



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



STS-127 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-15-09**

Program Freeze Point

PRCB Presentation

S115127C



STS-127 Delta Launch Site Flow Review

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Baseline the STS-127 Mission Specific Requirements and Flow Plans.

The STS-127 Integrated Launch Site Requirements were established by PRCBD S115127AR1 dated 10-23-08. This CR and the Associated Data Package were reviewed at the 01-12-09 FRWG.

Flight Management*

Orbiter Engineering*

Payload/Cargo Engineering*

SSME

Shuttle Processing*

Requesting Approval

Requesting Approval

Status in BackUp

KSC Integration

Flight Software

Orbiter GFE

EVA

MO3/USA-PI

USA-OE

USA-PI

MP21

PH-A

MK-SIO

USA-FSW

MV5

XA

No changes from LSFR

KSC ISS and Payload Processing

UB-R3

*Backup Material



**STS-127 DELTA LAUNCH SITE FLOW
REVIEW**

Presenter
Ann Patterson
Date
15 January 2009

STS-127/2J/A

Delta Launch Site Flow Review (DLSFR)

Flight Requirements Status

PRCB 15 January 2009

Ann M. Patterson, STS-127 MIM

James Flores, USA Flight Mgr.

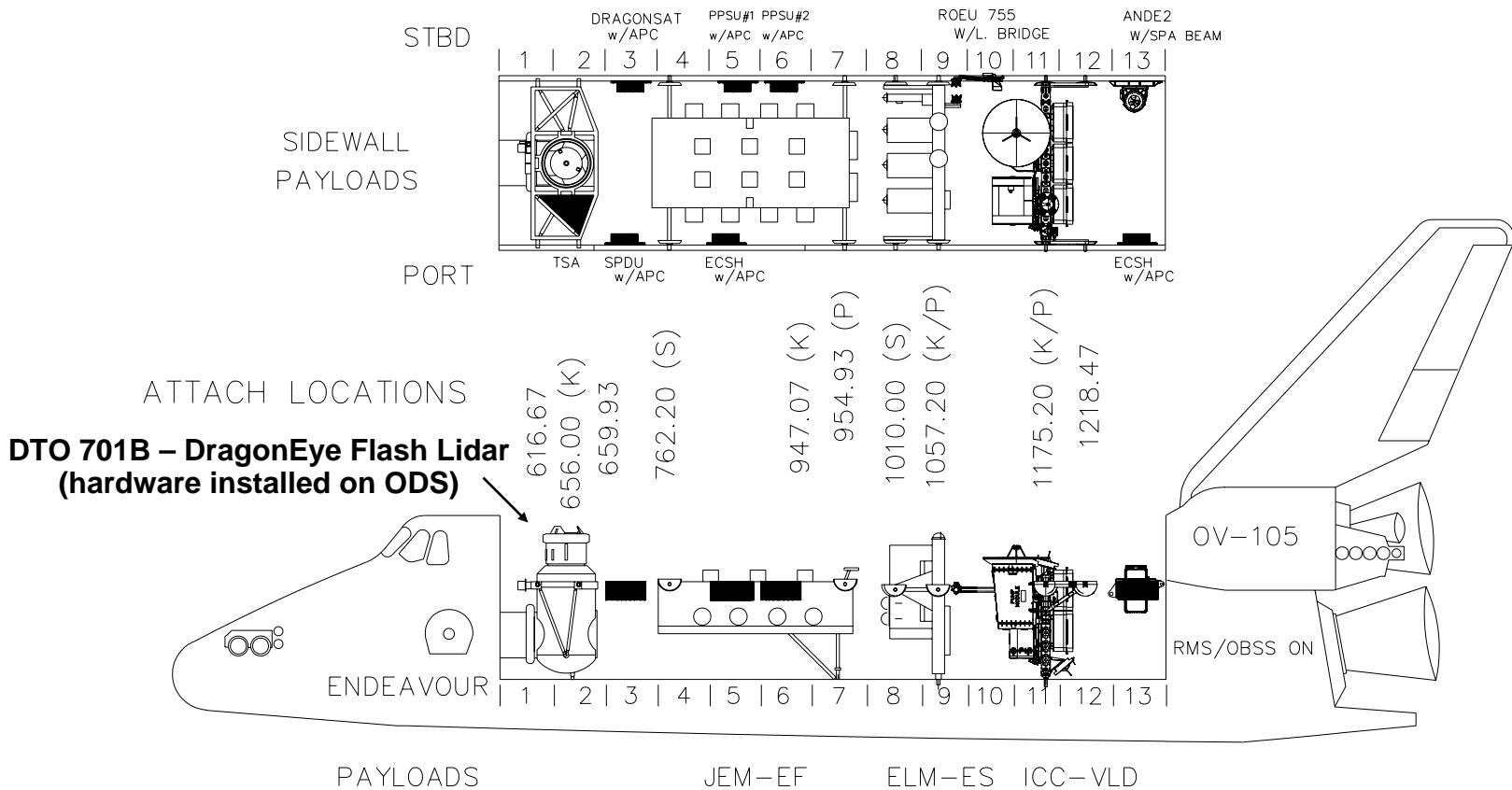
Adam Richards/Boeing Mass Properties



STS-127 DELTA LAUNCH SITE FLOW REVIEW

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LAUNCH

05/15/09
 39A/ MLP 3
 CREW SIZE: 7UP/7DN

CONFIGURATION

OV-105 (23)
 LP03;RP04
 ET-131
 BI-138
 RSRM-106
PROPOSED (1) 2045 (2) 2060 (3) 2054
 OI-33
 SRMS,ODS,OBSS,SSPTS
 ECSHS(2),PPSUS(2),ROEU

PAYLOAD

ISS-2J/A	ISS-2J/A
DRAGONSAT	MAUI
ANDE-2	SEITE
	SIMPLEX

ORBIT

51.6 DEG
 122 NM
 DIRECT INSERTION
 DURATION: 15 + 1 + 2 DAYS

CONSUMABLES

CRYO TANK SETS	5 (FULL)
GN2 TANKS	6 (FULL)
FWD RCS	1912# (OFFLOAD)
AFT RCS	4970# (FULL)
OMS	22760# (FULL)

LANDING

SITE	KSC
TAL	ZARAGOZA
ALT. TAL	MORON & ISTRES
SCA	911



STS-127 DELTA LAUNCH SITE FLOW REVIEW

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Date 15 January 2009

•	<u>PERFORMANCE MARGIN</u>		
•	SIMULATION MARGIN (OCFAF127)		+ 3158
•	WEIGHT CHANGES SINCE SIMULATION		
•	PAYLOAD	<u>- 156</u>	
•			
	TOTAL WEIGHT CHANGES	- 156	+ 156
•	OTHER PERFORMANCE PROJECTIONS		
•	PROTECTION FOR DOL DISPERSIONS		- 700
•	SRB – M.P. UPDATES		- 215
•	SRB – BR / 1.85 MIL LOWER THAN 0.3705 AVG		- 666
•	PROJ TO 5 MIN WINDOW FROM INPLANE		- 600
•	PERFORMANCE CHANGES ADJUSTMENT		<u>- 11</u>
•	CURRENT BASELINED APM (01/06/09)		+ 1122
•	PROJECTED FOR ENGINES		
•	SSME (Isp and Thrust) for ENG SET 2045, 2060, 2054		<u>+68</u>
•	PROJECTED APM		+1190

STS-127 OV-105 Flight 23 Delta LSFR Orbiter Element

Kim Guodace
Scott Copenhaver

USA/OE
Boeing / VMMO

January 15, 2009

STS-127, OV-105 Flight 23 DLSFR Orbiter

Purpose:

- Obtain program authorization for baseline of modifications to be performed prior to STS-127, OV-105 Flight 23.
 - Mandatory Mods – One new requirement – Fastener Removal Verification
 - Potential Mods – No new requirements
- Provide information on one mission kit update
 - Mission Kit Mods – One new mission kit – Bay 4 Longeron
- Summary of previously baselined mods
- Summary of other requirements
 - Chits

Back-up

- TPS Priorities
- RCNs
- Modification Matrix
- Description of previously baselined mods

STS-127 OV-105 Flight 23 – Mandatory Modifications

Request authorization of one mod record

- **Verification of Fastener Removal from Overhead Luminous Ceiling Panel required (per mod record TCTIV7317177REF, 0105, 003)**
 - Authorization is needed for physical verification of fastener removal from overhead luminous ceiling panel assembly V070-731874 (-050) per released EO G06
 - Fastener removal is required for future manifest of the Multiple Headset Adapter (MHA) tech order M072-703014

STS-127 OV-105 Flight 23 – Mission Kit Modifications

Bay 4 Longeron requirement:

- Bay 4 longeron bridges V073-340103-001 and -002 are required for JEM-EF on STS-127
 - The only flight pair is manifested to support the forward end of Super Lightweight Integrated Carrier (SLIC) currently installed on STS-125
 - STS-125 delay directly impacts installation of STS-127 bay 4 bridges
 - Second “original build” pair was flown on and recovered after STS-107 but has been deemed unusable
- The OPO has narrowed the options presented at LSFR to two
 1. Modify a set of Bay 3 Longeron Bridges made from Titanium (Palmdale) – ECD: 30 Jan 09
 2. Build a new set of Bay 4 Longeron Bridges from Aluminum (NSLD) – ECD: 16 Jan 09
- Summary
 - Work is being performed in parallel
 - Each facility is on schedule

(For information only)

STS-127 OV-105 Flight 23 - DLSFR Baseline

The following modifications have been baselined at a previous review (LSRR)

- **30099 – Airlock Upper Hatch Decal/Blanket Mod**
 - Revised markings to show handle positions for opening and closing on internal hatch and external TCS blankets
- **30179 - Mid-Deck Partition Lexan Covers**
 - Installs protective Lexan covers over structural panels in crew module to preclude inadvertent damage
- **30189 – APU GN2 QD Heater Mod**
 - Installs heaters to alleviate concerns of possible on-orbit QD leakage
- **Mod Details in Back-up**

STS-127 OV-105 Flight 23 - DLSFR Baseline

- The following mission kit modifications have been baselined at a previous review (LSRR)
 - 23029 – Expanding PL Retention Active Latch Control Capability
 - Provides wire harnesses to accommodate 18 latches to meet mission requirements
 - 30234 – Dragon Eye DTO Implementation
 - Installs DTO box with flash LIDAR and data acquisition unit on ODS truss
 - 30099 External Airlock Ducting Configuration Change
 - Revised configuration to launch with ducting installed versus stowed

STS-127 OV-105 Flight 23 – Attrition Modifications

Significant Attrition Modifications

- **Installation of refurbished MO10W Panel**
 - Installation complete to replace faulty N2/O2 Crossover valve contained in present MO10W Panel
 - Updated panel includes new design flow meters

Chits

The following are presented for information only

Chit No.	Title	Description
J6116	AMES Gap Filler Removal and Replacement	Approved
J6275A	Orbiter Structure IML Surface Corrosion Sampling Inspection	Approved
J6306	OV-105 Mid Fuselage Lockbolt collar inspections	Approved – Performs sampling prior to Flights 21, 22 and 23
J6321A	ASA and ATVC R&R for Tin Whisker remediation	Approved – Further Tin Whisker remediation will R&R ASA slot #1, #2 and ATVC slot #1, #4 to establish 4-4-2-2 (ASA-ATVC-RJDA-RJDF) remediated box configuration
J6327	WLE RCC Joggle Inspection	Approved
J6341A	Evaluation of OMS Pod LI-900 Tile Installed on 0.090" SIP	Approved – All tiles have been upgraded
J6402	Micro Inspection of Captive Gap Fillers	Approved
J6410A	Aft Stub Cracked Tile Inspection	Approved
J6414A	Rudder Speed Brake Thermal Tab Inspection	Approved
J6417A	WLE IR Thermography Statistical Study	Approved
J6419	Putty Repair Tile Removal	Approved
J6420	Sampling of OV-105 APU System 3 Lube Oil	Approved
J6423	DRAGONEYE Interface Plate Fit Check	Approved – Cargo Integration Chit

Chits

The following are presented for information only

Chit No.	Title	Description
J6425	Acquisition of Certification Data for the Integrated Window Inspection Tool (IWIT) on OV-105, Flow 23 (Post Flight 22)	Approved – Hardware will not be certified for on-vehicle use. Chit to be withdrawn.
J6429A	ET Door Drive Actuator Changeout and Refurbishment (OV-105)	Approved
J6430	Middeck Partition Inspection	Approved
J6433	STS-127 Port and Starboard Sill Requirements	Approved – Cargo Integration Chit
J6436	Parallel Latch Bench Testing	Approved
J6447	STS-126 Post Flight Inspection and Contamination Sampling of Laser Camera Laser Camera System and Orbiter Locations	Approved
J6453	Nose Landing Gear Door (NLGD) Thermal Barrier Friction Test (OV-103/37, OV-104/30, OV-105/23)	In Assessments
J6454	MDM FA1 & EIU 2 R&R on OV-105 to address LDC 7715 Diode Concerns	Approved
J6459	OV-105 Putty Repairs	In Assessments

STS-127
ISS – 2J/A JEM EF, ELM-ES, ICC-VLD, DRAGONSAT,
ANDE-2
Delta Launch Site Flow Review

Payload Cargo Engineering Status

Michael Barido

281-212-6072

January 15, 2009

STS-127 DLSFR

Engineering Flight Product Status

<u>Drawing No</u>	<u>Title</u>	<u>Rev</u>	<u>EO</u>	<u>Released</u>
• V072-200207	MECSLSI	C	C01	12/04/08
• VA72-200207	Cargo Arrangement	A	A01	10/14/08
• VD72-200207	Avionics Diagram	B	B01	11/21/08
• VS72-200207	Integrated Schematic	B	B01	11/21/08
• VS70-540345	Retention Schematic	A	A01	10/15/08

Engineering Open Work

	<u>ECD</u>
• V072-200207: MECSLSI	
– Add Notation for STS-400	TBD
– Incorporate Bay 4 longeron bridge updates	TBD
• M072-710127: Payload Bay Wiring Tech Order	
– Potential update due to bay 4 bridge	TBD

Non-Standard Work (Chits)

	<u>Status</u>
• J6433: STS-127 Port and Starboard Sill Requirement	Approved
– 8 sill measurements in OPF to support acceptance of ELM-EF trunnion length	
• J6423: DragonEye Interface Plate Fit Check	Completed
– Offline fit check of DragonEye Adapter Plate to TCS Carrier Plate	

Endeavour STS-127
Delta Launch Site Flow Review
Space Shuttle Main Engine

SSME - KSC
Paul Brzeski
(321) 861-4064

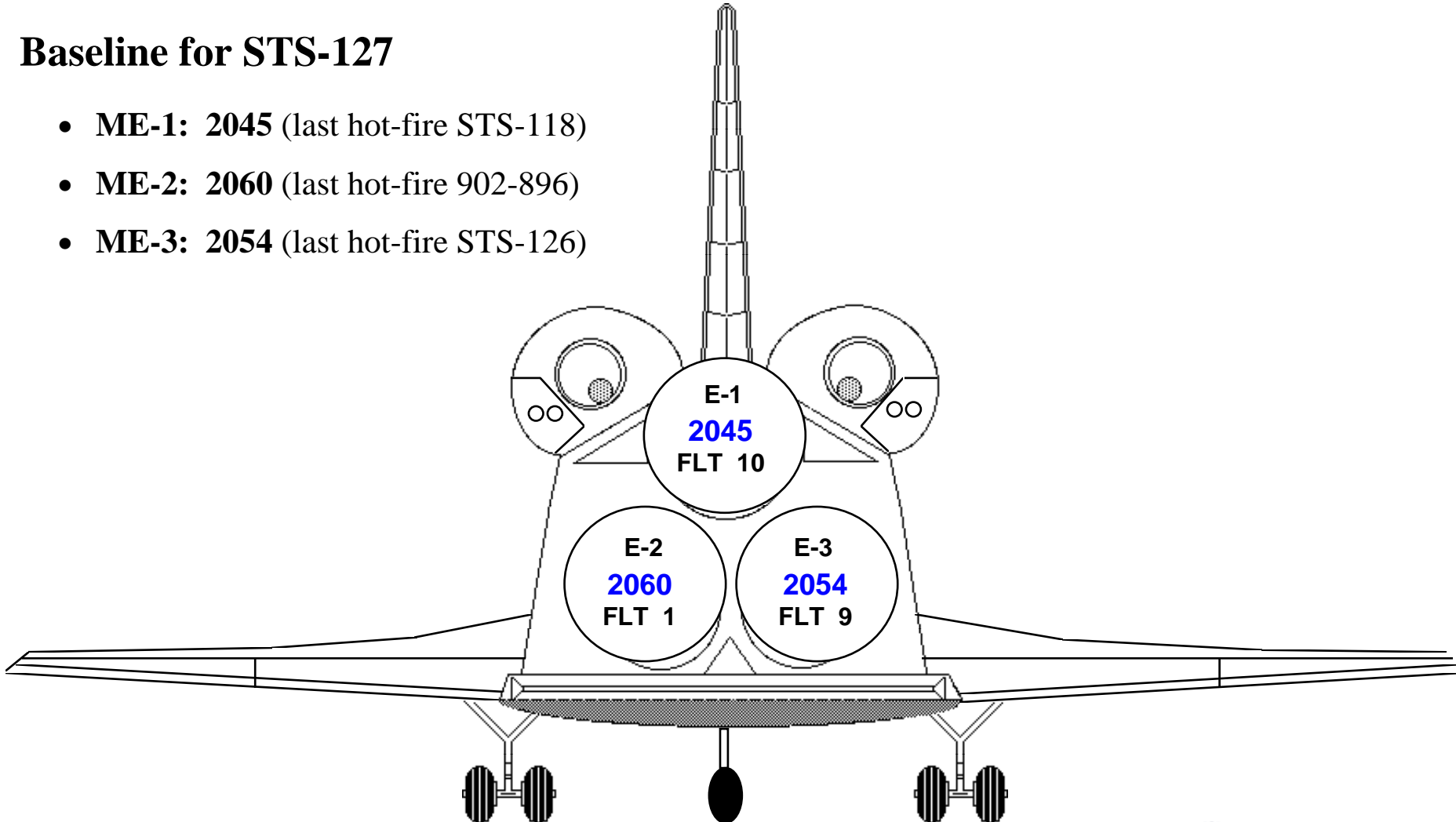


STS-127 Delta Launch Site Flow Review

SSME Allocations / Locations

Baseline for STS-127

- **ME-1: 2045** (last hot-fire STS-118)
- **ME-2: 2060** (last hot-fire 902-896)
- **ME-3: 2054** (last hot-fire STS-126)





STS-127 Delta Launch Site Flow Review

SSME Planned Modifications

- Work authorized by Shuttle Project Action Request (SPAR) or Level II Change Request (CR)

ECP	Title	Engine(s)	Kit Drawing	Weight Impact	SPARs / CRs	Status
1530	LPOTP re-identification: Joint O5 over-sized inserts with corrosion inhibitor.	2045	2R112820-010	0 lbs	ME-0233 R01	Complete
1354	Incorporate Redesigned Controller Coolant Duct	2045	2R053848-010	-1.6 lbs	ME-0233 R03	Complete
N/A	Change Engine Top Assy part number from RS007001-401 to RS007001-441.	2060	N/A	0 lbs	ME-0243 B	Complete

STS-127 Delta Launch Site Flow Review

Rocketdyne Action Requests (RAR)

RAR	Title	Engine(s)	SPARs / CRs	Status
KLO-1595	Inspect LPOTP Joint O5 Inserts/Bolts.	2045	ME-0233 B	Complete.
KLO-1596	Inspect MOV and OPOV Inlet Cup Washers.	2045	ME-0233 B	Complete.
KLO-1597	Dye Penetrant Inspect Powerhead RS009423 Weld 1.	2045	S060983V	Complete.
KLO-1618	Reallocate LPFTP from E2045 to E2059.	2045	ME-0233 R02	Complete.
KLO-1624	Inspect Electrical Harness Routing/Slack.	2060 2045	S071807K	Complete.
KLO-1626	Allocate HPFTP, HPOTP, and LPOTP.	2060	N/A	HPFTP 8021R1: Installed. HPOTP 8312: Installed. LPOTP 4606: Installed.
KLO-1627	Inspect HPFTP Inlet Housing.	2060	ME-0243 R01	Complete.
KLO-1630	Allocate HPFTP, LPFTP, HPOTP, and LPOTP.	2045	N/A	HPFTP 8119: Installed. LPFTP 2130R4: Installed. HPOTP 8223: Installed. LPOTP 2716: Installed.
KLO-1631	Remove HPFTP 8021R1 .	2060	ME-0243 R02	Complete.
KLO-1631R1	Allocate HPFTP.	2060	N/A	HPFTP 8125: Installed.
KLO-1633	Inspect HPFTP Inlet Housing.	2054	ME-0246 B	In-work, part of postflight STS-126 processing.

KSC Launch and Landing Project

STS-127

Delta Launch Site Flow Review

January 15, 2009





Milestone Interface Chart

S. Ford

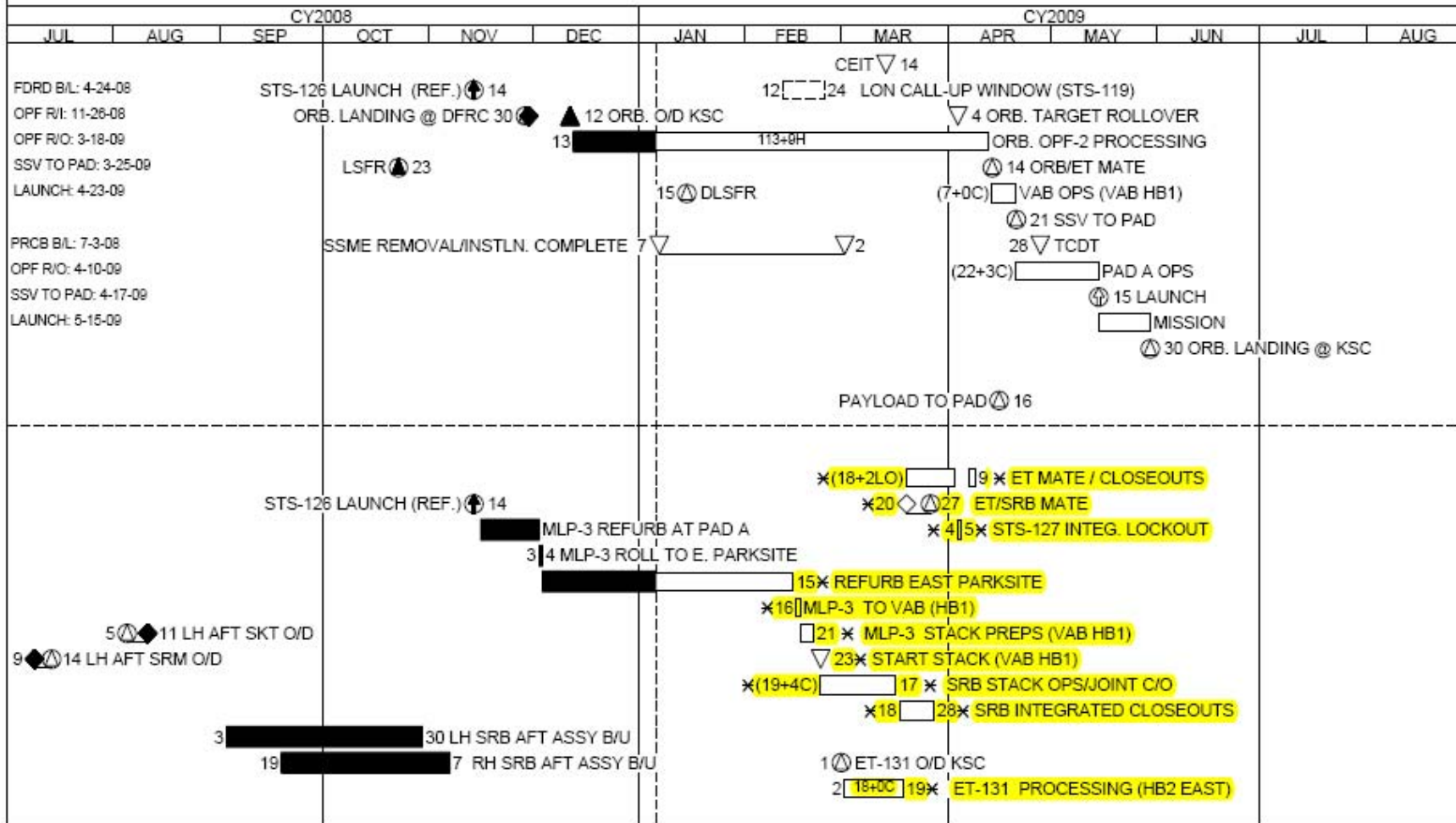


STS-127 KSC Milestone Interface Chart

OPR: USA - R. GILLETTE, INTEG. OPS.
NASA - S. FORD, PH-0

OV-105/23/ ISS-29-2/J/A
CREW / DURATION: 7 / 15
ET 131/ BI138 / RSRM 106 / MLP-3/ PAD-A / VAB HB-1

SSP APPROVED MANIFEST PRCB 7-3-08 (REF. CR #SO42013HK)
Status as of:
01/08/2009



THREATS:

NOTES: 1. LAUNCH DATE WOULD BE 5/13/09 TO SUPPORT LON FOR STS-119 IF CALLED UP USING ET-130

Flight Element Processing

R. Goodman



Flight Element Processing Overview

- **OPF Flow Milestones** **Presented**
- **OPF Non-Standard Processing** **Presented**
- **TPS Status** **Presented**
- **TPS Cavity Estimate** **Presented**
- **Chits Summary** **Backup**
- **Modification Summary** **Backup**
- **Configuration/Facilities** **Backup**

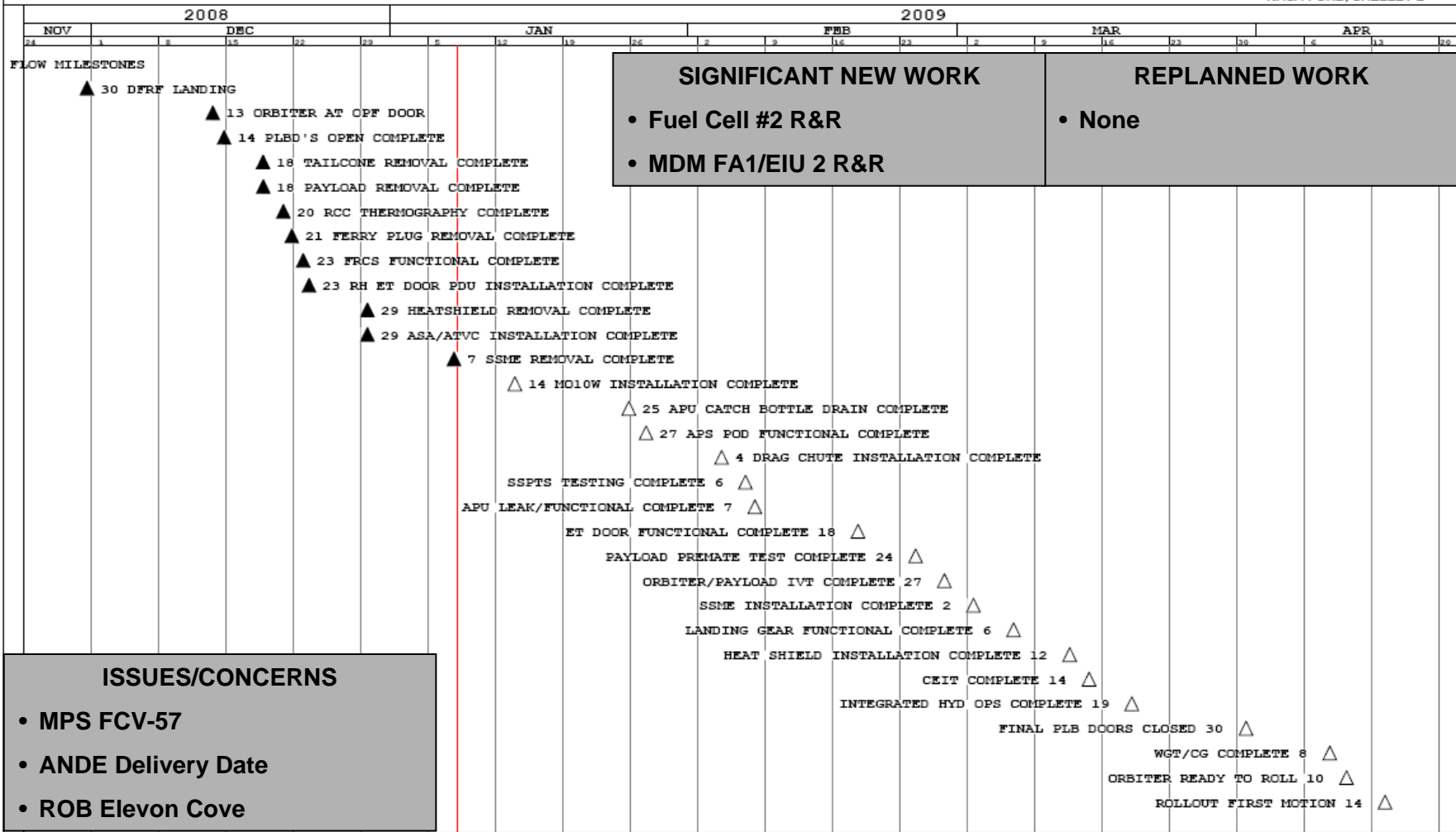


STATUS	
USA	NASA
C	C
CR/CO/CS/CE	RO/RT/CO/RS/CE

STS-127/OV-105 OPF FLOW MILESTONES
 DOWN PAYLOAD: ISS-27-ULF2/MPLM UP PAYLOAD: ISS-29-2JA/JEM EF

Creation Date: 3-SEP-2008
 Revision Date: 8-JAN-2009
 Revision :F

OPR:USA-GOODMON, RANDAL D
 NASA-FORD, SHELLEY L



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

OPF Non-Standard Processing

Hardware Replacement Items

- Window #1 and #6 R/R (Potential W2, W3, W4, W7 & W11 – E/E)
- Fuel Cell #2 R/R
- RH ET Door PDU R/R
- MPS GH2 Flow Control Valves and 2” Line R/R
- ASA 1 & 2 R/R and Test
- ATVC 1 & 4 R/R and Test
- MDM FA-1 R/R and Test
- EIU 2 R/R
- MLGD Environmental Seal R/R
- -Y Star Tracker

Time & Cycle Items

- PLB Vent Door Filters (6 each) and PLB Vent Liner Filters (8 each) R/R
- GPS Batteries R/R (3 Each)



OPF Non-Standard Processing Continued

Deferred to Flight 23

- MO10W R/R
- UHF Transceiver R/R
- LH OMS Pod Failed MADS Measurements
- Wireless Video System Antenna Radome Repair Scratches
- LH Pod Y-Web Door FIB R/R
- ODS Bent Pins (Russian Connector)

Outstanding IFA Troubleshooting

- IPR-127V-0001 APU #3 Z-Axis Accelerometer
- IPR 127V-0003 MPS Pressure Decay
- IPR 127V-0004 RH OMS POD Cross Feed Drain Line Temp Transducer
- IPR 127V-0005 Fuel Cell #1 H2 Flow Meter
- IPR 127V-0006 KU-Band COMM Mode
- IPR 127V-0007 APU 1 Fuel Tank Outlet Pressure Transducer
- IPR 127V-0008 GNC Bypass of MDM FF3 I/O Error
- IPR 127V-0016 Payload Signal Processor I/O
- IPR 127V-0017 KU-Band 216 KBPS Forward Link Frame Sync Telemetry
- IPR 127V-0018 KU-Band Erroneous Radar Data
- IPR 127V-0019 CDR Keyboard



TPS Status

- TPS Post Flight Inspections - 97% Complete
- ~36 Cavities (0 Bonded)
- Risk Reduction TPS Completion
 - Corrosion
 - Tile – 98%
 - RSI – 62%
 - Heatsink Perimeter – 1%
 - Putty Repair – J6388 (1 tile)
 - 9 LB/90 SIP
 - I/B Elevons – 100%
 - O/B Elevons – 100%
 - Base Heatshield – 79%
- LESS Access Panel Removals Planned - 2 Upper & 11 Lower



TPS Work Content (STS-127)

Projected TPS Removals

<u>Priority</u>	<u>Description</u>	<u>LSFR</u>	<u>DLSFR</u>
Mand	Deferred Tile/ Fib For 1 Flight (Minimum)	7	7
Mand	In-Flight Tile/Fib Damage (Estimate)	50	50*
Mand	Operational Damage (Estimate)	20	20*
Mandatory Total		77	77

***NOTE: Defined Numbers Will Result In Diverted Resources To Putty Repair/GF Effort**

Risk Reduction:

Mand	Highest Priority Putty Repair Removals (Chit J6419)	1	1
Mand	2 nd Subset Putty Repair Removals (J6459) / 3 NLGD	8	8
Mand	Structure IML Surface Corrosion Sampling	12	12
14	Base Heat-shield 9lb/90 SIP Tile Upgrade	9	9
Risk Reduction Total		30	30

Projected TPS Removals TOTAL **107** **107**





STS-127 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-15-09**

Backup Material

FRWG Presentation (With Minor Changes)



STS-127 DELTA LAUNCH SITE FLOW REVIEW

Presenter

Ann Patterson

Date

15 January 2009

Flight Operations and Integration (FO&I)

- **Mission Summary**
- **Flight Requirements:**
 - MIP, PIPs, CIP**
 - FDRD**
 - FRD**

Backup Charts



STS-127 DELTA LAUNCH SITE FLOW REVIEW

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Date 15 January 2009

MISSION SUMMARY

- **Launch and assemble the ISS-2J/A launch package to the ISS**
- **Launch Package consists of:**
 - **Japanese Experiment Module-Exposed Facility (JEM-EF)**
 - **JEM Experiment Logistics Module-Exposed Section (ELM-ES)**
 - **Integrated Cargo Carrier-Vertical Light Deployable (ICC-VLD)**
 - **Orbiter Crew compartment items being transferred to and from ISS**
- **Two Deployable Payloads**
 - **Space Shuttle PICOSAT Launcher 5510/Dual RF Autonomous GPS On-Orbit Navigator Satellite (DRAGONSAT)**
 - **Canister for All Payload Ejections/Internal Cargo Unit/Atmospheric Neutral Density Experiment-2 (CAPE/ANDE-2)**
- **Payload Bay DTO**
 - **DTO 701B – DragonEye Flash Lidar (hardware mounted on ODS)**
- **Payloads of Opportunity**
 - **Maui Analysis of Upper-Atmospheric Injections (MAUI)**
 - **Shuttle Engine Ion Turbulence Experiment (SEITE)**
 - **Shuttle Ionospheric Modification with Pulsed Local Exhaust (SIMPLEX)**



**STS-127 DELTA LAUNCH SITE FLOW
 REVIEW**

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FLIGHT MASS PROPERTIES

ALL WEIGHTS AND CG'S ARE WITHIN ACCEPTABLE LIMITS

<u>CASE</u>	<u>TOUCHDOWN WEIGHT pounds (LIMIT)</u>	<u>MACH 3.5 X C.G. inches (LIMIT)</u>
NOMINAL	214726 (233000)	1087.9 (1075.2)
RTLS	238653 (245000)	1081.6 (1076.7)
TAL	235018 (244000)	1079.7 (1076.7)
AOA	231247 (242000)	1077.1 (1075.2)
CONT RTRN	221091 (233000)	1077.4 (1075.2)

**NOTE: RTLS INCLUDES 25 SEC FRCS DUMP
 TAL INCLUDES 120 SEC ARCS & 65 SEC FRCS DUMP
 2714 LBS AFT FUSELAGE BALLAST**

ESTIMATES BASED ON OCFAF127 AND MODIFIED FOR WEIGHT CHANGES THRU 01/06/09.



STS-127 Delta Launch Site Flow Review

Presenter	Ken Nowak	
Date	01-15-2009	Page 1

- **STS-127 Orbiter/Ferry Mass Properties Have Been Reviewed by Space Shuttle Program Integration and Are Within Specified Limits**

<u>Case</u>	<u>Ferry Weight (LB)</u>	<u>Center of Gravity (inch)</u>		
		<u>X</u>	<u>Y</u>	<u>Z</u>
<u>Nominal - Orbiter c.g.</u> (SCA c.g.)	217665	1114.1 (1409.8)	-0.2 (N/A)	370.9 (513.4)
(Max CM Ballast (2066 lbs) + 1475 lbs additional CCGD items, No Fluids Off-Loaded, No Payload Bay Opening)				
<u>AOA - Orbiter c.g.</u> (SCA c.g.)	227566	1113.7 (1409.4)	-0.3 (N/A)	372.2 (514.7)
(CM Ballast (156 lbs), No Fluids Off-Loaded, No Payload Bay Opening)				
<u>TAL - Orbiter c.g.</u> (SCA c.g.)	206671	1074.3 (1370.2)	-0.3 (N/A)	373.7 (518.2)
(3 SSME's Removed, No Fluids Off-Loaded, No Payload Bay Opening, Max Weight 217000 LB)				

X c.g. Limits (Orbiter Coordinates)

Nominal	=	1060.0 TO 1117.4
AOA	=	1060.0 TO 1116.0
TAL	=	1060.0 TO 1125.5

Z c.g. Limits (Orbiter Coordinates)

Nominal	=	360.0 TO 380.0
AOA	=	360.0 TO 380.0
TAL	=	360.0 TO 380.0



STS-127 DELTA LAUNCH SITE FLOW REVIEW

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<u>Documentation</u>	<u>Status</u>	<u>ECD/Date</u>
• <u>MIP – NSTS 21434, Basic, Chg 1(6/20/08)</u>	CR-0005 (Out for Review): Update Task Priority Table Add DragonEye CSR Requirements TBD items	14 Jan 2009
• <u>PIP – DRAGONSAT, Basic (12/12/07)</u>		
• NSTS 21540	No Open CRs	
• <u>PIP – ANDE-2, Basic (7/13/07)</u>		
• NSTS 21544	CR 21544-0005 Out for Review	14 Jan 2009
• <u>PIP – MAUI, Basic, Chg 2 (5/5/08)</u>		
• NSTS 21530	No Open CRs	
• <u>PIP- SEITE, Basic (11/19/07)</u>		
• NSTS-21542	No Open CRs	
• <u>PIP – SIMPLEX, Rev A (6/16/08)</u>	No Open CRs	
• NSTS 21327		
• <u>IP – DTO 701B DragonEye Flash Lidar, Basic (7/28/08)</u>		
• NSTS 21552	No Open CRs	
• <u>FDRD</u>	SO72127B: Increase STS-127 Mission Duration	Not out for review



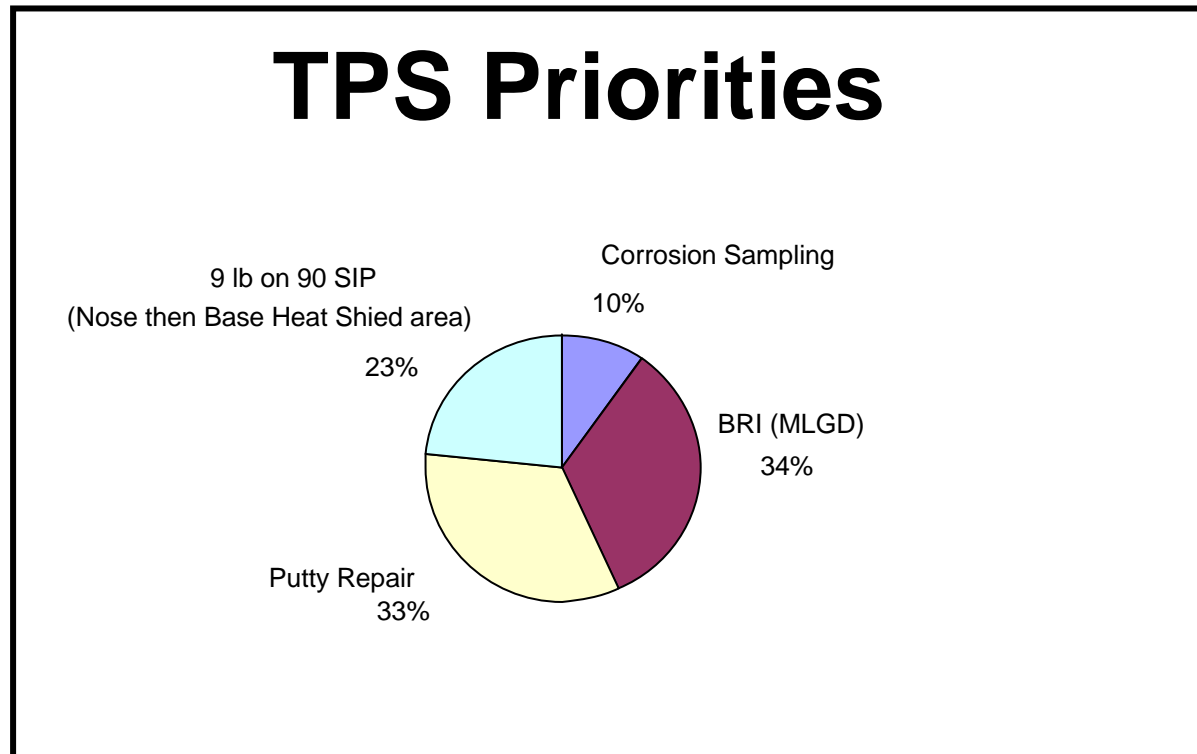
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- **STS-127 FRD Latest Revision: 004, dated November 26, 2008**
(<http://sspweb.jsc.nasa.gov/efrd>)
 - **Approved CR**
 - FRD 17462-127-0016, Update LiOH to Support 6 Member ISS Crew
 - **Open CR**
 - FRD 17462-127-0017, Update to Photo TV Video Table
 - **No issues for DLSFR**
- **CRs posted at <http://sspweb.jsc.nasa.gov/icbdata>**

Back-up

TPS Allocation Breakdown – OV-105 (12/17/08)



- Orbiter's expectations for the work areas are shown on the pie chart for STS-127
 - The above table is for reference only – exact #'s are determined by the KSC Team
 - Access/configuration/length of flow
 - Distribution provides data/risk reduction in all areas of the list
 - Does not allocate all the resources in one area

Current TPS status (12/17/08)

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	see #16
6. BRI-18 Tile – STR side of ET Doors 1/B	8	complete	1	complete
7. Inboard Elevon “Hub” Tile Mod	4	complete	2	complete
8. 1/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 (Under Review)	24	0	3	0
12. MLGD - Outboard AFT 1/3	24	0	1	1
13. Nose Area 9lb/90 SIP	14 (16OV103)	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 Door, LESS carrier panels, NLGD	MLGD 100	MLGD 0	MLGD 1	MLGD 0
	NLGD 123	NLGD 12	NLGD 19	NLGD 26
	LESS 68 (92 ^{OV-105})	LESS 7	LESS 5	LESS 12
	ET Door 22	ET Door 6	ET Door 4	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

OV-105 Specific TPS priority list (12/17/08)

Mandatory (everyflow expectation)

- Flight damage, OMRS Rqmts/Chits, LRU access, & deferred work
 - Corrosion Sampling (10% of total tile allocation) *Chit J6275A*
 - Putty repairs, Second Set Chit J6459 (5 tiles remain)
 - Putty repairs in RCC & Window DTA Zones of influence (10 tiles) (Chit Pending)
 - Deferred work may be redeferred with acceptable inspection
- Continue G/F R & R on a best effort basis - zones 2B subset

Prioritized Opportunity

- 10 MLGD** – Outboard Middle 1/3 - (6 Door/6 STR)
- 11 ET Door** - Remaining STR side of Door, Front Edge First 24 tiles (12 per side) – Under Review
- 12 MLGD** - Outboard AFT 1/3 (1/3 left) 6/door/6 str)- 24 Tile
- 13 Nose Area 9lb/90 SIP Upgrade to FRCI-12** – 14* Tiles (7/side) (*103 16 tiles, thruster)
- 14 Base Heat Shield 9lb/90 SIP Upgrade to FRCI-12** – 42 Tiles (32/stinger, 10/Box Attach point)
- 15 Gap fillers in Subset 2B** (Line across MLGD edge)
- 16 Remaining BRI-18 Tile** – Remaining MLGD (top priority) / ET Door / LESS carrier panels/NLGD
 - MLGD (Inboard, forward edge working to AFT door edge)
 - ET Door
 - LESS - panels 8, 9, 10, 7, 6, 5, 4, 3, 2, 1, 11, 12, 13 (in that order)
 - NLGD (attrition – do leading edge first)
- 18 MADS Instrumentation Failures** (104 & 105 L/H OMS Pod)(place holder)
- 19 Remaining Gap Fillers & Window BRI-18** Windows 2, 3, 4, & 5 Upper Carrier Panels (top priority)

Structural Corrosion Sampling Plan (Info Only) (12/17/08)

- Bold-outline locations are primary focus locations for each vehicle
- Region C Heat Sink samples the most desirable of all samples taken due to lack of data
- Region A “Tile only” – OV-103 (6 tiles), OV-104 (8 tiles), OV-105 (2 tiles)
- Region B “Upper Surface, non-tile” – OV-103 (48) 12”x12” FRSI, OV-104 (10) 24”x12” FRSI
- Region C “Heatsink” – OV-103 and OV-105 (44 minimum tiles)

Region A	MINIMUM SAMPLE	OV-103 (Current Flight)	OV-104 (Current Flight)	OV-105 (Current Flight)
TILE (EACH SAMPLE SITE IS ONE TILE CAVITY)				
TILE - AFT FUSE BASE AND DOME HEAT SHIELDS	6	20	7	33
TILE - AFT FUSE LOWER	7	13	9	11
TILE - AFT FUSE SIDES	2	0	0	0
TILE - BODYFLAP LOWER SURFACE	3	0	0	7
TILE - BODYFLAP SIDES AND UPPER SURFACE	3	2	0	5
TILE - FWD FUSE LOWER	6	29	26	18
TILE - FWD FUSE SIDES AND UPPER SURFACE	7	24	18	14
TILE - LH IB ELEVON	3	5	3	6
TILE - LH OB ELEVON	2	2	2	2
TILE - LH WING	14	28	20	15
TILE - MID FUSE LOWER	21	62	30	60
TILE - RH IB ELEVON	3	8	3	5
TILE - RH OB ELEVON	2	2	2	3
TILE - RH WING	14	27	26	14
TILE - VERTICAL TAIL and RSB	4	7	7	6

Region B

FRSI AND FIB (EACH SAMPLE SITE IS ONE FIB OR ONE 12" X 12" SECTION OF FRSI)				
RSI - AFT FUSE SIDES BH Sand DHS	3	1	1	1
RSI - FWD FUSE SIDES AND UPPER SURFACE	9	17	9	10
RSI - LH IB ELEVON	3	2	0	0
RSI - LH OB ELEVON	2	0	0	0
RSI - LH WING	23	2	0	0
RSI - MID FUSELAGE SIDES	15	28	14	15
RSI - RH IB ELEVON	3	0	0	0
RSI - RH OB ELEVON	2	0	0	0
RSI - RH WING	23	2	0	0
RSI - VERTICAL TAIL and RSB	11	16	11	17

Region C

HEAT SINK PERIMETER (EACH SAMPLE SITE IS ONE 2' LINEAR FOOT SECTION)				
HEAT SINK PERIMETER - BODYFLAP	3	0	0	0
HEAT SINK PERIMETER - LH OB ELEVON	1	0	0	0
HEAT SINK PERIMETER - LOWER FWD FUSELAGE	3	0	0	0
HEAT SINK PERIMETER - RH IB ELEVON	2	0	0	0
HEAT SINK PERIMETER - RH OB ELEVON	1	0	0	0
HEAT SINK PERIMETER - LH IB ELEVON	2	0	0	1

- Minimum 4 tiles per sample set

RCNs

The following are presented for information only

RCN No.	Title	Description
OV17818	OBSS Post Flight Inspection	Performs inspections of IBA striker bar and MRL hooks to identify potential damage due to thermal effects on orbit
KV17817	Radiator retract Flexhose retraction verification Visual monitor of radiator retract flex hoses for bending conditions during final payload bay door closure prior to flight and post-flight	Effectivity for final PLB door closure prior to STS-127

Modifications Matrix

MCR NO.	MCR TITLE	KIT/ MOD RECORD & DESCRIPTION	TECH ORDER IMPACT (FOR REFERENCE ONLY)
<u>Mods Previously Baselined at LSRR</u>			
30099	D-Hatch Decals Relocation - Blanket Decal - Hatch Handle Decal	TCTIM0030099REF, 0003, 1 TCTIM3330099REF, 0003, 0	M072-364828-005 was -002 M072-593828-005 was -001 Model MV0828A
30179	Mid Deck Partition Impact Protection, OV-105	VK70-334795-001, 0105, 0	None
30189	APU QD Heating Modification - APU - Wiring	TCTIV4630189REF, 0105, 0 TCTIV7930189REF, 0105, 0	None
<u>Mission Kit Mods Previously Baselined at LSRR</u>			
23029	Payload Retention Sys-Active Latch Control Capability	VK73-774010-001, 0001, 0	M072-710727 (new tech order) Model MV0073A
30234	DRAGONEYE DTO Implementation	TCTIM0030234REF, 0003, 0	M072-730021-022 was -020 M072-363838-003 was -001 Model MV0828A
30099	External Airlock Ducting Configuration Change	None	M072-643402-011 was -009 Model MV0828A
17222	RMS Elbow camera installation	None	M072-544504-015 was -009 Model MV0082A
<u>Mods to be Baselined at Delta LSFR</u>			
17177	Verification of Fastener Removal from Overhead Luminous Ceiling Panel	TCTIV7317177REF, 0105, 3	None

STS-127 OV-105 Flight 23 – Approved Mods

Mod baselined at LSRR

• 30099 – Airlock Upper Hatch Decal/Blanket Mod

- During STS-124, crew experienced difficulty closing the upper airlock “D” hatch
- Hatch closure requires proper handle positioning and associating mechanism positioning to ensure latch kickers do not interfere
- Research of drawings indicated that a stop bolt mod and re-rigging was previously implemented but the hatch decals were not relocated to match the revised configuration
- For STS-126 a temporary decal mod was implemented on OV-105 via one flight MR to add new position decal and cover incorrect decal with white tape
- For STS-127, implementation of this mod will relocate the UNLATCH decals on the inner and outer surface of the D hatch and the outside hatch surface TCS blanket

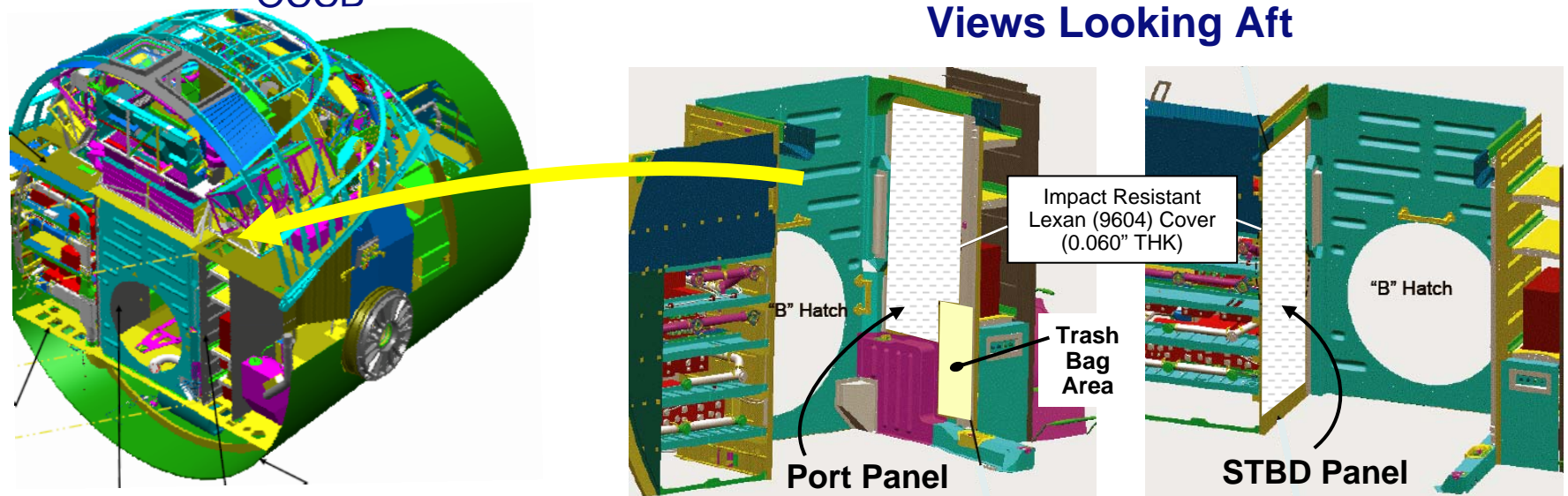


STS-127 OV-105 Flight 23 – Approved Mods

Mod baselined at LSRR

– 30179 - Mid-Deck Partition Lexan Covers

- Modification to implement 0.060" Lexan covers on the crew module aft mid-deck partitions (port and starboard), to provide impact protection for primary structure
 - Lexan will cover the entire surface of each partition (excluding trash bag area)
 - Warning decals previously applied on the partitions (for STS-124 and subs) following evaluation showing the partitions carry a significant part of the reactive load on the aft bulkhead from CM pressure, and are also located in high traffic area
 - Implementation of covers for STS-119 & subs approved by OPO at 7/22/08 OCCB

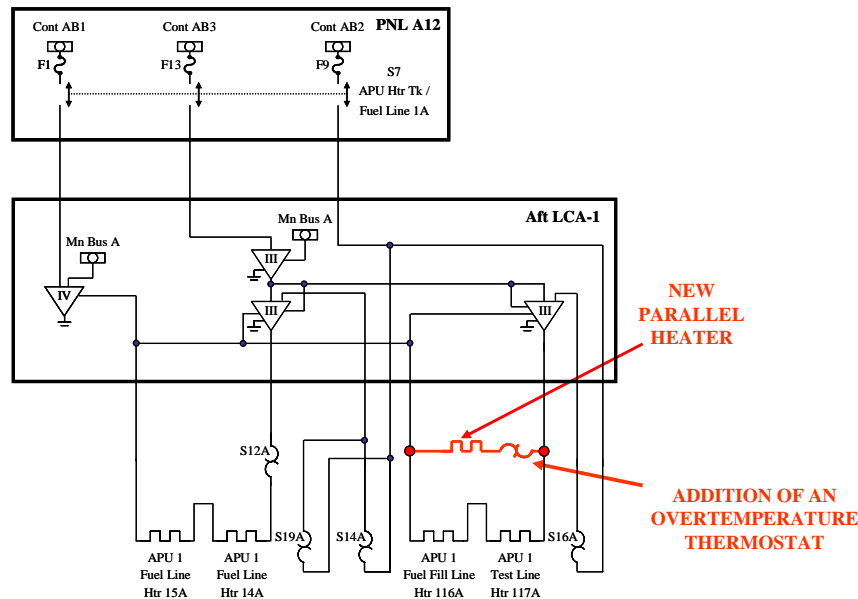


STS-127 OV-105 Flight 23 – Approved Mods

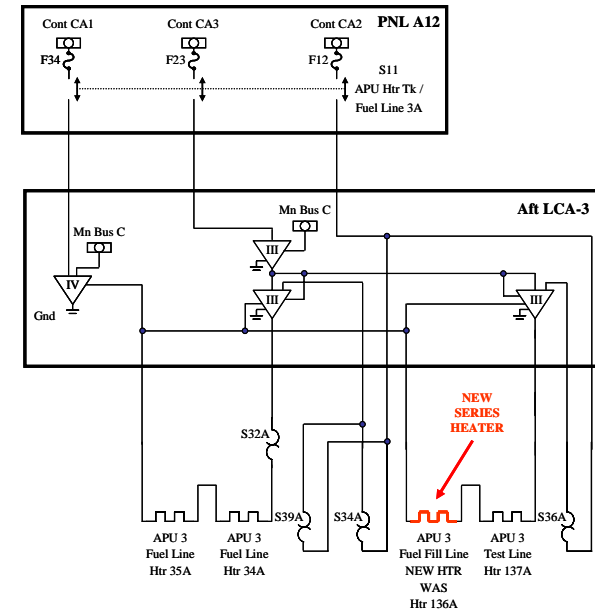
Mod baselined at LSRR

- **30189 – APU GN2 QD Heater Mod** – Modification installs heaters to the APU GN2 fill QDs to alleviate concerns of possible on-orbit QD leakage
 - For Systems 1 and 2 this mod installs a parallel heater to the system 1 fuel fill and test line heater along with an overtemperature thermostat and uses that new heater to heat both the systems 1 and 2 GN2 QDs (1st flight on STS-119, OV-103)
 - For System 3 this mod replaces the existing fuel fill heater with a longer heater and uses that heater to heat both the fuel fill line and the GN2 fill QD (1st flight)

System 1 and 2 Mod



System 3 Mod



BACK-UP CHARTS

STS-127 DLSFR

Engineering Flight Product Status - Concluded

Rescue Flight Status

- For rescue of STS-119, the STS-127 Reconfiguration Engineering Products will be updated by the Engineering Order To Follow (EOTF) process (if required)
- For STS-400, a Program Configuration Waiver will be submitted in March 2009 to document the differences between STS-400 and STS-127 and allow the launch of STS-400 without a MECSLSI update
 - OV-105 will be configured per STS-400 requirements prior to OPF roll-out
 - A Chit will be submitted to document and configure OV-105 to STS-400 requirements

Standardization

- Mission configuration does comply with NSTS 60523 Orbiter/Payload Integration Standardization Document with the following approved waivers:
 - S063799 – Add monitoring of PPSUs and parallel latch ready-to-latch via MDMs, replace 3 standard cables with mission-unique cables
 - S063885 – ODS X1/X2 connector mate verification via MDM PF01, PF02 not required

STS-127 DLSFR

DragonEye DTO 701B

Description

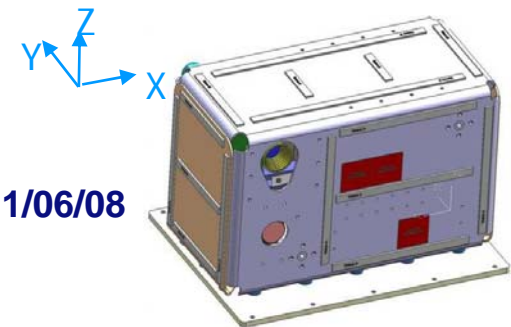
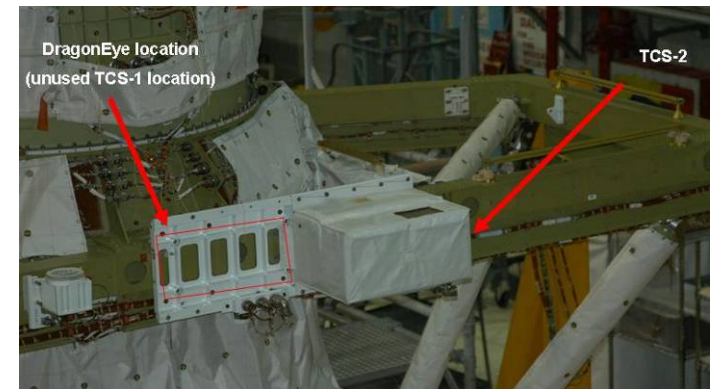
- SpaceX DragonEye (DE) is one of two leading candidates for investigation of a flash Light Intensification Detection and Ranging (LIDAR) relative navigation sensor for the SpaceX Dragon vehicle
- For STS-127, DragonEye DTO assembly mounts to the existing Trajectory Control System (TCS) Carrier Assembly on the Orbiter Docking System (ODS) in the Stbd location, with the TCS-2 mounted in the Port location

Documentation

- NSTS 21552: DragonEye DTO 701B Integration Plan
- ICD-A-21342: Shuttle Orbiter/ODS-ISS Cargo Element ICD
 - Documents avionics interfaces
- ICD-3-0071-02: Orbiter Level III ICD
 - Documents mechanical interfaces

Engineering

- V072-200207: MECSLSI update with DE-related tech orders released 11/06/08
 - M072-730021: TCS Tech Order for Mechanical Installation of DE into Orbiter
 - M072-363838: TCS Blanket Tech Order (blanket removed for DE installation)
- VS72-200207 & VD72-200207: Electrical interfaces updated 11/21/08
- VA72-200207: Cargo Arrangement update expected Feb/Mar 2009



STS-127 DLSFR

DragonEye DTO 701B - Concluded

Testing

- OMRS FII, V6 to be baselined 01/27/09
- DE Adapter Plate Fit Check to TCS Carrier Plate successfully completed 10/15/08 (Chit J6423)

Hardware Deliveries

- Cargo Integration Harness - shipped 12/19/08
- Prime DragonEye Assembly - to be shipped 02/16/09
- Backup DragonEye Assembly - to be shipped 02/23/09

STS-127 DLSFR

OMRS Status

Baselined Files

- P434 – ISS-2J/A Baseline 11/19/08A
- P1540 – SSPL/DRAGONSAT Baseline 11/04/08A
- P544 – ANDE2 Baseline 11/04/08A
- PS17796 S07 – Parallel Retention Latching 11/19/08A

Open Work

ECD

- FII, V2 Post-Mate
 - PP17XXX P434 – Addition of Powered Middeck Payloads 01/27/09
- FII, V4 Pre-Mate
 - PS17841 Mission-Unique List 01/13/09
 - PS17827 FIII MUL 01/20/09
 - PS17842 Adjacent Pin 01/20/09
- FII, V6 Shuttle Experiments
 - PX17XXX 701B – DragonEye Baseline 01/27/09

Issues/Concerns

- None

STS-127 DLSFR

Annex 1

Baselined Files

- NSTS 21434 ISS-2J/A MIP Annex 1
- NSTS 21540 DRAGONSAT PIP Annex 1
- NSTS 21544 ANDE2 PIP Annex 1

Issues/Concerns

- None

TGHR Status

Customer Submittal
Release For Review
Baseline

01/23/09

02/14/09

03/16/09

Issues/Concerns

- None

STS-127 DLSFR

Payload ICDs/PIRNs

All Payload-Unique ICDs are baselined

PIRNS that impact Flight Products

<u>PIRN #</u>	<u>ICD/Payload</u>	<u>Title</u>	<u>ECD</u>
A04368	JEM ES/ICD-A-21434-ES	Baseline Exceedances	03/12/09
A05668	JEM ES/ICD-A-21434-ES	Add Non-Compliance for Aft-Mounted Latch Guide	01/30/09
A04370	JEM EF/ICD-A-21434-EF	Baseline Exceedances	02/19/09
A05681	ODS ISS/ICD-A-21342	DragonEye Power and Wavelength Data	02/09/09

FUTURE WORK: Possible PIRNS for ANDE CAD Model U/D, ICC-VLD Final CAD Model Update, JEM EF Cargo Validated and Final Model/DPA Data Update, JEM ES Final Model Delivery

STS-127 DLSFR

Cargo Close-Clearance Process

- No Close-Clearance areas were identified so none are currently being tracked.

STS-127 DLSFR

Cargo Integration Hardware Status

Delivery Status

- All planned CIH delivered to KSC

Issues/Concerns

- None

BACKUP



OV-105/FLT 23/STS-127 Chits

<u>L/I</u>	<u>CHIT</u>	<u>DESCRIPTION</u>	<u>STATUS</u>
1.	J6116	AMES Gap Filler Removal & Replacement	Approved
2.	J6275A	Orbiter Structur IML Surface Corrosion Sampling Inspection	Approved (1/14)
3.	J6306	OV-105 Mid Fuselage Lock Bolt Collar Inspection	Complete
4.	J6321A	ASA & ATVC R&R For Tin Whisker Remediation	Complete
5.	J6327	WLE RCC Joggle Inspection	Complete
6.	J6341A	Evaluation Of OMS Pod LI-900 Tile Installed on 0.090" SIP	Approved (1/28)
7.	J6402	Micro Inspection Of Captive Gap Fillers	Complete
8.	J6410	Aft Stub Cracked Tile Inspection	Approved
9.	J6414A	RSB Thermal Tab Inspection	Approved (1/14)
10.	J6417A	WLE IR Thermography Study	Complete
11.	J6419	Highest PriorityPutty Repair Tile Removal	Approved (1/5)
12.	J6420	Sampling Of APU System 3 Lube Oil	Approved (3/9)
13.	J6423	Dragoneye Interface Plate Fit Check	Complete
14.	J6429A	ET Door Drive Actuator Changeout & Refurbishment	Complete
15.	J6430	Mid Deck Partition Inspection	Approved (1/19)
16.	J6433	Port & Starboard Sill Measurements	Complete
17.	J6436	Parallel Retention Latch Control Bench Test	Closed
18.	J6447	Post Flt Insp/Contamination Sampling of Laser Camera System & Orb. Locations	Complete
19.	J6453	NLGD Thermal Barrier Friction Test	Pending
20.	J6454	MDM FA1 & EIU 2 R&R	Approved (12/26)
21.	J6459	2 nd Subset OV-105 Putty Repair Tile Removal	Pending
22.	Jxxxx	HD Video Camera Trouble Shooting	New
23.	Jxxxx	RCC and Window DTA Zones of Influence	New



Modification Work Summary

Approved Baseline

- **30177** **Mid-Deck Partition Lexan Covers**
- **30189** **APU GN2 QD Heater**
- **30099** **External Airlock Ducting Change**
- **30099** **Airlock Upper Hatch Decal/Blanket**



CONFIGURATION / Facilities

- **OV-105: Flight 23**
- **OMS Pods: LP03 / RP04**
- **ET: 131**
- **SRB: BI-138/RSRM 106**
- **SSME: TBD(#1), TBD (#2), TBD (#3) U/R**
- **Payload: ISS-2JA, JEM-EF, ELM-ES, ICC-VLD, Dragonsat, ANDE2**
- **Flight Software: OI-33**
- **Firing Room: 4**
- **OPF Bay: 2**
- **MLP: 3**
- **VAB High Bay: 1**
- **Pad: A**





STS-127 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-15-09**

Overview

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



STS-127 Delta Launch Site Flow Review

Presenter

MK-SIO / A. Swift

Date

01-15-09

Page

1

Mandatory RCNs:

NONE

Non-Mandatory Value Added RCNs:

OV17818 V54 – OBSS POST FLIGHT INSPECTION 1/9/09

STS-127

Delta Launch Site Flow Review

Flight Software Overview

Judi Powell

Flight Software

FRWG 01/12/09

PRCB 01/15/09

STS-127 DLSFR (FSW)

- **STS-127/OV-105 Base System is the Third Scheduled Flight of Operational Increment (OI) 33 Flight Software (FSW)**
- **STS-127/OV-105 Flight Software Payload/Vehicle Support:**
 - ISS-2J/A
 - Orbiter Interface Unit (OIU)
 - Sequential Still Video (SSV)
 - Orbiter Docking System (ODS)
 - Trajectory Control System (TCS)
 - Assembly Power Converter Units (APCUs) & Station to Shuttle Power Transfer System (SSPTS) (generic support for both configurations)
 - ISS Caution and Warning (ISSCW)
- **Major New Flight Software Support Items:**
 - None

STS-127 DLSFR (FSW)

- **STS-127 Source Changes/Edits for Primary Flight Software (Base)**
 - SCR 92882 - Allow Three String GPS for STS-116 and Subsequent OV-105 Flights
 - SCR 93211A - Update of SSMEC Vehicle Data Table (VDT) for Enhanced Accelerometer Operations
 - SCR 93215A - Protect Ascent Bearing Spec From MM 104 Retrograde Guidance Solution
 - SCR 93252A - Raise Fwd RCS Tank Temperature Limits
 - SCR 93267A - Removal of the Set and Reset to False Cmds For the RCS Tank Iso Valves
 - DR 124995 - Runway Label Not Displayed Above the Runway
 - DR 124997 - Wrong DEU for Spec 54 Automatic Ascent to Entry Bearing Switch
 - DR 126166 - I-Load Constraint Checker for STS 126 Failed with an Abend
 - DR 126187 - Entry Bearing Display not Displayed on CRTs with Unsupported MF after MM602 Transition
- **STS-127 Patch Implementation for Primary Flight Software**
 - DR 126366 - IFA STS-126-I-001, SM GPC Failure to send GCIL Commands
 - Scheduled to be available in the field on January 22, 2009

STS-127 DLSFR (FSW)

- **STS-127 Patch/Edit Implementation for Backup Flight Software (included on the delivered mass memory)**
 - **SCR 93223 - Change N2/O2 BFS FDA K-Loads to I-Loads**
 - **SCR 93261 - Correction to OI-33 BFS High Rate GPS Updates Introduced in SCR 93201**
 - **DR 121410 - BFS Setting of Unused Bits in Feature Control Words**
 - **DR 121418 - BFS – Erratic HSI During Ascent**
- **STS-127 Patch Implementation for Backup Flight Software**
 - **None**

STS-127 DLSFR (FSW)

- **Products**

- **STS-127/OV-105 Base software production schedule (available to field)**

- **Shuttle Data Tape** **September 22, 2008A**
 - **Mass Memory Unit** **October 16, 2008A**
 - **STS-127 Flight Specific I-Load patch** **February 4, 2009**

- **STS-127/OV-105 ADTL was not required.**

- **Open Items**

- **None**

- **Issues or Concerns**

- **No issues or concerns with STS-127 at this time**



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**STS-127 DLSFR
FLIGHT CREW EQUIPMENT/GFE**

Presenter
Ron Allison

Date Jan 15, 2009

Page 1

STS-127 DLSFR FCE/GFE Status

**Kenneth Brown
Manager, GFE & Flight Crew Equipment Office
Johnson Space Center**



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Page **2**

- Delivery dates are partnered



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Page **3**

BACKUP



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Date Jan 15, 2009

Page 4

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	Cert O/C	KSC Need	JSC Planned	JSC Remarks	JSC Contact
A (port forward)	M072-750025-080	10/20/08	07/06/07	C	11/19/08	11/19/08	STS-126 config	Randall Moore
B (port aft)	M072-750025-081	10/20/08	07/06/07	C	3/09/09	3/09/09		Randall Moore
C (starboard aft)	M072-750025-082	10/20/08	07/06/07	C	3/09/09	3/09/09		Randall Moore
D (starboard forward)	M072-750025-083	10/20/08	07/06/07	C	2/18/09		STS-126 config	Randall Moore
Payload Ops camera	M072-340107-004, 005	1/27/09		O	2/27/09	2/27/09		Randall Moore
SRMS elbow camera	M072-544504-015	10/20/08	3/3/09	C	2/18/09	2/18/09		Randall Moore
SRMS wrist camera	M072-544504-010	1/2/09	3/3/09	C	2/18/09		STS-126 config	Randall Moore
Centerline Airlock Camera (stowed)	M072-660828-002, CCCD			C			Stowed.	Randall Moore
Lefthand Umbilical Camera (aft)	M072-705001-016	3/3/09	06/07/07	C	4/8/09	4/3/09		Randall Moore
					Page 72 of 96			Randall Moore



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STS-127 DLSFR FLIGHT CREW EQUIPMENT/GFE

Presenter
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Date Jan 15, 2009

Page 5

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	Cert O/C	KSC Need	JSC Planned	JSC Remarks	JSC Contact
Righthand Umbilical Camera	M072-705001-027, 028	3/3/09		C	4/8/09	4/3/09	.	Randall Moore
Digital Television (DTV)	M072-710570-007			C			Installed hardware.	Randall Moore
MCIU/RMS Situational Awareness Display (RSAD)	M072-710543-001		03/07/00	C			Installed hardware.	Larry Schmidt
Portable Foot Restraint (PFR)	M072-661568-029		03/11/05	C	2/16/09	2/16/09		Sandy Peterson
Tools for Rendezvous and Docking (TRAD)	M072-730021-020			O	2/01/09	11/19/08		Larry Schmidt
Tool Stowage Assembly (TSA)	M072-660853-002 M072-660850-005	10/01/07		C	2/27/09	2/27/09	.	Sandy Peterson
Video Processing Unit (VPU)	M072-710338-007		07/05/01	C			Installed hardware.	Larry Schmidt
Winches	V070-650007-085		11/19/04	C				Sandy Peterson



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STS-127 DLSFR FLIGHT CREW EQUIPMENT/GFE

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Date Jan 15, 2009

Page **6**

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	Cert O/C	KSC Need	JSC Planned	JSC Remarks	JSC Contact
Wireless Video System (WVS)	M072-744007-001 UHF M072-344828-001 mount M072-744004-012 S-BAND M072-744004-014 S-BAND M072-744004-015 S-BAND M072-744004-018 S-BAND			C				Randall Moore
Space to Space Orbiter Radio (SSOR)	M072-344828-002 M072-740828-002 antenna			C			Installed hardware.	Larry Schmidt
RMS Sideview Camera (RSC)	M072-710281-002 M072-000416-006 camera	12/07/07	11/24/04	C	3/02/09	3/02/09		Randall Moore
Wing Leading Edge (WLE) Instrumentation - Left Wing**	M072-756111-007			C			Installed hardware.	Gary Cox
Wing Leading Edge (WLE) Instrumentation - Right Wing**	M072-756111-008			C			Installed hardware.	Gary Cox
								Gary Cox
OBSS Sensor Package 2	M072-710282-006			C	2/16/09	1/30/09		Larry Schmidt
Airlock Adapter Plate				C			Installed hardware.	Sandy Peterson



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Orbiter Project Office

NASA Johnson Space Center, Houston, Texas



STS-127 DLSFR FLIGHT CREW EQUIPMENT/GFE		Presenter Ron Allison
		Date Jan 15, 2009
		Page 7

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	Cert O/C	KSC Need	JSC Planned	JSC Remarks	JSC Contact
RMS				C			Installed hardware.	Kenneth Ruta
OBSS Sensor Package 1	M072-710282-008			C	2/16/09	1/30/09		Randall Moore
OBSS				C			Installed hardware.	Kenneth Ruta

EVA Status STS-127/2JA Delta Launch Site Flow Review

**Bridget Ziegelaar
EVA Office
Johnson Space Center
January 15, 2009**

- **Forward Bulkhead PFR**
 - Portable Foot Restraint, SED33105308-307, to be installed on forward bulkhead
 - Delivery date - 2/16/09
 - Released T.O. M072-661568-029
 - Required to protect for contingency EVA TPS inspection/repair
- **Lightweight Port TSA**
 - Port LWTSA installation – Tech Order: M072-660850-005
 - Port LWTSA Tools installation – Tech Order: M072-660853-002
 - Mission Specific Port LWTSA Tools installation – Tech Order: M072-660853-005
 - This is due to the LON need to transfer an extra Rope Reel. This area will stay installed on STS-127 regardless of LON flight.
- **No Starboard TSA**
- **Winches**
 - Winch P/N SED33101570-327 on Forward Bulkhead
 - Winch P/N SED33101570-325 on Aft Bulkhead
 - Both installed, expiration date is October 2011



STS-127 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-15-09**

Backup Material

- **SSP Systems Drawings** Attachment 1
- **SSP Authorized Modifications/Non-Standard Work** Attachment 2
- **SSP OMRS Waivers and Exceptions** Attachment 3
- **Launch Window** Unavailable
- **Open Configuration Waivers** Attachment 5



STS-127 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-15-09**

SSP System Drawings

The Drawings Baseline Was Released By PRCB S115127 on 07-24-08

- **V072-000001-278** (Rev. VT) Space Shuttle System (Rel. 12-11-08)
 - **V072-200207-001** (Rev. C) Mission Equipment Cargo Support (Rel. 12-04-08)
 - **SGD32104492-501** (Rev. K1) Crew Compartment Configuration (Rel. 12-16-08)
 - 502** Descent
 - **V070-000001-005** Orbiter General Assembly
 - **V070-410100-018** SSME Installation
 - **10100-0061-175** Integrated SRB General Assembly (BI-138)
 - **80901000000-529** External Tank Assembly (ET-131)

- **STS-127 LSRR + 18 days Mission Configuration Product Plan (MCP) was last published on 10-18-08 and will be republished at ORR -14 days on TBD.**



STS-127 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-15-09**

SSP System Drawings – (Continued)

Ferry Configuration

- **V072-000001-279** (Rev. VT) Space Shuttle System Drawing (Rel. 12-11-08)
- **V072-200207-002** (Rev. C) Mission Equipment Cargo Support (Rel. 12-04-08)
- **SGD32104492-001** (Rev. K1) Crew Compartment Configuration (Rel. 12-16-08)
- **V072-300055-030** (Rev. BT) Ferry Flight Configuration (Rel. 12-11-08)

SCA 911

LW MAR

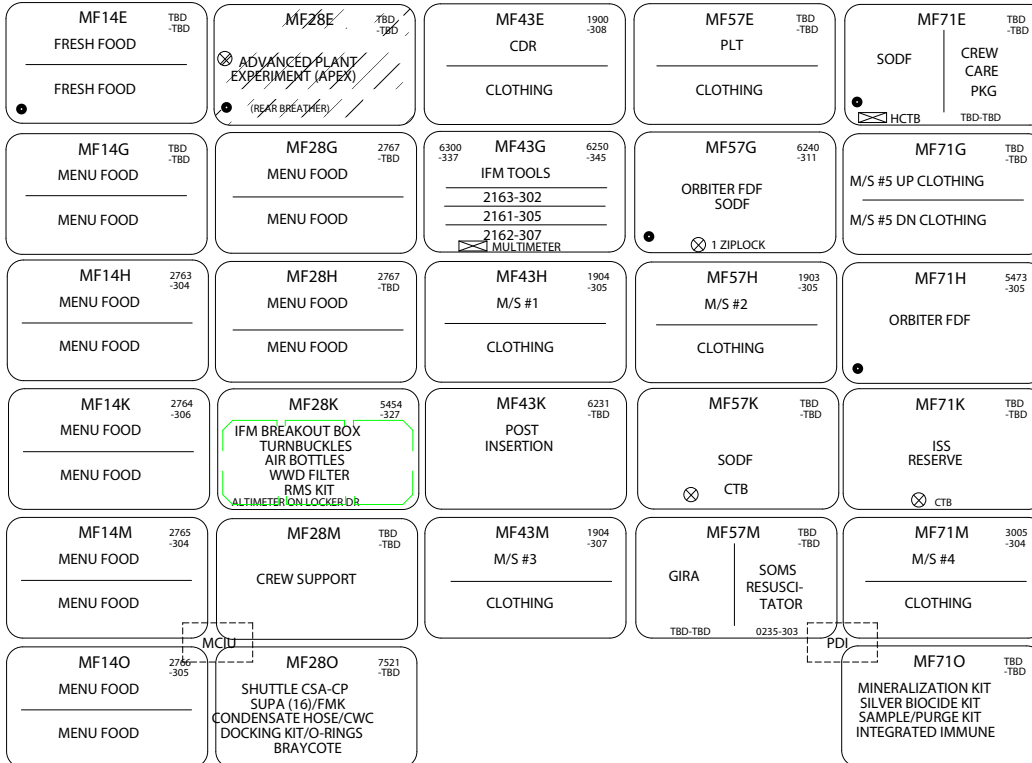
MODULAR LOCKER LAYOUT ASCENT

LEADER: OMAR HASHEM
 DATE: 9-5-08
 LAUNCH: NET 5-15-09
 FLIGHT: STS-127/ISS-2JA
 VEHICLE: OV-105
 CREW: 7 PERSON 15 + 1 + 2 DAYS
 ROOMS: NO RCRS, SLEEPING
 BAGS, EXT A/L, ERGOMETER, RMS,
 LW MAR

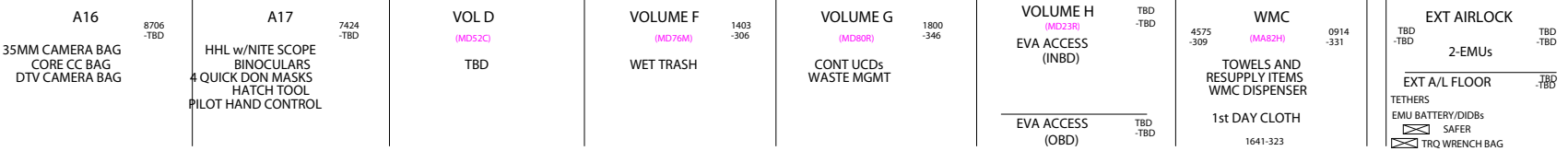
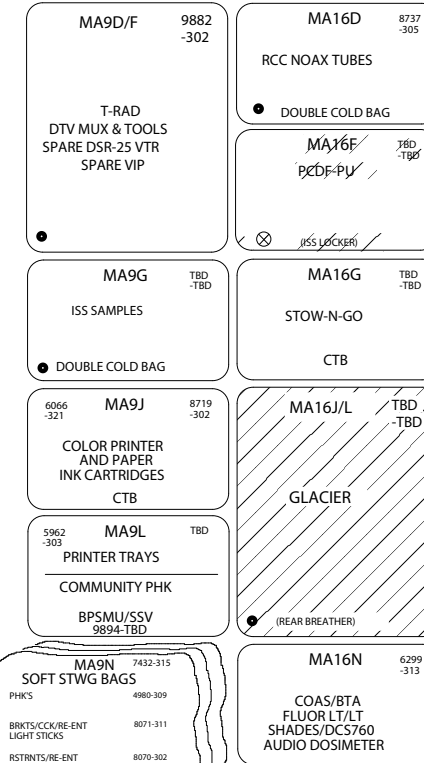
CDR MARK POLANSKY
 PLT DOUGLAS HURLEY
 M/S #1 CHRISTOPHER CASSIDY
 M/S #2 JULIE PAYETTE
 M/S #3 THOMAS MARSHBURN
 M/S #4 DAVID WOLF
 M/S #5 (UP) TIMOTHY KOPRA
 M/S #5 (DN) KOICHI WAKATA

PANTRY FOOD 1622 -308	MF57A PANTRY FOOD 1622 -308	PANTRY FOOD 1622 -302
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MIDDECK FORWARD



MIDDECK AFT



LIQH BOX (7435-306):
 31 LIQH TOTAL + 1 ATCO
 29 IN LIQH BOX
 2 INSTALLED

WINDOW SHADE BAG - WINDOW SHADES (5548-343)
 IFM CABLES & HOSES (4259-341)
 FILM CHANGE BAG (4828-303),
 PANEL COVERS

L10A1: V10/AVIU/TAPES(6686-327)
 DCS BATTERY CHARGER
 L10A2: DTV
 L11: PDIP 2
 L11A2;A3 OIU PANELS
 L12A1: SSP 1
 L12A2: SSP 2
 L12A3: PDIP 1
 R12A1: VPU
 R12A2: OPP/SPASP

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

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
 DWG NO. SGD32104450

CCMM: ALAURNA HOEY
 (281) 483-4608
 /USR/DWGS/LOCKER/STS127

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 (SGD32104450)



STS-127 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **01-15-09**

Modification Impact Report

- **Mission Equipment Modifications and Orbiter Modifications analyzed for impacts to OMRSD, LCC, ICD, EMI, Software, and GSE.**
- **A total of 4 MCRs have been approved and/or pending mods**
- **Current MCR impact status:**
- **No impacts for all six disciplines 3**
- **Possible impacts still under review 1**
 - **MCR 30234 is being reviewed for LCC, ICD, and EMI impacts**

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
023029	AUTH KSC	VK73-774010-001	0001 000	PAYLOAD RETENTION SYS-ACTIVE LATCH CONTROL CAPABILITY ADDED PER MCR BASIC. REF MODEL MV0845A	S115127A 2008-10-06	MAND 023
030099	PLND KSC	TCTIM0030099REF	0003 001	D-HATCH DECALS RELOCATION ON UPPER HATCH BLANKET ADDED PER V828-000002 F18 & V828-360179 A02	S115127A 2008-10-06	MAND 023
	PLND KSC	TCTIM3330099REF	0003 000	RELOCATE ACTUATOR HATCH HANDLE POSITION DECAL, MV0828A ADDED PER V519-331035 A08 & V519-331051 A16	S115127AR2 2008-12-15	MAND 023
030234	AUTH KSC	TCTIM0030234REF	0003 000	DRAGON EYE DTO IMPLEMENTATION ADDED PER V828-000002 F22, REPLACES 030234,0105,0	S115127A 2008-10-06	MAND 023

TOTAL MODS =

4

MCR/ECP	STAT SITE	ITEM/KIT NUMBER TCTI NUMBER	SEQ EISN NO.	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
	AUTH KSC	J6116	0105 002 SPAR	AMES GAP FILLER REMOVAL AND REPLACEMENT	ORB-0086B 2006-08-16	MAND 023
	AUTH KSC	J6275A	0105 001 SPAR	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 023
	AUTH KSC	J6306	0105 002 SPAR	OV-105 MID FUSELAGE LOCK BOLT INSPECTION	S-J6306 2007-11-27	MAND 023
	PLND KSC	J6321A	0105 000 SPAR	ASA #1 & #2 AND ATVC #1 & #4 R&R FOR OV-105, FLT 23 ASA AND ATVC R&R'S WILL BE IMPLEMENTED IN PARALLEL WITH PLANNED OV-105 STS-127 FLT 23 PROCESSING.	S-J6321A 2008-02-05	MAND 023
	PLND KSC	J6327	0105 001 SPAR	WLE RCC JOGGLE INSPECTION	S-J6327 2008-02-14	MAND 023
	PLND KSC	J6341A	0105 001 SPAR	EVALUATION OF OMS POD LI-900 TILE INSTALLED ON 0.090" SIP	S-J6341A 2008-04-09	MAND 023
	PLND KSC	J6402	0105 001 SPAR	MICRO INSPECTION OF CAPTIVE GAP FILLERS DOCUMENTS MICRO INSPECTION OF SPECIFIC CAPTIVE GAP FILLERS DUE TO RECENTLY OBSERVED FLT DEGRADATION.	S-J6402 2008-08-08	MAND 023
	AUTH KSC	J6410	0105 001 SPAR	AFT STUB CRACKED TILE INSPECTION	S-J6410 2008-09-18	MAND 023
	AUTH KSC	J6412	0105 001 SPAR	STS-126 PAYLOAD CLOSE CLEARANCE REQUIREMENTS POST STS-126 REQUIREMENTS	S-J6412 2008-09-17	MAND 023
	AUTH KSC	J6414A	0105 000 SPAR	RUDDER SPEED BRAKE THERMAL TAB INSPECTION	S-J6414A 2008-12-19	MAND 023
	PLND KSC	J6417A	0105 000 SPAR	WLE IR THERMOGRAPHY STATISTICAL STUDY REQ'D IR SCANS WILL BE PERFORMED IN PARALLEL WITH PLANNED POST FLIGHT THERMOGRAPHY.	S-J6417A 2008-12-02	MAND 023
	AUTH KSC	J6419	0105 000 SPAR	OV-105 PUTTY REPAIR REQ'D TPS REPLACEMENT WILL BE PERF'D IN PARALLEL WITH PLANNED STS-127 GROUND PROCESSING.	S-J6419 2008-10-09	MAND 023
	PLND KSC	J6420	0105 000 SPAR	SAMPLING OF OV-105 APU SYSTEM 3 LUBE OIL	S-J6420 2008-10-08	MAND 023
	AUTH KSC	J6423	0105 000 SPAR	DRAGONEYE INTERFACE PLATE FIT CHECK FIT CHECK WILL BE PERF'D OFFLINE IN THE FLT CREW EQMNT LAB	S-J6423 2008-10-08	MAND 023

AREA WITH TRAJ CONTROL SYS CARRIER ASS'Y

AUTH	J6425	0105 000	ACQUISITION OF CERTIFICATION DATA FOR THE IWIT ON OV-105	S-J6425	MAND
KSC		SPAR	FLOW 23 (POST FLIGHT 22)	2008-10-29	023
PLND	J6429A	0105 000	ET DOOR DRIVE ACTUATOR CHANGEOUT AND REFURBISHMENT	S-J6429A	MAND
KSC		SPAR	ET DOOR DRIVE ACTUATOR R&R IS PLANNED FOR STS-127 OPF PROCESSING FLOW. WORK ID'D AT STS-127 LSFR.	2008-11-06	023

MCR/ECP	STAT SITE	ITEM/KIT NUMBER TCTI NUMBER	SEQ EISN NO.	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
	PLND KSC	J6430	0105 000 SPAR	MIDDECK PARTITION INSPECTION	S-J6430 2008-10-14	MAND 023
	AUTH KSC	J6433	0105 000 SPAR	STS-127 PORT AND STARBOARD SILL REQUIREMENT SILL MSRMNTS WILL BE PERF'D IN PARALLEL WITH PLAN-NED STS- 127 MIDBODY PROCESSING.	S-J6433 2008-11-13	MAND 023
	COMP KSC	J6436	0105 000 SPAR	STS-127 PARALLEL PAYLOAD RETENTION LATCH CONTROL BENCH TEST	S-J6436 2008-11-19	MAND 023
	AUTH KSC	J6447	0105 000 SPAR	STS-126 POST FLT INSP AND CONTAMINATION SAMPLING	S-J6447 2008-12-19	MAND 023
	AUTH KSC	J6454	0105 000 SPAR	MDM FA1 & EIU 2 R&R ON OV-105 TO ADDRESS LDC 7715 DIODE	S-J6454 2008-12-19	MAND 023
	AUTH KSC	018985	0105 000 NSW	INSTALLATION OF REFURBISHED MO10W PANEL REF. INT-EO-18985,0105,0 APP'D AT STS-127 LSFR	S115127AR1 2008-11-04	SCHD 023
030179	PLND KSC	VK70-334795-001 NOT REQUIRED	0105 000	KIT - MID DECK PARTITION IMPACT PROTECTION, OV-105 ADDED BY EDS I/F & V070-334794 NEW, REF FCS-5-12-0 279, W/W TCTIM0030179REF,0003,0	S115127A 2008-10-06	MAND 023
030189	AUTH KSC	TCTIV4630189REF NOT REQUIRED	0105 000	APU QD HEATING MOD ADDED BY EDS I/F & V070-465002 Y05, 465433 F03 & 4 65463 E03. REPLACES 030189,0105,0 IN PART	S115127A 2008-10-06	MAND 023
	AUTH KSC	TCTIV7930189REF NOT REQUIRED	0105 000	APU QD HEATING MOD, WIRING ADDED BY EDS I/F, V070-775536 A10 & -775540 A09, R EPLACES MOD CONTR 030189,0105,0	S115127A 2008-10-06	MAND 023

TOTAL MODS =

25

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
008754	APPD KSC	TCTIM5408754REF NOT REQUIRED	0007 000	ROEU P/L INTEGRATION DISCONNECT HDWE TO SUPRT JEM ELM ES ADDED PER V785-544001 B21. REF: K785-710005-001 0007 0	NOT REQD	023
008840	APPD KSC	K725-710086-001 NOT REQUIRED	0001 000	KIT - INTEG H/W; ICC-VLD (VERTICAL LIGHT DEPLOYABLE) ADDED BY EDS I/F & KIT EO NEW	NOT REQD	023
	APPD KSC	K845-774022-001	0001 000	KIT - INTEG H/W, ICC-VLD ADDED PER V845-774980 NEW & V845-774981 NEW	NOT REQD	023
008844	APPD KSC	K796-774001-001	0001 000	ADDITIONAL HARDWARE REQMTS TO SUPPORT TRIDAR ADDED PER V796-000002 A06	NOT REQD	MAND 023
	APPD KSC	K845-774023-001	0001 000	DTO COMMAND & CONTROL CABLE KIT ADDED PER V845-000002 H05	NOT REQD	MAND 023

TOTAL MODS = 5

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIOR
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
	AUTH	CR S063944A	B138 000	TCTI FOR IMPLEMENTATION OF THE IPT AT KSC	S063944A	
	KAS				2008-11-26	

TOTAL MODS = 1

MCR/ECP	STAT SITE	ITEM/KIT NUMBER TCTI NUMBER	SEQ EISN NO.	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
-----	COMP KSC	KLO-1624	2045 000 NSW	INSPECT SSME FLEET ELECTRICAL HARNESS ROUTING AND SLACK	S071807K 2008-08-01	MAND 010
	COMP KSC	KLO-1624	2060 000 NSW	INSPECT SSME FLEET ELECTRICAL HARNESS ROUTING AND SLACK	S071807K 2008-08-01	MAND 001

TOTAL MODS = 2

Approved STS-127 OMRS Waivers and Exceptions

WVR EXC	ELEMENT PROJECT	PRCBD NUMBER WAIVER# (STAT) (INITIAL STS)		ABSTRACT RAS REQUIREMENTS	EISN PAYLOAD	STS BEG END	
+	E	ORB	S053296PJ EK10261 (A)	OMRSD EXCEPTION REQUEST - WING LEADING EDGE RCC PANEL REFURBISHME NT(EK10261)	105	019	023
	W	ET	S053293FZ WK03850R1 (A) (STS-093)	L02/LH2 TANK PRESSURE MONITOR FOR MOVE	ET	099	999
		OMS	S053294ZV WK10093 (A)	OMRSD WAIVER REQUEST - OMS HEATER RESISTANCE (WK10093)	0024	024	031
			S053296UN WK10301R1 (A)	OMRSD WAIVER REQUEST - LOMS HELIUM ISOLATION VALVE LEAKAGE (WK103 01R1)	0013	031	034
			S053299HG WK10648R2 (A)	OMRSD WAIVER REQUEST - LEFT OMS PODHELIUM ISOLATION VALVE INTERNA L LEAK(WK10648R2)	0013	033	036
		ORB	S053296LJ WK10240 (A)	OMRSD WAIVER REQUEST - WSB 2 GN2 REG PRESS BELOW OMRSD (WK10240)	105	018	026
			S053298TA WK10538 (A)	OMRSD WAIVER REQUEST - MODULAR AUXILIARY DATA SYSTEM FREQUENCY DI VISIONMULTIPLEXER 1 FREQUENCY CALIBRATIONOV- 105 (WK10538)	105	020	026
			S053298TB WK10540 (A)	OMRSD WAIVER REQUEST - MODULAR AUXILIARY DATA	105	020	026

SYSTEM FREQUENCY DI
VISIONMULTIPLEXER 2 MUX CH.
1 DATA SHIFT OV-105
(WK10540)

S053299DQ WK10614	(A)	OMRSD WAIVER REQUEST - MODULAR AUXILIARY DATA SYSTEM FREQUENCY DI VISIONMULTIPLEXER-M1A, NOISE RATIO/NOISE LEVEL (WK10614)	105	021 026
S053299HE WK10639R1	(A)	OMRSD WAIVER REQUEST - AUXILIARY POWER UNIT 1 GAS GENERATOR CHAMB ERPRESSURE BIAS (WK10639R1)	105	022 025

Approved STS-127 OMRS Waivers and Exceptions

WVR EXC	ELEMENT PROJECT	PRCBD NUMBER WAIVER# (STAT) (INITIAL STS)	ABSTRACT RAS REQUIREMENTS	STS EISN PAYLOAD	BEG END	
+	W	ORB	S053299LM WK10655 (A)	OMRSD WAIVER REQUEST - FUEL CELL POWER PLANT CELL PERFORMANCE MON ITORSTACK DELTA VOLTAGE 1 AT 510 MILLIVOLTS (WK10655)	105	022 025
	RCS		S053296DC WK10138 (A)	OMRSD WAIVER REQUEST - RRCS FUEL HELIUM REGULATOR LEAKAGE (WK1013 8)	0024	025 030
			S053296PV WK10275 (A)	OMRSD WAIVER REQUEST - RRCS FUEL A& B LEG REG LOCKUP PRESSURE(WK 10275)	0024	026 034
	SRB		S053293WA WK03886 (A) (STS-103)	LH FWD AND RH MID SRB JOINT TEMP SENSORS	BI	099 999

+-----+						
o	o	o	o	o	o	o
	Waivers	Except	Deviat	Cannib	Total	
+-----+						
o	o	o	o	o	o	o
o	Total Extracted	o	13	o	1	o
+-----+						

-
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ACTIVE WAIVERS FOR
OV-105

Item #	Authority	Date	Waiver Description	Effectivity	Wad
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
341	S063701	08/07/07	<p>The following requirement is waived to allow OV-105 to fly with the following out-of-configuration condition:</p> <p>Partial installation of Tech Order M072-660010-004, Middeck Air Flow Re-routing Duct Tech Order, not to include bolt (NAS1003-8A) and washer (NAS620C10) in the lower aft corner of the vent housing cover assembly.</p> <p>During vertical stowage the nut plate (not under USA Tech Order configuration controlled) was noted missing from behind the starboard closeout panel. Without the nut plate, the bolt and washer cannot be installed. The area cannot be currently accessed to re-install the missing hardware. (NOTE: MRB in work on PR FCS-5-20-0476 to approve use of tape on the open hole. Lost and found PR LAF-5-20-0440 written to document lost nut plate.</p>	OV-105, Flight 20	

ACTIVE WAIVERS FOR
OV-105

Item #	Authority	Date	Waiver Description	Effectivity	Wad
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>	<p>OV-103, Flight 35 OV-104, Flight 30 OV-105, Flight 21</p>	
345	S115123AR5	03/03/08	<p>The following requirement is waived to allow OV-105 to fly with the following out-of-configuration condition:</p> <p>Tech Order M072-544504-009, (CATIA) RMS elbow camera, fly with the RMS elbow camera/PTU assembly angle change from 10.6 degrees to 0 degrees for STS-123 launch.</p> <p>A dynamic clearance assessment for STS-123 identified an interference between the camera/PTU assembly and the Payload Bay Door radiators. A decision was made to change the tilt angle from 10.6 degrees to 0 degrees for launch.</p>	OV-105, Flight 21	

Prepared by: Jeff McRoberts
USA RV/DR
861-2505

1/5/2009

ACTIVE WAIVERS FOR
OV-105

Item #	Authority	Date	Waiver Description	Effectivity	Wad
346	S115126AR3	05/16/08	<p>The following requirement is waived to allow OV-105 (STS-400/LON) to fly with the following out-of-configuration condition:</p> <p>Allow the use of STS-126 reconfiguration engineering products on OV-105 Flight 22 for the configuration of STS-400 (engineering reflects STS-126 requirements and vehicle is in STS-400 configuration at roll-out, as-designed vs. as-built).</p> <p>Given time constraints after STS-400 is ordered to launch, approval of this configuration waiver provides the least costly and most efficient means to document the STS-400 launch configuration.</p>	STS-400/LON (OV-105, Flight 22)	

ACTIVE WAIVERS FOR
OV-105

Item #	Authority	Date	Waiver Description	Effectivity	Wad												
347	S115126AR5	8/22/2008	<p>The following requirement is waived to allow OV-105 (STS-400/LON) to fly with the following out-of-configuration condition:</p> <p>Active latches without extended guides in Bays 8 and 12 will replace the respective STS-126 requirements:</p> <table><tbody><tr><td>Bay 8 STBD</td><td>M072-544201-203</td></tr><tr><td>Bay 8 Port</td><td>M072-544201-204</td></tr><tr><td>BAY 12 STBD</td><td>M072-544101-028</td></tr><tr><td>Bay 12 Port</td><td>M072-544101-027</td></tr></tbody></table> <p>Latches changed from secondary to primary:</p> <table><tbody><tr><td>Bay 12 STBD</td><td>M072-002112-043 Partial in Lieu of M072-002212-045</td></tr><tr><td>Bay 12 Port</td><td>M072-002112-044 Partial in Lieu of M072-002212-046</td></tr></tbody></table> <p>The following Tech Orders will not be installed:</p> <p>M072-000423-001 M072-710801-001 M072-544001-008</p> <p>The following Tech Orders will be partially installed:</p> <p>M072-544752-003 ROEU installed but not mated and grease application not accomplished.</p> <p>M072-000442-004 Orbiter aft bulkhead handrails removed, but LMC installation not accomplished.</p> <p>M072-002113-003 and M072-002113-004 latch cap bolt MD111-4026-1635 torque to 20 +/- 5 ft-lbs.</p>	Bay 8 STBD	M072-544201-203	Bay 8 Port	M072-544201-204	BAY 12 STBD	M072-544101-028	Bay 12 Port	M072-544101-027	Bay 12 STBD	M072-002112-043 Partial in Lieu of M072-002212-045	Bay 12 Port	M072-002112-044 Partial in Lieu of M072-002212-046	STS-400/LON (OV-105, Flight 22)	
Bay 8 STBD	M072-544201-203																
Bay 8 Port	M072-544201-204																
BAY 12 STBD	M072-544101-028																
Bay 12 Port	M072-544101-027																
Bay 12 STBD	M072-002112-043 Partial in Lieu of M072-002212-045																
Bay 12 Port	M072-002112-044 Partial in Lieu of M072-002212-046																

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861-2505

1/5/2009