FLOWMETER LO WERLIMIT (WK10557R1)	103	033	042
			S053299BB WK10603 (A)	OMRSD WAIVER REQUEST - FORWARD OXYGEN REGULATOR	103	034	039

LOCK UP PRESSURE(WK10603)			
	S053299JU WK10653 (A)	OMRSD WAIVER REQUEST - WATER SPRAY BOILER #1 EXCEEDED 44 PSIA MAX IMUMLIMITATION (WK10653)	103 035 040
	S053299MG WK10656 (A)	OMRSD WAIVER REQUEST - FUEL CELL POWERPLANT 3 HYDROGEN FLOWMETERL OWER LIMIT (WK10656)	103 035 038
RCS	S053298VTR1 WK10559 (A)	OMRSD WAIVER REQUEST - RIGHT RCS OXIDIZER B-LEG SECONDARY REGULAT ORLOCK UP HIGH (WK10559R1)	0023 035 043

FLIGHT-SPECIFIC

Approved STS-128 OMRS Waivers and Exceptions

WVR	ELEMENT	PRCBD NUMBER WAIVER# (STAT)	ABSTRACT RAS REQUIREMENTS	EISN PAYLOAD	STS	BEG	END
EXC	PROJECT	(INITIAL STS)					
+	W	SRB	S053293WA	LH FWD AND RH MID SRB	BI	099	999
			WK03886 (A)	JOINT TEMP SENSORS			
			(STS-103)				

+-----+-----+-----+-----+-----+-----+-----+-----+							
	Waivers	Except	Deviat	Cannib	Total		
+-----+-----+-----+-----+-----+-----+-----+-----+							
o							
o							
o	Total Extracted	9	3	0	0	12	
+-----+-----+-----+-----+-----+-----+-----+-----+							

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
47	S052310A	02/14/91	Fly with FRSI instead of tile	OV-103, Flight 12 & Subs (flight by flight evaluation)	OK TO RETIRE S061954B MV 4-2 RTF-130 Briefing
53	S052428A	03/27/91	Allows specified flights to fly with interim TPS repair after each mission to minimize damage to surrounding tile during ferry flight	STS-37, STS-39, STS-40, STS-42 thru STS-999	STAYS OPEN
101	S076972	11/19/91	Permit the modified GPCs (AP101-S) Battery Back-up Unit to fly with annotated fastener improvements without rolling the LRU Part Number	STS-42, STS-44, STS-47 and STS-49 thru STS-999	STAYS OPEN
327	S115114VR5	03/17/05	Partial installation of M072-784633-014 (harness installation - interface panel - MADS #3). The M072-784663-014 Technical Order was established to incorporate the crossover bracket modification at locations X0863 and X0750. The dash number configuration for the Technical Order was not baselined until January 25, 2005 (PRCBD S115114VR2). This area was closed out before this time and would cause significant impact to verify configuration of this Technical Order dash number -014. ***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****	OV-103, Flight 31 OV-103, Flight 32 WAIVER for STS-121	INS-3-28-279 (installed Tech Order)
328	S115114WR1	04/07/05	Partial installation of M072-794500-004, for Integrated Vehicle Health Monitoring (IVHM) harness installation, calls for the removal of the unused IVHM harness and routing hardware. This requirement was manifested after the Bay 13 Longerons Bridge installation was complete. With the installation of the bridge, the removal of the IVHM harness is no longer possible without the removal of the bridge. ***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****	OV-103, Flight 31 OV-103, Flight 32 WAIVER for STS-121	OEL-3-31-304 PTL OEL-3-31-4432 PTL

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
329	S115114AM	08/15/05	<p>The following requirements are waived to allow OV-103, Flight 31 to fly (ferry) with the following out-of-configuration conditions:</p> <ol style="list-style-type: none">1) V070-391139-025 (blanket under window #1 removed for ferry flight)2) M072-421502-002 (did not perform acetone wipe prior to universal thruster plug assemblies - procedural omission)3) V070-753110-003 (camera mount will not be installed for ferry flight) <p>***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****</p>	OV-103, Flight 31	Ferry Flight from Dryden
330	S115114VR15	09/16/05	<p>The following requirement is waived to allow OV-103 to ferry from DFRC to KSC with the following out-of-configuration condition:</p> <p>TCS blanket V070-362917-001 located at Door #44 NOT installed.</p> <p>***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****</p>	OV-103, Flight 31 Ferry Flight	Ferry Flight from Dryden

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
331	S115114VR15	09/16/05	<p>The following requirement is waived to allow OV-103 to ferry from DFRC to KSC with the following out-of-configuration condition:</p> <ol style="list-style-type: none">1) Two switches on Panel A15 will ferry without switch guards (P/N G070-700904-001). In lieu of switch guards at two locations, tape was installed.2) Eight GSE switch guards were left installed and not removed as required by Technical Order M072-710700-002 as called out in the ferry flight drawing.3) Three switch guards are not installed on Panel L4 for TACAN circuit breakers. The procedure does not include the switch guard installation. <p>***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****</p>	OV-103, Flight 31 Ferry Flight	Ferry Flight from Dryden
332	S115121TR8	05/04/06	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>M072-794500-004 IVHM harness installation Bay 13 called out by MECSLSI V072-200201 NOT removed from OV-103.</p> <p>During STS-114 processing this Tech Order configuration called for the removal of an un-used IVHM harness along with the routing hardware. At the time the Tech Order was made a requirement for Flight 31, the Bay 13 longeron had already been installed for flight. The harness was demated and stowed in place per MR and was deferred to a future flight at which time Bay 13 longeron will be removed since the Bay 13 longeron was not removed this flight, a configuration waiver is needed for STS-121.</p>	OV-103, Flight 32	

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
333	S115121TR8	05/04/06	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>Partial installation of M072-784633-014 (harness installation - interface panel - MADS#3). The M072-784633-014 Tech Order was established to incorporate the crossover bracket modification at locations X0863 and X0750. The dash number configuration for the Tech Order was not baselined until January 25, 2005 (PRCBD S115114VR2). This area was closed out before this time and would cause significant impact to verify configuration of this Tech Order dash number -014.</p> <p>***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****</p>	OV-103, Flight 32	
335	S115116NR2	08/18/06	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>M072-794500-004 IVHM harness installation Bay 13 called out by MECSLSI V072-200195 not removed from OV-103.</p> <p>During STS-114 processing, this Tech Order configuration called for the removal of an unused IVHM harness along with the routing hardware. At the time the Tech Order was made a requirement for Flight 31, the Bay 13 longeron had already been installed for flight. The harness was demated and stowed in place per MR and was deferred to a future flight at which time Bay 13 longeron will be removed since the Bay 13 longeron was not removed this flight, a configuration waiver is needed for STS-116.</p>	OV-103, Flight 33	

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
336	S115116NR2	08/18/06	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>M072-794500-004 IVHM harness installation Bay 13 called out by MECSLSI V072-200201.</p> <p>During OMDP, the crossover bracket modification was successfully implemented at all four locations with no technical issues by engineering defined by Orbiter drawings as well as three Tech Orders (M072-794011, M072-794021 and M072-794051). The M072-784633-014 Tech Order was established to incorporate the crossover bracket modification at two locations (X0863 and X0750).</p> <p>At the X0863 location, M072-784633-014 called for the removal of a clamp and six screws to reflect the change harness mounting due to the new wire tray shape. TPS OEL-3-31-245 incorporated the electrical portion of this modification per the vehicle drawings as well as the three tank set harness Tech Orders. During STS-114 processing, the WAD was reviewed and it was determined that an error exists in the M072-784633 engineering. This Tech Order reflects harness routing at the X0863 that does not reflect the as-built configuration on the Orbiter. A one flight configuration waiver was processed and approved for STS-114 and STS-121. All hardware on this Tech Order supports MADS wire routing, there were no observed wire routing violations noted during Flight 31 midbody closeout and all MADS testing will be completed and verified. No technical issue with hardware, installation, or function of MADS. There was no access to this area this flow to perform wire routing as-designed condition. A configuration waiver is needed for STS-116 for this Tech Order.</p>	OV-103, Flight 33	

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
337	S115116NR4	10/27/06	<p>Tech Order M072-544501-087 - install, M072-544501-027 - remove, -087 configuration is for the new over-center stops being installed. Mission-unique loads will not require these new stops. Program decision was made to not remove the RMS.</p> <p>This configuration will incorporate the over-center stops mod, the change is to all four MPM locations. The new stops, replace existing GFE stops, incorporate a stronger design to address mission-unique loads that have a potential to exceed the current mechanism capability. The decision was made not to incorporate this mod during STS-116 flow due to the low potential for load exceedence. Since -087 established the over-center stops mod along with other mods that were completed for this flow,a configuration waiver is needed for STS-116. In addition the removal of the -027 from the previous mission was not completed.</p>	OV-103, Flight 33	
338	S115116NR4	10/27/06	<p>Tech Order M072-794021-026 install, M072-794021-019 remove, -026 configuration is for the new over-center stops being installed. The change is rerouting and retaping of the wire harnesses near the over-center stops to alleviate any interference. Program decision was made to not remove the RMS.</p> <p>This configuration would reroute and retape harnesses on the MPMs to support the over-center stops mod. Since -026 established a new configuration in support of the over-center stop mod and this was not worked this flight, a configuration waiver is needed for STS-116. In addition, the removal of the -019 from the previous mission was not completed.</p>	OV-103, Flight 33	

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
342	S115120DR3	09/12/07	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>Tech Order M072-784633-015 harness installation - interface panel - MADS#3 called out by MECSLSI V070-200199 was established to re-route MADS harness in support of SSPTS at location X0863. There was no access to this area this flow to re-route harness to meet as-designed congiguration. At this time there is NO plan to ever open up this area again.</p>	OV-103, Flight 34 thru OV-103, Flight 999	
344	S071024MP	12/20/07	<p>During maintenance of an Advanced Master Events Controller (AMEC) it was discovered that the module cards are able to translate upward, away from connectors. The cards are retained by friction applied by wedge-locks. An assessment determined a 0.070 upward card translation, would result in card disengagement from connectors. The wedge-lock system can not assure the cards will not translate upwards. The AMEC vendor (Boeing Autonetics) is no longer on contract supporting SSP. A design proposal is to provide a secondary connector retention using the AMEC covers. The new design new lids will limit the upward translation to 0.055. The new design will reduce the milled section of the cover and add silicone pads to provide shock absorption. Due to the absence of the original vendor and no current alternate drawings available for the AMEC the modification is being requested via a program directed Material Review (MR).</p> <p>P/N MC450-0016-0029</p> <p>S/N U6F0002, U6F0003, U6F0004, U6F0006, U6F0007, U6F0009, U6F0010 and U6F0011</p> <p>***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****</p>	OV-103, Flight 35 OV-104, Flight 30 OV-105, Flight 21	