



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



STS-126 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-08-08**

Program Freeze Point

PRCB Presentation

S115126D



STS-126 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-08-08**

Baseline the STS-126 Mission Specific Requirements and Flow Plans.

The STS-126 Integrated Launch Site Requirements were established by PRCBD S115126AR1 dated 03-06-08. This CR and the Associated Data Package were reviewed at the 05-05-08 FRWG.

Flight Management*

Orbiter Engineering*

Payload/Cargo Engineering*

SSME

Shuttle Processing*

Requesting Approval

Requesting Approval

Requesting Approval

Status in Backup

MO3/USA-PI

USA-OE

USA-PI

MP21

PH-A

KSC Integration

Flight Software

Orbiter GFE

EVA

KSC ISS and Payload Processing

MK-SIO

USA-FSW

MV5

XA

UB-R3



STS-126/ULF2

Delta Launch Site Flow Review (DLSFR)

Flight Requirements Status

PRCB May 8, 2008

Shelby Lawson, STS-126 MIM

James Flores, USA Flight Mgr.

Adam Richards/Boeing Mass Properties

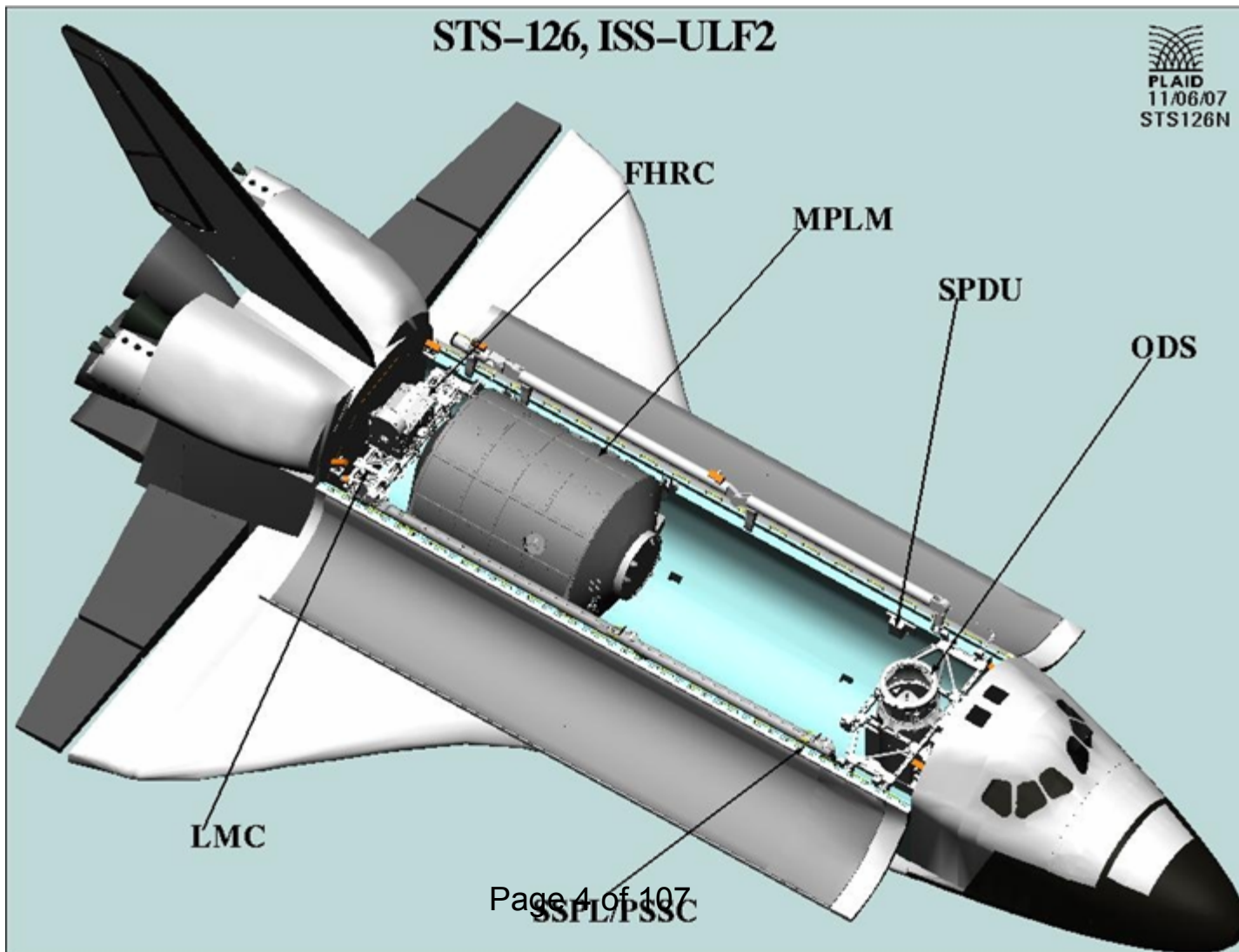


STS-126 Delta LAUNCH SITE FLOW REVIEW

Presenter **Shelby Lawson/MO3**

Date **05/08/08**

Page **2**





STS-126 Delta LAUNCH SITE FLOW REVIEW	Presenter Shelby Lawson/MO3	
	Date 05/08/08	Page 3

LAUNCH

10/16/08 (FDRD CR-11/10/08)
 39A/ MLP3
 CREW SIZE: 7UP/7DN (One crew rotation)

ORBIT

51.6 DEG
 122 NM
 DIRECT INSERTION (190 NM altitude)
 DURATION: 15 + 1 + 2 DAYS (4 EVAs)

CONFIGURATION

OV-105 (22)
 LP03;RP04
 ET-129
 BI-136
 RSRM-104
PROPOSED: (1) 2047 (2) 2044 (3) 2054
 OI-33
 SRMS,ODS,OBSS,SSPTS

CONSUMABLES

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

PAYLOAD

ISS-ULF2	ISS-ULF2
MPLM	MAUI
LMC	SEITE
SSPL/PSSC	

LANDING

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

- **FDRD UPDATE REQUIRED TO MANIFEST SSME'S**
- **FDRD CR S042013HG TO UPDATE LAUNCH DATE (ECD 5/22/08 PRCB)**



STS-126 DELTA LAUNCH SITE FLOW REVIEW	Presenter Shelby Lawson/MO3	
	Date 05/08/08	Page 4

PERFORMANCE MARGIN

•	SIMULATION MARGIN (OCFAF126)	+2153	
•	WEIGHT CHANGES SINCE SIMULATION		
•	PAYLOAD	+87	
•	OPERATOR	-166	
•	ORBITER	+117	
•	CREW COMPARTMENT	-314	
•	ET	<u>+2</u>	
	TOTAL WEIGHT CHANGES	-274	+274
•	OTHER PERFORMANCE PROJECTIONS		
•	PROTECTION FOR DOL DISPERSIONS	-700	
•	10/16/08 LAUNCH DATE (PMBT & ATMOS)	+390	
•	SRB-M/P UPDATES	-213	
•	SRB – BR / 0.05 MIL LOWER THAN 0.3705 AVG	-18	
•	PROJ TO 5 MIN WINDOW FROM INPLANE	-600	
•	PERFORMANCE CHANGES ADJUSTMENT	<u>-19</u>	
•	CURRENT BASELINED APM (04/15/08)		+1267
•	MANIFEST SSME'S		
•	ISP/THST FOR ENG SET 2047, 2044, 2054		<u>-8</u>
•	PROJECTED APM		+1259
	VOLUME III: ASCENT PERFORMANCE MANAGER'S RESERVE GUIDELINE AT LSRR/LSFR IS 400 LBS		



STS-126 DELTA LAUNCH SITE FLOW REVIEW	Presenter Shelby Lawson/MO3	
	Date 05/08/08	Page 5

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

<u>CASE</u>	<u>TOUCHDOWN</u> <u>WEIGHT pounds (LIMIT)</u>	<u>MACH 3.5</u> <u>X C.G. inches (LIMIT)</u>
NOMINAL	223072 (233000)	1086.6 (1075.7)
RTLS	238864 (245000)	1086.0 (1077.2)
TAL	237483 (244000)	1086.1 (1077.2)
AOA	233788 (242000)	1083.7 (1075.7)
CONT RTRN	204290 (233000)	1084.3 (1075.7)

(CONT RTRN CASE IS NO MPLM, LMC IN LAUNCH CONFIGURATION (FHRC RTN) Fwd CG case)

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

ESTIMATES BASED ON TDDP OCFAF126 AND MODIFIED FOR WEIGHT CHANGES THRU 04/15/08.



STS-126 Delta Launch Site Flow Review

Presenter	Shelby Lawson	
Date	05-08-2008	Page 1

- **STS-126 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.)	225204	1113.6 (1409.4)	-0.3 (N/A)	373.8 (516.3)
(Max CM Ballast (2014 lbs) + 1050 lbs additional CCGD items, No Fluids Off-Loaded, No Payload Bay Opening)				
<u>AOA - Orbiter c.g.</u> (SCA c.g.)	232367	1113.7 (1409.6)	-0.2 (N/A)	375.2 (517.7)
(Max CM Ballast (2014 lbs) + 450 lbs additional CCGD items, No Fluids Off-Loaded, No Payload Bay Opening)				
<u>TAL - Orbiter c.g.</u> (SCA c.g.)	209088	1081.7 (1377.8)	-0.1 (N/A)	376.9 (521.0)
(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 1116.0
AOA	=	1060.0 TO 1116.0
TAL	=	1060.0 TO 1123.8

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-126 OV-105 Flight 22 Delta LSFR Orbiter Element

L.R. (Bert) Wagster
Doug Cline

USA/OE
Boeing / VMMO

May 8, 2008

STS-126, OV-105 Flight 22 DLSFR Orbiter

Purpose:

- Obtain program authorization for baseline of modifications to be performed prior to STS-126, OV-105 Flight 22.
 - Mandatory Mods – One new requirement
 - Mod Deferrals – None
 - Mission Kit updates – No new requirements
 - Potential Mods and Mod Summary

- Present summary of other requirements
 - Chits
 - TPS Priority

Back-up

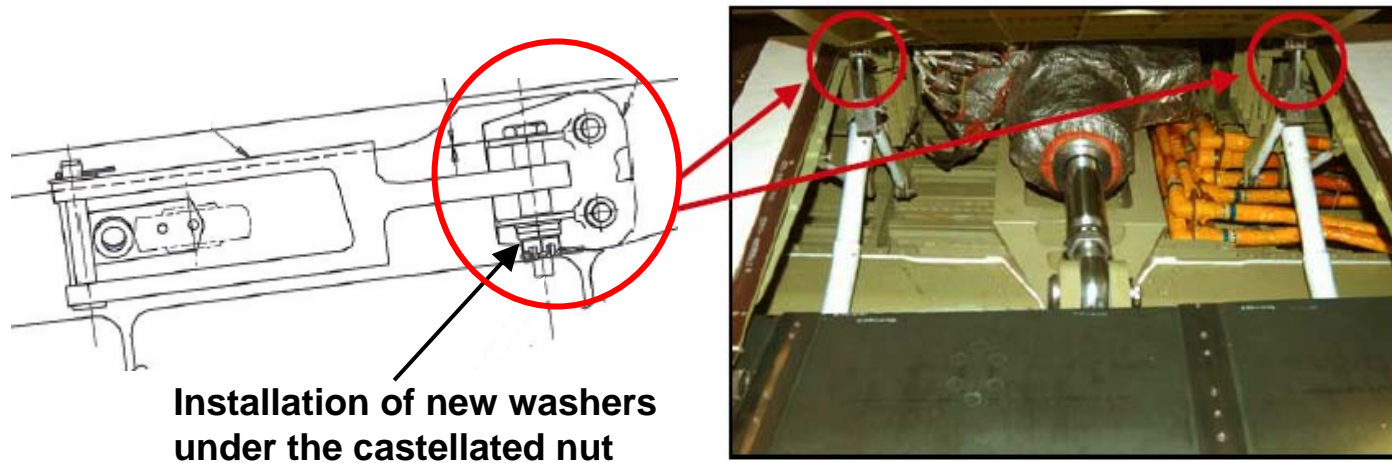
- Modification and Certification Matrix
- Description of mods
- BRI-18 priority status

STS-126 OV-105 Flight 22 – Mod Addition

Request approval for the following

30099 Flipper Door Fastener Joint Gap Requirement Correction

- Adds two flat washers to flipper door 4 and 12 clevis attach fitting to maintain correct link gap spacing
 - RH and LH flipper doors 4 and 12 noted to have an incorrect fastener configuration at the link to flipper door clevis fitting such that the design gap requirement under the bolt head could not be met for the castellated nut installation
 - Addition of two MD153-1002-0003 washers under the castellated nut at each location will correct the discrepant condition and allow joint fastener gap design requirements to be met



STS-126 OV-105 Flight 22 – Mod Summary

One potential GFE modification with MECSLSI impact for Flight 22

OCRD S165341 End Effector upgrade tech order change

- Currently in approval cycle, hardware planned for delivery in the summer
- Revision to M072-544502 required

The following Modifications have been previously authorized

30010 Crew Seat Inertia Reel Change out

- Perform crew seat inertia reel change out on all M/S, Pilot and Commander seats

30010 Flight Deck Bogen Bracket Quick Shoe Fitting relocation

- Relocates quick shoe mounting plate from crew module wall to secondary support structure bracket

17222 WLE Sensor System Firmware and Software Upgrade

- Implements revised software configuration previously planned for STS-123 but de-baselined prior to flight
 - MECSLSI update not required

RCNs/Chits

The following are presented for information only

Chit No.	Title	Description/status
J5927	OV-105 Body Flap (BF) Power Drive Unit (PDU) Gearbox Fluid Level Inspection	Performs second of two fluid checks to assess potential fluid leakage during flight
J6275A	Orbiter Structure IML Surface Corrosion Sampling Inspection	Approved - Performs inspections beneath tile in specified areas to complete sampling started under previous chit J5930
J6295	OV-105 IR Thermography, RCC panels 14L, 13L 9R joggle areas	Previously approved thermography to observe joggle area indications after mission cycle
J6306	OV-105 Mid Fuselage Lockbolt collar inspections	Approved – Performs sampling prior to Flights 21, 22 and 23
J6313	AMEC power-off Spurious output test	Approved – Second test to verify spurious outputs will not adversely affect range safety system
J6327	WLE RCC Joggle inspections –	Approved - Performs visual and tactile inspections of the inboard slipside joggle regions
J6328	Wing Leading Edge Structural Noise Measurements During OPF or MDD Vehicle transfers	Approved – Activates WLEIDS to record data during changes to vehicle orientation or support
J6330	Flight Pin Installation into LMC Secondary Passive Latches in Support of STS-400 Launch Configuration	Approved – Provides for installation of flight pins for OPF rollout
J6337	Air flow verification of middeck supply and return air register locations	Approved – measures air flow in cabin to characterize pockets of CO2 build-up

RCNs/Chits

The following are presented for information only

Chit No.	Title	Description/status
J6341A	Evaluation of OMS pod LI-900 tile installed on 0.090" SIP	Approved – Performs inspection of OMS pod stinger carrier panel tiles for in-plane cracks.
J6345	Installation of tempilabels on MLG shock strut axles	Complete –Installation of tempilabels to provide date for shorter temporary runway at Edwards
J6352	STS-125 OV-104, STS-126 OV-105 AMEC power off spurious output test	Pending approval – Performs testing of AMEC output during power down for indications of spurious outputs to SRB recovery system
J6353	ODS booster fan single and dual fan operation, measure air flow	Pending Approval – Performs airflow measurements to determine benefits of having dual fan motors operating compared to single fan operation

BRI-18 and other Tile Mod Summary – OV-105, Flt 22

Priority Number	OV-105
1. BRI-18 Tile - MLGD FWD O/B Corner (28 tile)	Complete
2. BRI-18 Tile - MLGD FWD Edge (22 tile)	Complete
3. BRI-18 Tile - MLGD O/B Side (18 tile)	Complete
4. BRI-18 Tile - STR side of ET Doors aft and outboard (20 tile)	Planned for STS-126
6. BRI-18 Tile – STR side of ET Doors Inboard side (8 tile)	Planned for STS-126
7. Inboard Elevon “Hub” Tile Modification (4 tile)	Complete
8. I/B Elevon 9lb/90 SIP (17 tiles/side, 34 total)	Partial work planned
9. O/B Elevon 9lb/90 SIP (3 tiles/side, 6 total)	Partial work planned
10. Structural Corrosion Sampling	~50% complete Partial work planned
11. MLGD – Outboard Middle 1/3 (6 door + 6 struc., 12 side, 24 total)	3 complete
12. Nose Area 9lb/90 SIP (7 tiles/side 14 total)	0
13. MLGD - Outboard AFT 1/3 (6 door + 6 struc., 12 side, 24 total)	1 complete
14. Base Heat Shield 9lb/90 SIP (stinger and attach point 42 tiles total)	11 complete Partial work planned
15. Gap fillers in Subset 2B (line across MLGD)	0%
16. BRI-18 Tile – LESS Carrier Panels 8-10 (24 tile) Remaining MLGD 100 tiles total (Top Priority) / LESS carrier panels, 68 tiles total / NLGD 123 tiles total – leading edge first	38 complete
17. Other Current Approved Mod work	No New Mods
18. Proposed MADs Instrumentation failures	Partial work planned
18. Remaining Gap Fillers & Window BRI-18 (126 tile total)	18 complete

**STS-126/ULF2 – MPLM, LMC, PSSC
DELTA LAUNCH SITE FLOW REVIEW
(dLSFR)**

**PAYLOAD CARGO ENGINEERING STATUS
&
STS-400 Configuration Waiver**

**Abbas Elsabagh
Cargo Mission Manager
281-212-6186
May 8, 2008**

STS-126 dLSFR

ENGINEERING FLIGHT PRODUCT STATUS

<u>DRAWING NO</u>	<u>TITLE</u>	<u>REV</u>	<u>EO</u>	<u>RELEASED</u>
V072-200206	MECSLSI	A	A01	02-11-08
VA72-200206	CARGO ARRANGEMENT	NEW		11-15-07
VD72-200206	AVIONICS DIAGRAM	A	A01	02-11-08
VS72-200206	INTEGRATED SCHEMATIC	A	A01	02-11-08
VS70-540335	RETENTION SCHEMATIC	A	A01	02-12-08

DELTA FRED MECSLSI

03-20-08

DELTA FRED PSSC T.O.

02-29-08

STANDARDIZATION

- MISSION CONFIGURATION DOES COMPLY WITH ORBITER/PAYLOAD INTEGRATION STANDARDIZATION DOCUMENT NSTS 60523

RESCUE FLIGHT STATUS

- STS-326 RECONFIGURATION ENGINEERING PRODUCTS WILL BE DEVELOPED BY THE ENGINEERING ORDER TO FOLLOW (EOTF) PROCESS

STS-126 dLSFR

STS-400 Configuration Waiver

Purpose

Configuration waiver to NSTS 07700 Vol. IV, Book 1 Section 3.1.3 is requested to account for differences between reconfiguration engineering products and actual configuration requirements for STS-400.

STS-126 dLSFR

STS-400 Configuration Waiver (Continue)

Background

- For typical ISS LON flights, Reconfiguration Engineering Products are produced only after LON call up
 - The engineering for the rescue vehicle is updated to comply with the LON requirements using an Engineering Order to Follow (EOTF)
- STS-400 must be ready to fly within 7 days of STS-125 (HST) launch
- OV-105 (flt #22) roll-out will have to meet STS-400 requirements. The roll-out configuration for STS-400 is similar to STS-126 roll-out configuration with minimum differences which have been documented in chit J6330
- OV-105 (flt #22) reconfiguration engineering products meet STS-126 requirements and would be used to configure STS-400 for flight with differences in payloads and cargo integration hardware configurations defined in this waiver
- NSTS 07700 Vol. IV, Book 1 Section 3.1.3 Launch Configuration states: “At launch, the Space Shuttle Vehicle (SSV) must be fully compliant with the approved baselined configuration. Differences between the as-designed configuration and the as-built configuration shall exist only as a result of program or project-approved deviation or waivers”

STS-126 dLSFR

STS-400 Configuration Waiver (Continue)

Waiver Requested to NSTS 0770 Book 1 para 3.1.3:

- The waiver will 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)
- FOICB approved to configure STS-400 utilizing STS-126 reconfiguration engineering products with the following noted differences:
 - No MPLM or LMC installed
 - MPLM keel latch open to prevent sliding
 - ROEU in unmated/stowed configuration
 - Payload mate tech order (LMC to LIP cable) not installed
 - LIP connector capped
 - Secondary passive latches pinned (LMC)
 - No latch guides on MPLM latches
- *Note: Sidewall payload (PSSC) required for STS-126 would fly on STS-400*

STS-126 dLSFR

STS-400 Configuration Waiver (Continue)

Justification:

- Given the 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.
- The following alternative options are avoided by pre-approval of this configuration waiver:
 - Processing a configuration waiver while in STS-400 countdown.
 - Processing a CR to change engineering while in STS-400 countdown, followed by release of engineering while in STS-400 countdown.
 - Generation and management of dual engineering products to support STS-126/400, followed by a cleanup CR while in STS-400 countdown or after STS-400 stand down.

Notes:

- FOICB concurred with the plan to utilize the single MECSLSI configured to STS-126 requirements with a list of Tech Orders (TOs) that differ for STS-400
- Chit J6330 was approved in advance (2/13/08) to allow for installation of flight pin in passive secondary latches (Required for STS-400)
- The plan and delta configuration (see TO list in backup) between the two missions was reviewed and approved by the IPT and the community, including KSC GO

STS-126 dLSFR

STS-400 Configuration Waiver (Continue)

Recommendation

- Approve the configuration waiver for STS-400 only

STS-126 dLSFR

STS-400 Configuration Waiver (Continue)

Concurrences:

Organization	Review Date	Comment
Boeing-SE/HS2, Payload Cargo Integration	04/23/08	CIE/PCI and Boeing LSS(KSC)
USA-FL/USK-246, Ground Operations	04/23/08	KSC GO: PPM and Payload Engineer
USA-HOU/USH-700D, Payload Cargo Engineering	04/14/08	PCE/CMM
NASA-JSC/MO, Flight Integration & Operations	04/15/08 04/15/08	STS-400 Flight Manager STS-126 Flight Manager

Endeavour STS-126

Delta Launch Site Flow Review

Space Shuttle Main Engine

SSME - KSC
Paul Brzeski
(321) 861-4064

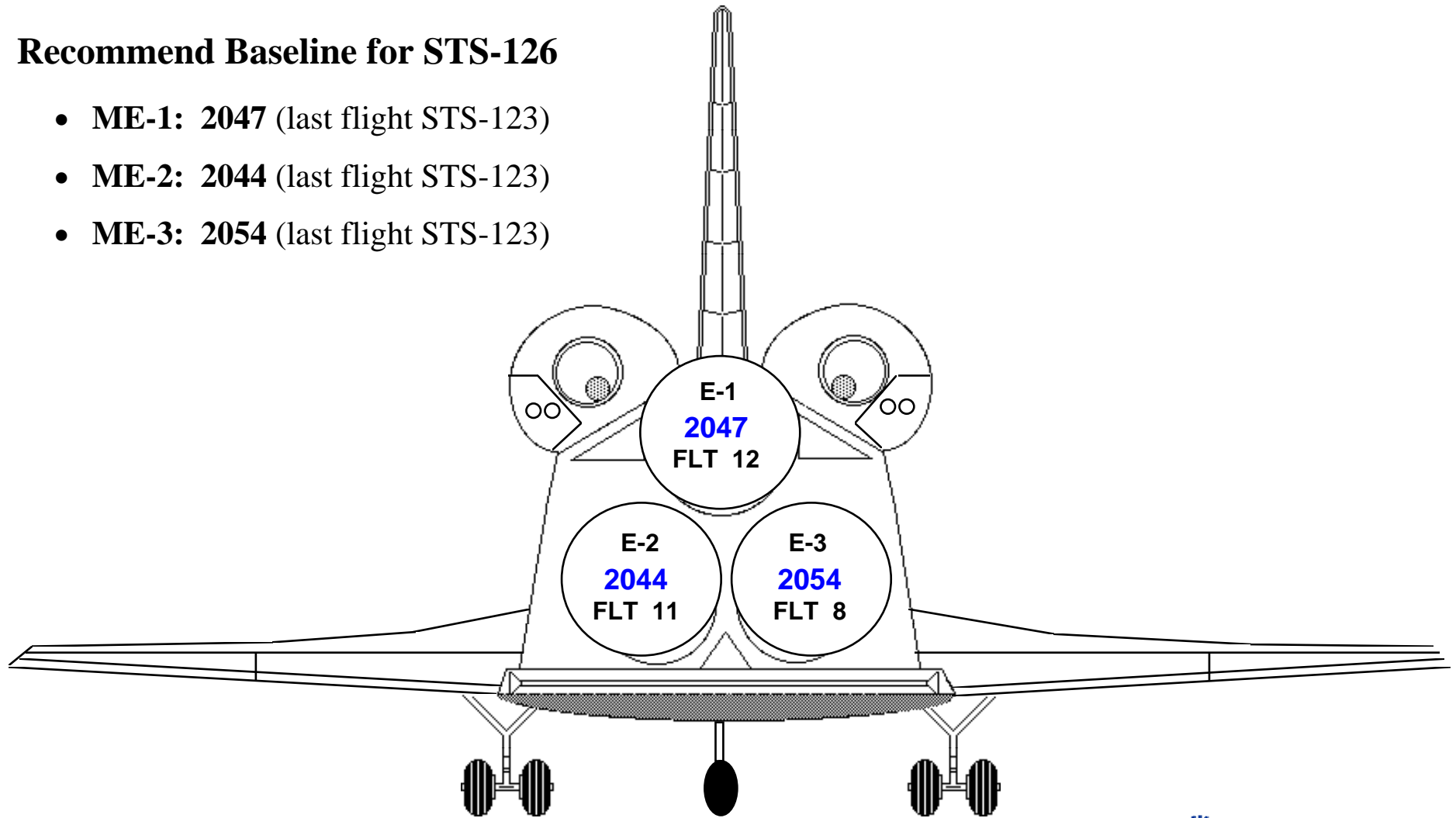


STS-126 Delta Launch Site Flow Review

SSME Allocations / Locations

Recommend Baseline for STS-126

- **ME-1: 2047** (last flight STS-123)
- **ME-2: 2044** (last flight STS-123)
- **ME-3: 2054** (last flight STS-123)





STS-126 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
1527	Liquid Air Insulation Removal & Replacement Time Cycle Extended (from 1 flight only to inspection)	2047	N/A	0 lbs	N/A	Spec and OMRSD revisions complete.
		2044	N/A	0 lbs	N/A	
		2054	N/A	0 lbs	N/A	
1530	LPOTP re-identification: Joint O5 over-sized inserts with corrosion inhibitor (nameplate change only)	2047	2R112820-010	0 lbs	ME-0234 R03	In-work
		2044	2R112820-010	0 lbs	ME-0226 R07	In-work
		2054	2R112820-010	0 lbs	ME-0228 R04	In-work



STS-126 Delta Launch Site Flow Review

Rocketdyne Action Requests (RAR)

RAR	Title	Engine(s)	SPARs / CRs	Status
KLO-1619	Allocate Spare HPFTP 8024R1 to Engine 2047.	2047	N/A	Pending postflight STS-123 pump removal.

KSC Launch and Landing Project

STS-126

Delta Launch Site Flow Review

May 8, 2008





Milestone Interface Chart

K. Tenbusch

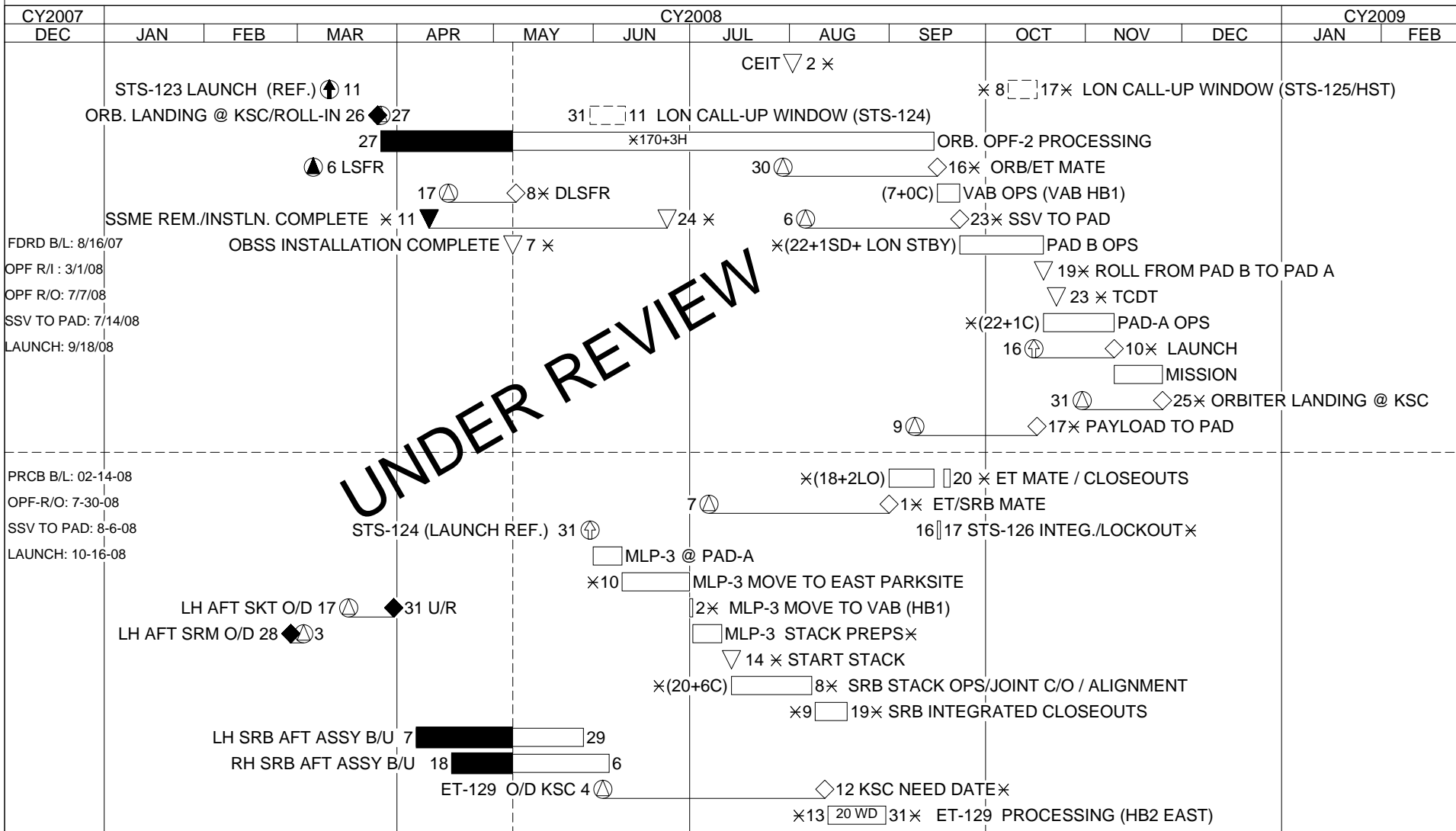


STS-126 KSC Milestone Interface Chart

OPR: USA: R. GILLETTE, INTEG. OPS.
NASA: K. TENBUSCH, PH-A

OV-105/22 ISS-27-ULF2 / MPLM
CREW / DURATION: 7 UP - 7 DWN / 15
ET 129 / Bi136 / RSRM 104 / MLP-3 / PAD-A / VAB HB1

SSP APPROVED MANIFEST PRCB 2-14-08 (REF. CR# S042013HD)
Status as of:
05/06/2008



UNDER REVIEW

THREATS:

1. ET DELIVERY
- ×2. 3 DAYS OF PARALLEL ET CLOSEOUTS WITH ORBITER MATE OPS.
- ×3. MINIMUM CONTINGENCY

NOTES:

1. TWENTY-SEVENTH ISS/SSP FLIGHT
2. PARALLEL OPS WITH STS-125 HST VEHICLE @ PAD A
3. ET REASSIGNMENT (ET-127 TO ET-129)

Flight Element Processing

M. Parrish



Flight Element Processing Overview

- **OPF Flow Milestones** **Presented**
- **OPF Processing Deltas** **Presented**
- **TPS Status** **Presented**
- **TPS Cavity Estimate** **Presented**
- **Stoplight Chart** **Presented**
- **Chits Summary** **Backup**
- **Modification Summary** **Backup**
- **TPS BRI Map** **Backup**
- **Configuration/Facilities** **Backup**

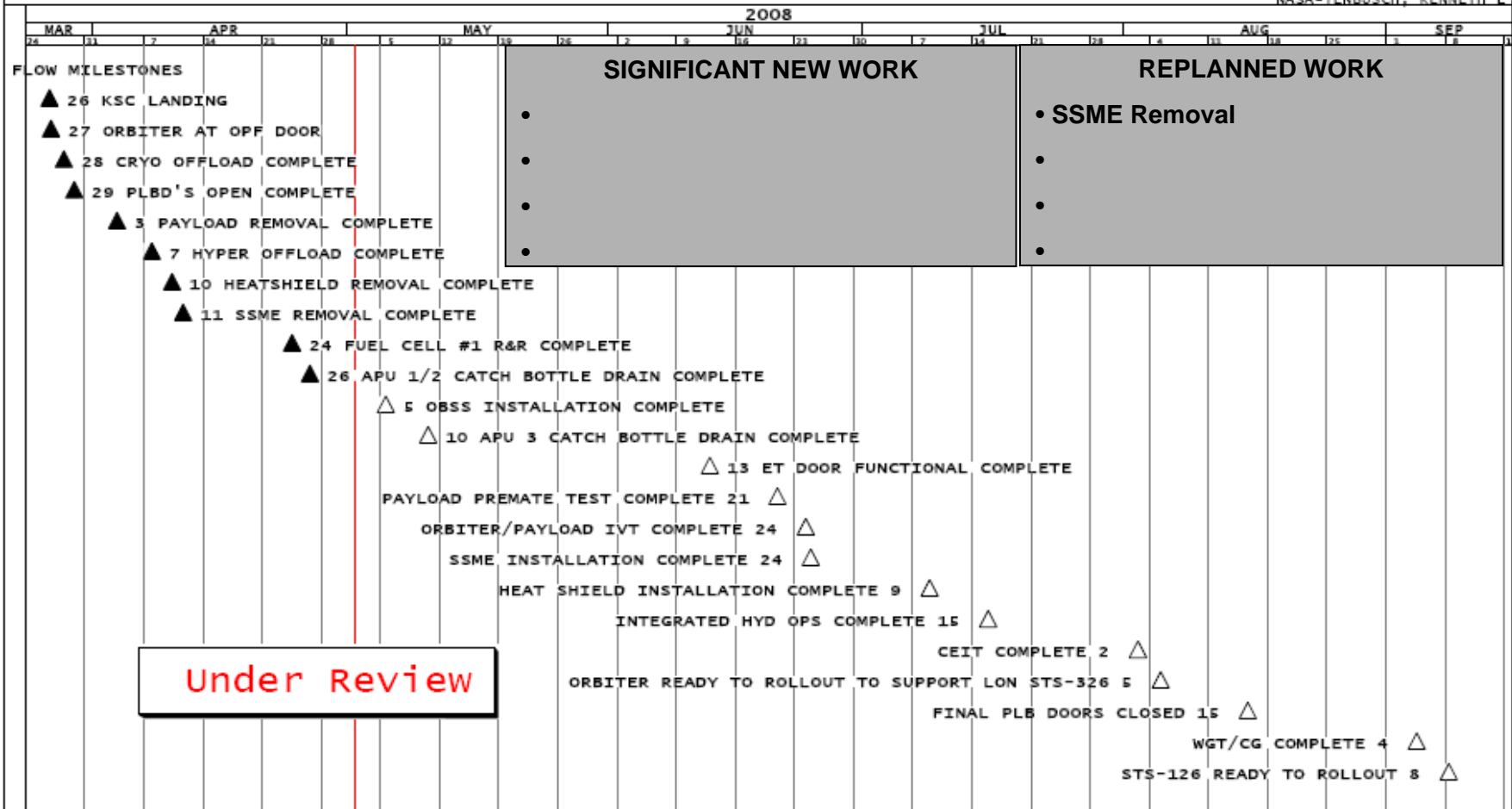


STATUS	
USA	NASA
C	C
0=Cancel	10=Not-cancel

STS-126/OV-105 OPF FLOW MILESTONES
DOWN PAYLOAD:ISS-25-13/A - UP PAYLOAD:ISS-27-ULF2/MPLM

Creation Date: 4-OCT-2007
Revision Date: 29-APR-2008
Revision : F

OPR: USA-GOODMON, RANDAL D
NASA-TENBRUSCH, KENNETH E



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

STATUS DATE: 2-MAY-2008:1 PLOT DATE: 2-MAY-2008, 9.47 am NETWORK: OPF126.724 CONTACT: L.P. TUTEN ,1-0673 OPF BAY-2 EXE:CUSOPFSU.27



OPF Processing Deltas

New Items

- Window #1 and #6 Replacement
- LH Pod DSC OL1 Card R&R
- FES PRI A Controller R&R
- APU #1 Fuel Tank Decay (Suspect MD12 AHC Bleed Screw Seal)
- APU #3 Seal Cavity Drain Line Decay
- SSME 1 LH2 Pre-valve PD4 RV R&R
- EIU #1 R&R and Test
- Fuel Cell Common PH Sensor R&R
- UHF Transceiver R&R
- Chin Panel Gap Filler Replacement
- RMS End Effector R&R
- Panel O15 R&R (Potential)
- Radiator Retract Hose Assembly R&R (Potential)



OPF Processing Deltas Continued

Planned at LSFR

- Fuel Cell #1 R&R
- OBSS IBA Installation and Checkout

Deferred to Flight 22

- PVD Purge Circuit #1 Inspection and Star Tracker Filter R&R
- System #2 Hydraulic Flexhose Leak (Awaiting Leak Check)
- LH OMS Pod Failed MADS Measurements



TPS Status

- TPS Post Flight Inspections - 100% Complete
- ~53 Cavities (2 Bonded)
- BRI Tile Implementation on ET Doors
 - Total BRI = 28
 - Completes Priority 1-4 and 6-7
- LESS Access Panel Removals Planned - 2 Upper & 12 Lower
- Chin Panel Removed, Gap Filler in Fabrication



STS-126 “DLSFR” Cavity Estimate

<u>PRT Priority</u>		<u>Description</u>	
		<u>LSFR</u>	<u>DLSFR</u>
1	Deferred Tile/Fib for 1-Flight	13	7
1	In-Flight Tile/Fib Damage	65	45*
1	Insert Inspections	2	2*
1	OMS Pod Leading Edge (12-Tile/11-Fib)	--Complete--	
1	Operational (Adjacent Ops,C/P Ops,Veh Suppt)	18	18*
8/9/14	90 SIP/9LB Tile (17 IB Elevon, 6 OB Elevon, 3 Stinger)	0	26
10	Structure IML Surface Corrosion Inspection (LH IB Elevon)	0	4(4)
15	Gap Fillers	0	0
18	LP03 MADS Sensor V07T9972A	0	2
<u>BRI Implementation</u>			
1-3	MLGD Doors	--Complete--	
4/6	ET Door Structure-Side	20	28
TPS Removal TOTAL		118	132(136)*
(Estimate*)			





STS-126 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-08-08**

Backup Material

FRWG Presentation (With Minor Changes)



	Presenter	Shelby Lawson/MO3	
	Date	05/08/08	Page 6

Flight Operations and Integration (FO&I)

Flight Requirements:
MIP, PIPs, CIP
FDRD
FRD

Backup Charts



STS-126/ULF2		Presenter	Shelby Lawson/MO3
Mission Requirements Status		Date	05/08/08
		Page	7

Documentation

MIP – NSTS 21514, Rev A, Chg 1-5 (4/1/08)

CR-0011: Mission Priorities update

PIP- MAUI, NSTS 21530, Basic, Chg 1 (3/29/06)

CR-0003: Add Illuminator Constraint

CR-0004: Move Experiment Matrix in PIP

FDRD:

CR-S042013HG: Update Launch Dates for STS-125, STS-126 & STS-400

PIP – MPLM, NSTS 21499, Rev B, Chg 1-2 (12/7/07)

PIP – SSPL 5510/PSSC, NSTS 21539, Basic, Chg 1 (12/7/07)

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

CIP- LMC, NSTS 21494, Rev B, Chg 1-9 (2/4/08) STS-126 Addendum

ECD/Date

Post DLSFR

5/02/08 (A)

5/02/08 (A)

5/22/08

None pending

None pending

None pending

None pending



STS-126/ULF2 FRD Status		Presenter James Flores/USA
Date 05/08/08	Page 8	

- STS-126 FRD Latest Revision: 003, dated April 16, 2008 (<http://sspweb.jsc.nasa.gov/efrd>)

CRs in work:

- 015: Editorial Update
- 016: Additional LiOH to replenish ISS stockpile

- STS-326 Latest Revision: Revision 003, dated April 16, 2008 (<http://sspweb.jsc.nasa.gov/efrd>)

CRs in work: None

CRs posted at <http://sspweb.jsc.nasa.gov/icbdata>



STS-400 Flight Requirements Status

Presenter
Todd Hellner/Frank Richmond

Date 05/08/08

Page 9

STS-400 HST Rescue Flight MIP (NSTS 21543), Basic Dated 12/7/07:

Issues/Concerns:

–None Identified

STS – 400 Latest FRD Revision

–Revision 003, Dated February 20, 2008 (<http://sspweb.jsc.nasa.gov/efrd>)

Open CRs:

– None

CRs in Work:

– None

Back-up

Modifications Matrix

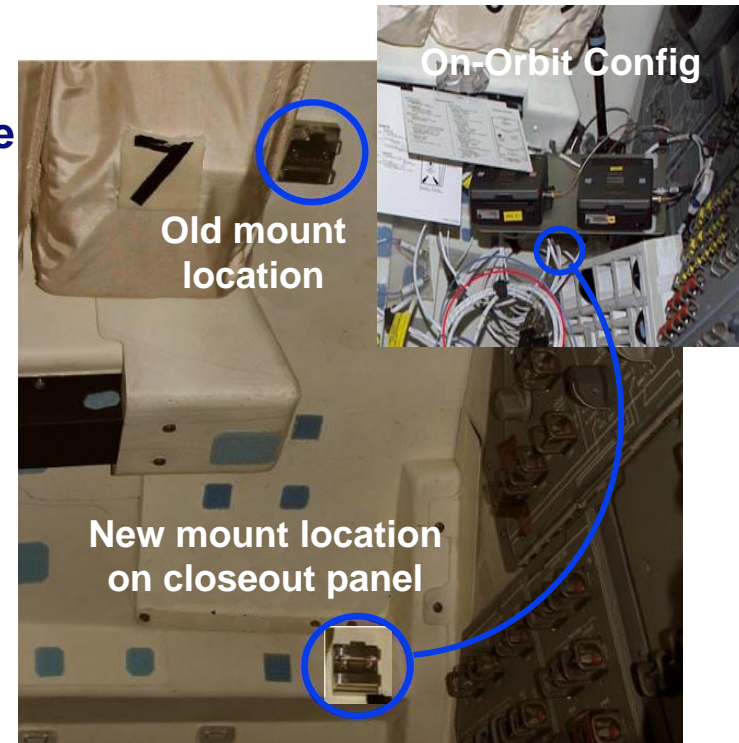
MCR NO.	MCR TITLE	KIT/ MOD RECORD & DESCRIPTION	TECH ORDER IMPACT	REMARKS
Mandatory Mods to be Baselined at Delta LSFR				
30099	Flipper Door fastener joint gap requirement Correction Mod	TCTIV1030099REF, 0105, 0 Modification corrects washer callout for flipper door hinge to provide proper gapping	None	EOTF change part of
Modifications Previously Authorized				
30010	Implementation of Inertia reel Mod on Crew Module Seats	Installs improved Inertia reels on PLT, CDR and M/S seats.	CCCD manifest Item	CR authorization in work separately (CR S063027Y)
17222	Wing Leading Edge Sensor System Firmware and Software Upgrade	TCTIM0017222REF, 0003, 8 Authorizes changes to the WLEIDS sensor configuration dash numbers and updates tech order installations.	M072-756111-007 M072-756111-008 Model MV0886A	No MECSLSI Impact Current STS-126 MECSLSI includes -007 and -008
30010	Flight Deck Bogen Bracket Quick Shoe Fitting Relocation	TCTIV6530010REF, 0105, 0 Relocates quick shoe fitting from crew module structure to secondary support bracket due to negative margins for kick loads on bracket arms attached to crew module wall.	None	CCCD impact

Certifications Matrix

Mandatory Mods to be Baselined at DLSFR										
30099	Flipper Door Fastener Joint Gap Requirement Correction Adds two flat washers to flipper door 4 and 12 clevis attach fitting to maintain correct link gap spacing.	Released 2/28/08	2/28/08	N/A	N/A	Go	N/A	Not Req'd Not Req'd	CR 05-100004-002J	Determined to have no cert impact. OCR/D S165309 approved on 3/18/08.
Mandatory Mods Previously Authorized										
17222	WLE Sensor System Firmware and Software Upgrade Implements revised software configuration previously planned for STS-123 but de-baselined prior to flight			N/A	N/A			Not Req'd Not Req'd		
30010	Crew Seat Inertia Reel Changeout Perform crew seat inertia reel changeout on all M/S, Pilot and Commander seats	Released 3/7/08	3/10/08	Houston 7/3/08 KSC 7/31/08	TBD	Go	5/30/08 P 5/30/08 P 5/30/08 P 5/30/08 P		CR 25-39126815-301G CAR 07-25-39126815-301G CR 25-3912985-301G CAR 08-25-3912985-301G	Certify replacement of MA-8 Inertia Reels with new MA-16 reels. Authorized by OCR/D S165281 on 12/18/07.
30010	Flight Deck Bogen Bracket Quick Shoe Fitting relocation Relocates quick shoe mounting plate from crew module wall to secondary support structure bracket	Released 4/2/08	4/2/08	N/A	N/A	Go	4/18/08 P 4/18/08 P		CR 25-650505-001F CAR 06-25-650505-001F	- Update quick-shoe install config to include 1 new location. - Certification deviation to kickload requirement for quick-shoe install on closeout panels (15 locations). Authorized by OCR/D S165328 on 4/1/08.

Bogen Bracket Fitting Modification

- Relocation of Bogen Bracket Base Plate and Quick Shoe Fitting
 - Recent assessment determined that one of the base plate/quick shoe fittings that support Bogen arms was mounted on primary structure (crew module canopy skin, aft mid-deck near overhead windows)
 - Multi-use (Bogen) mounts hold cameras, computers and recorders during on orbit operations
 - Stress assessment showed negative margins due to crew induced moment loads imparted by the Bogen Bracket attached to the quick-shoe
 - Base plate/quick shoe fitting moved to nearby location on secondary structure (fiberglass closeout panel)
 - Negative margins still exist for secondary structure mounting of all quick shoes, but acceptable risk based on no history of secondary structure damage and moderate mission impact (OVEI Waiver ZOV103A0071)



TPS Priorities – OV-105 STS-126 DLSFR OV-105

Mandatory

- Flight damage, OMRS Requirements/Chits, LRU access, & deferred work
 - Deferred work may be re-deferred with acceptable inspection

Note: Gap Filler R&R –To be worked on a best effort basis as resources allow.

Prioritized Opportunity

1-3 BRI-18 Tile - MLGD (68 Tile) **Complete**

1st, 2nd and 3rd subset – FWD and O/B corners and side – 34 tile/door

4. BRI-18 Tile - STR side of ET Doors (20 Tile)

4th subset – ET Doors – 10 tile/door

5. BRI-18 Tile – LESS Carrier Panels 8-10 (24 Tile) **Recommend move to #16 priority**

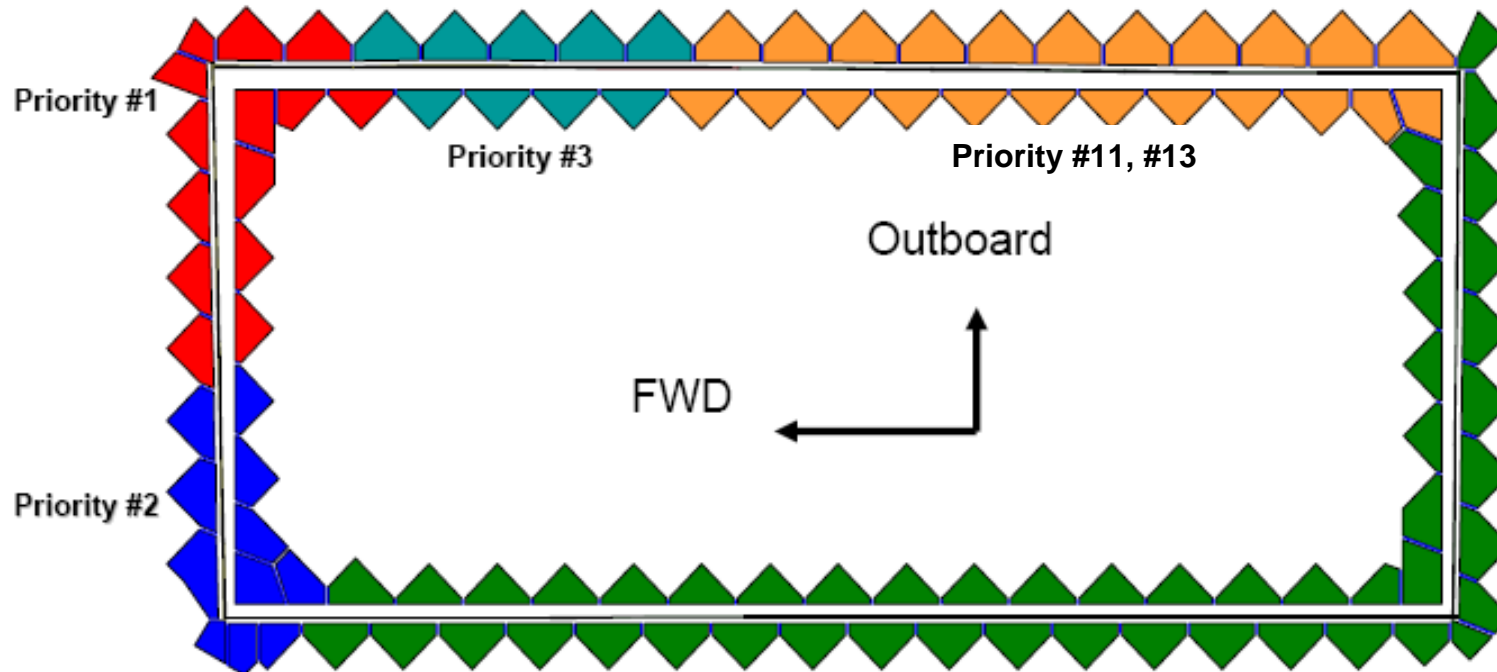
- 5th Subset – LESS Hot Panels – 12 tile/side

6. BRI-18 Tile – STR side of ET Doors Inboard side – AFT 4 Tiles/side (8 Tile total)

TPS Priorities – OV-105 STS-126 DLSFR

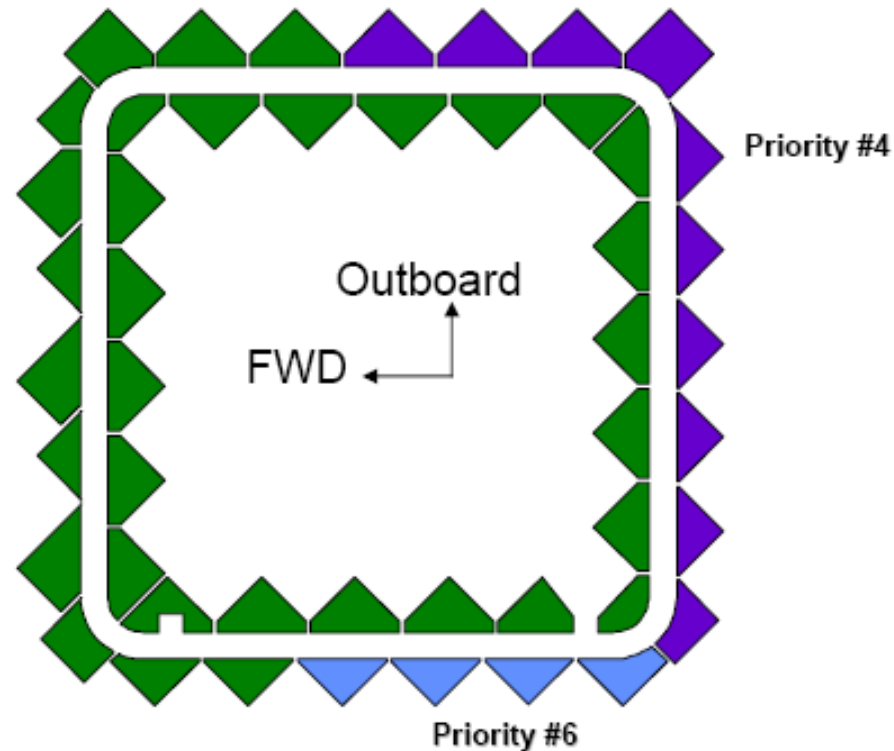
7. Hub Tile Modification – 104 (1 side)/103 (both sides) – 9 Tiles
8. I/B Elevon 9lb/90 SIP Upgrade to FRCI-12 – 34 Tiles (17/side)
9. O/B Elevon 9lb/90 SIP Upgrade to FRCI-12 – 6 Tiles (3/side)
10. Structural Corrosion Sampling – Heat sink Areas
11. MLGD – Outboard Middle 1/3 - (6 Door/6 STR)
12. FRCS 9lb/90 SIP Upgrade to FRCI-12 – 14 Tiles (7/side)
13. MLGD - Outboard AFT (1/3 left) 6/door/6 str)- 24 Tile
14. Base Heat Shield 9lb /0.090 – 32 stinger + 10 attach point, 42 tiles total
15. Gap fillers in Subset 2B (Line across MLGD edge)
16. BRI-18 Tile – Remaining MLGD (Top Priority)/LESS carrier panels/NLGD
 - a. MLGD (Inboard forward edge working to AFT door edge) 50/door, 100 total
 - b. LESS - panels 7, 6, 5, 4, 3, 2, 1, 11, 12, 13 (in that order) 34/side, 68 total
 - c. NLGD (attrition – do leading edge first) 38 structure, + 85 door, 123 total
17. Mod work None planned (Future potential - MLGD sneak flow)
18. Proposed MADs Instrumentation failures (104 & 105 L/H OMS Pod)
19. Remaining Gap Fillers & Window BRI-18
 1. Windows 2, 3, 4, & 5 Upper Carrier Panels (top priority)
 2. Window locations 1 & 6 Upper Carrier Panels 1st/Lower C/P's 1 – 6 last - 126 total

BRI-18 Top Risk Reduction Areas (MLGD)



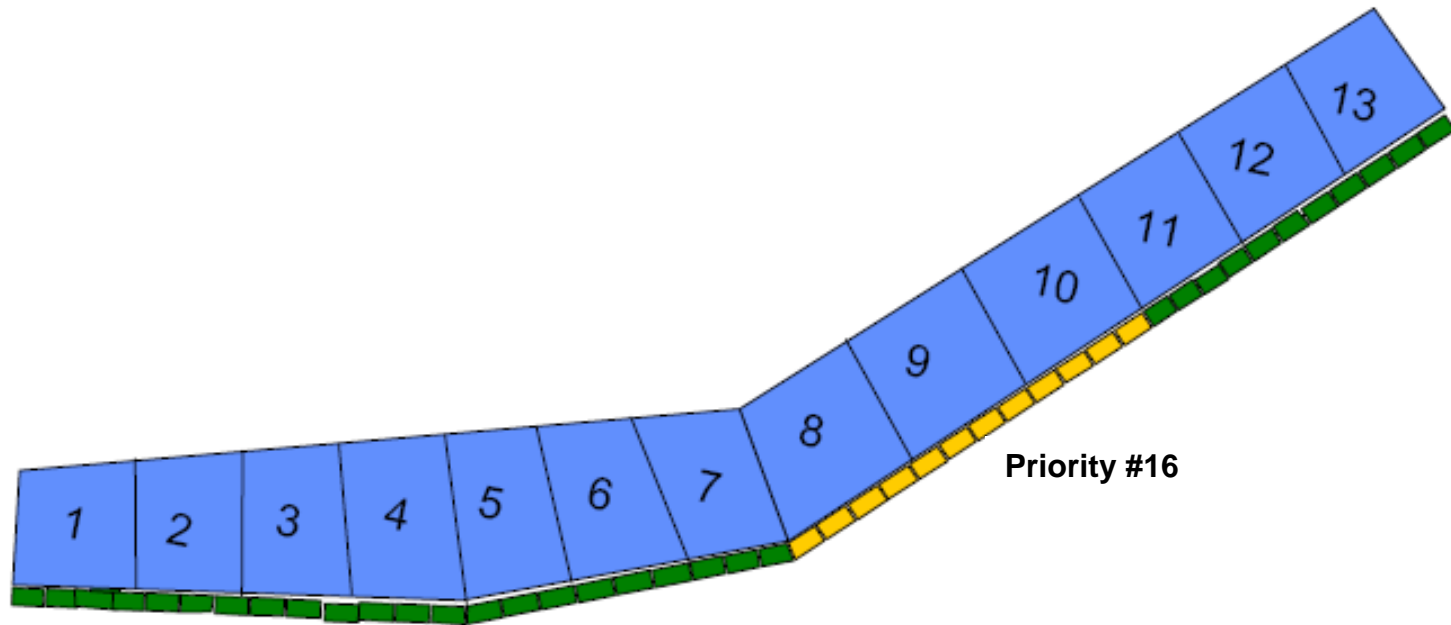
- 1. Note replace, door side tiles first within its priority coloring.***
- 2. When replacing “Green Level tiles” work outboard edge first STR and Door side***

BRI-18 Top Risk Reduction Areas (ET Door)



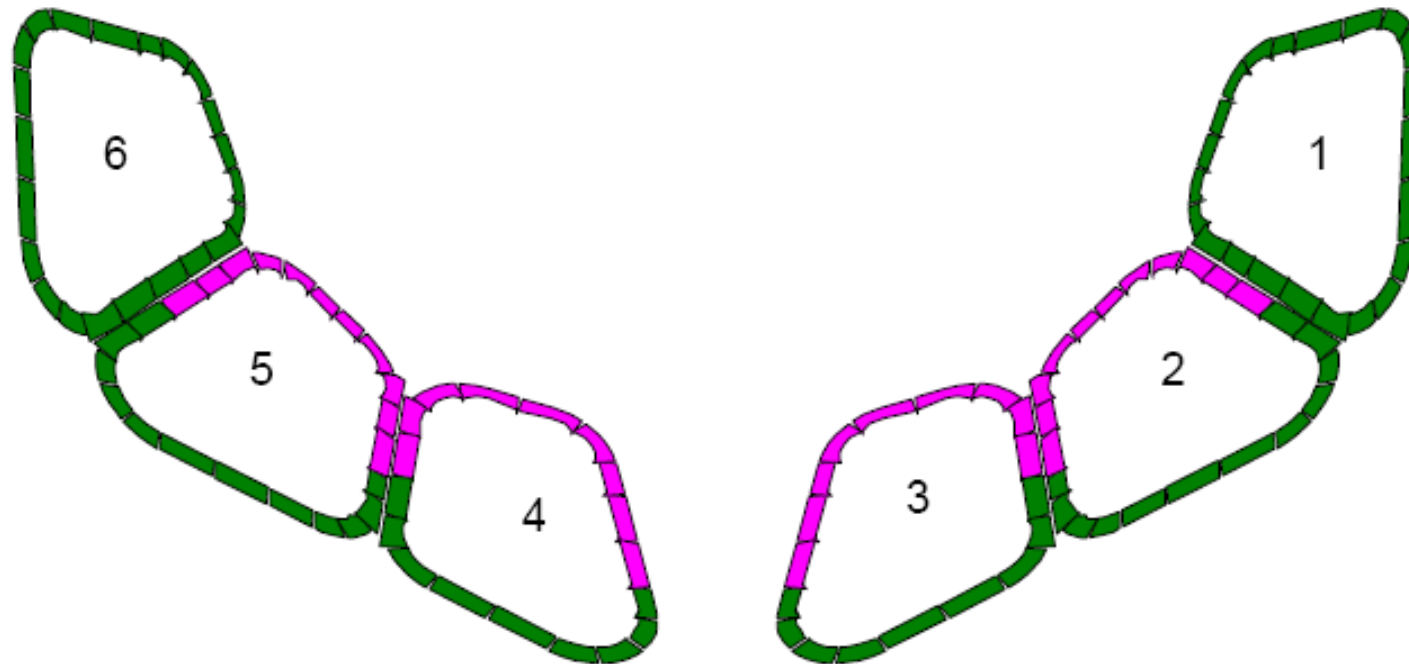
1. *When replacing “Green level priority” tiles work Inboard/Outboard Structure side tiles first.*

BRI-18 Top Risk Reduction Areas (LESS Carrier Panels)



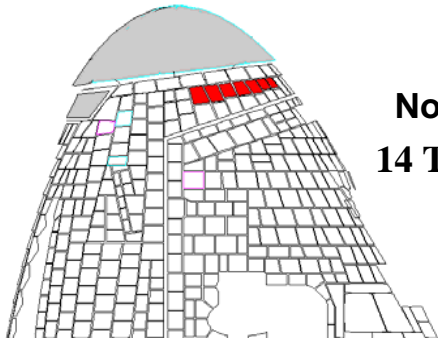
- ***When replacing “Green level priority” tiles work the following sequence in this order: Carrier panel # 7, 6, 5, 4, 3, 2, 1, 11, 12, 13,***

BRI-18 Top Risk Reduction Areas (Window Carrier Panels)

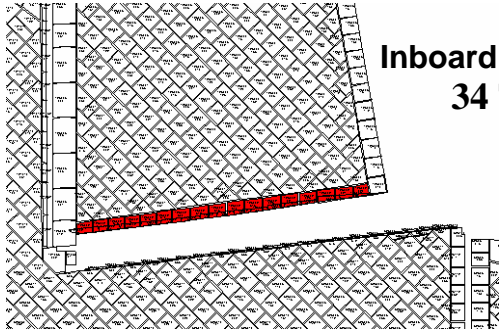


- ***When working the “Green level priority” tiles work the following Carrier panel in this order: Uppers on Windows 1 & 6, Lowers on windows 3 & 4, Lovers on windows 2 & 5.***

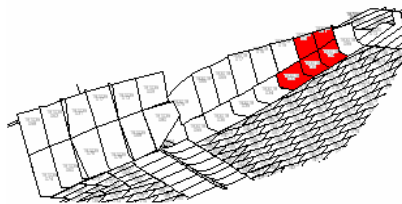
TPS Priority areas –9lb tile on 0.090 SIP



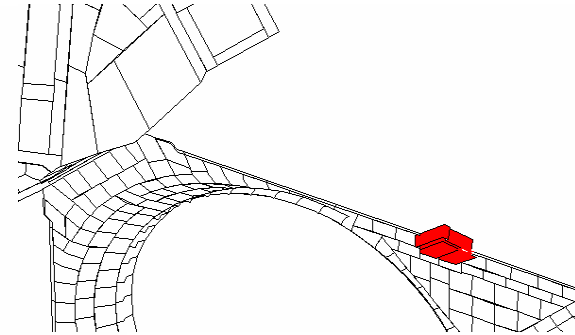
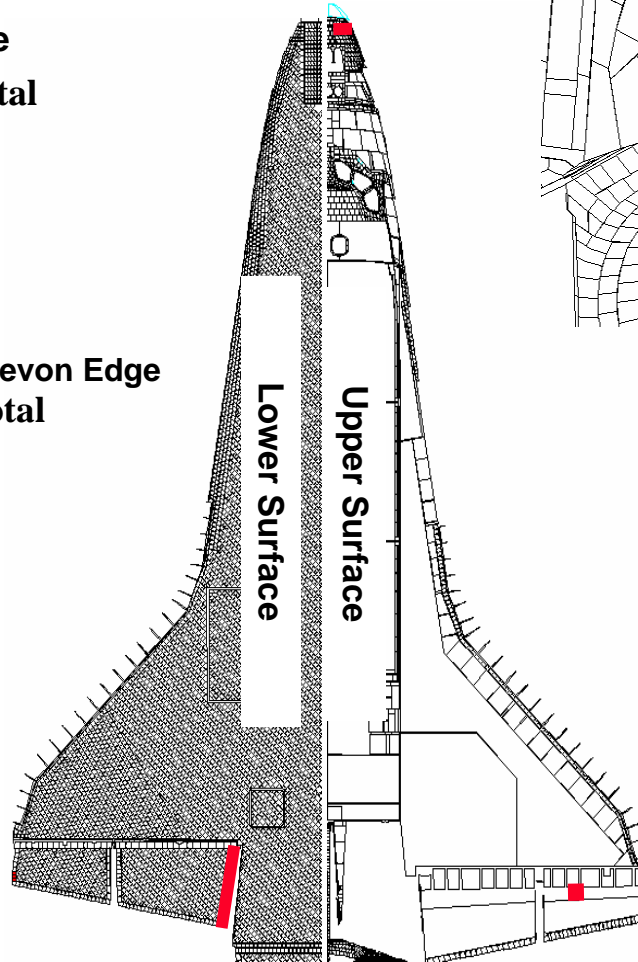
Nose
14 Total



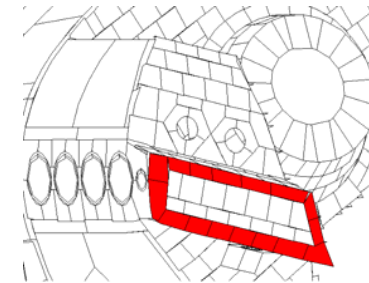
Inboard Elevon Edge
34 Total



Outboard Elevon
10 Total



**Attach
Point C/P** 12 Total



OMS POD Stinger
32 Total

Backup

STS-126 dLSFR

STS-400 Configuration Waiver (Continue) - Backup

- Active latches w/o extended guides for STS-400 in bays 8 and 12:

	<u>STS-126</u>	<u>STS-400</u>
– Bay 8 Port	From: M072-544201-340;	To: M072-544201-204
– Bay 12 Port	From: M072-544101-035;	To: M072-544101-027
– Bay 12 STBD	From: M072-544101-056;	To: M072-544101-028
- Latches changed from secondary to primary to support STS-400:

	From: M072-002212-045	To: M072-002112-043
	From: M072-002212-046	To: M072-002112-044
- The following payloads installation TOs identified on the STS-126 MECSLSI will not be installed in support of STS-400 flight:
 - M072-000423-001 (MV0072P)
 - M072-000442-004 (MV0072P)
 - M072-710801-001 (MV0712A)
 - M072-544001-008 (MV0073A)
- The following TOs identified on the STS-126 MECSLSI will be partially installed:
 - M072-544752-003 ROEU installed, but not mated & grease application not accomplished

STS-126 dLSFR

OMRSD

- FII V2 (POST-MATE)

BASELINED FILES

- P350 MULTI-PURPOSE LOGISTICS MODULE (MPLM)
- P430 SL/ORB GENERIC I/F REQUIREMENTS (LMC)
- P1539 Pico Satellite Solar Cell (PSSC)

RCNS

- PP17554 P514 – ISS-ULF2 BASELINE

RELEASE

11/07/07A

BASELINE

02/06/08A

- FII V4 (PRE-MATE)

RCNS

- PS17638R1 MISSION-UNIQUE LIST
- PS17637 FIII MUL
- PS17636R1 ADJACENT PIN TEST

RELEASE

04/11/08A

04/11/08A

04/29/08

BASELINE

04/29/08

04/29/08

05/15/08

- ISSUES / CONCERNS: NONE

STS-126 dLSFR

ANNEX 1

ISS-ULF2 - NSTS 21514

- BASELINE
- INTERIM CR

DATA REQUIRED – SAFETY-CRITICAL CIRCUIT DIAGRAM, FHRC & NTA CENTER OF GRAVITY FIGURES
(IF AVAILABLE)

- FINAL WEIGHT UPDATE (L-1 M)

CUSTOMER SUBMITTAL

10/18/07A
05/26/08

09/02/08

CR RELEASE

10/18/07A
06/02/08

09/09/08

ECD

11/27/07A
06/16/08

09/16/08

ISSUES/CONCERNS

- None

STS-126 dLSFR

ANNEX 1- CONT.

LMC - NSTS 21494

- **BASELINE**

DATA REQUIRED – OFFICIAL WEIGHT AND MASS PROPERTIES DATA, PAYLOAD AXIS SYSTEM FIGURE, STATIC LENGTH, AND MECHANICAL AND ELECTRICAL DRAWING

- **INTERIM CR**

DATA REQUIRED – SAFETY-CRITICAL CIRCUIT DIAGRAM, MECHANICAL AND ELECTRICAL DRAWING UPDATES, AND CENTER OF GRAVITY FIGURES

- **FINAL WEIGHT UPDATE (L-1 M)**

CUSTOMER

SUBMITTAL

CR RELEASE

ECD

01/15/08A

01/15/08A

02/19/08A

05/26/08

06/02/08

06/16/08

09/02/08

09/09/08

09/16/08

ISSUES/CONCERNS

- **None**

STS-126 dLSFR

ANNEX 1- CONT.

SSPL/PSSC - NSTS 21539

- BASELINE
- POST-CIR UPDATE

- INTERIM CR

CUSTOMER

SUBMITTAL

10/19/07A

03/04/08A

05/26/08

09/02/08

CR RELEASE

10/29/07A

03/05/08A

06/02/08

09/09/08

ECD

11/12/07A

04/03/08A

06/16/08

09/16/08

DATA REQUIRED – SAFETY CRITICAL CIRCUIT DIAGRAM, MECHANICAL DRAWINGS

- FINAL WEIGHT UPDATE (L-1 M)

ISSUES/CONCERNS

- NONE

STS-126 dLSFR

TGHR STATUS

CUSTOMER SUBMITTAL	6-16-08
RELEASE FOR REVIEW	7-16-08
BASELINE	8-15-08

ISSUES/CONCERNS

- None

STS-126 dLSFR

ICD STATUS (* = IMPACT FLIGHT PRODUCTS)

<u>DOCUMENT</u>	<u>TITLE</u>	<u>ECD</u>	<u>STATUS</u>
ICD-A-21494	LMC	12/18/00	BASELINED
TBD-024*	AS FLOWN CONFIGURATION UPDATE	05/09/08	IN WORK
TBD-028	INCORPORATE ISS IDD IRNS	(~ L-5 M)	
ICD-A-21350	MPLM	02/12/96	BASELINED
A05277*	REMOVE "ACTIVE" MPLM DATASET	05/09/08	IN REVIEW

FUTURE WORK:

INCORPORATE ISS IDD IRNS (~ L-5 M)
DOCUMENT TRUNNION SCRATCH

STS-126 dLSFR

ICD STATUS (* = IMPACT FLIGHT PRODUCTS)

<u>DOCUMENT</u>	<u>TITLE</u>	<u>ECD</u>	<u>STATUS</u>
ICD-A-21514-OOR	ISS-ULF2	12-04-07	BASELINED

FUTURE WORK:

- ADD HAZARD REPORT NUMBER
- UPDATE THERMAL DATA (~ L-5 M)
- ON-ORBIT TRANSLATION CLEARANCE VIOLATIONS (~ L-3 M)
- ADD LOADS/ROBOTICS DATA (~L-1 M)

Issues /Concerns

– None

STS-126 dLSFR

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
ICD-A-21539	SSPL/PSSC	02-15-08	BASELINED

STS-126 dLSFR

CARGO CLOSE CLEARANCE PROCESS

- **THE FOLLOWING CLOSE CLEARANCE AREAS HAVE BEEN IDENTIFIED AND WILL REQUIRE AS INSTALLED MEASUREMENTS:**
 - **MPLM SCUFF PLATE TO MPM** **ECD: 07/01/08**

STS-126 dLSFR

CARGO INTEGRATION HARDWARE STATUS

DELIVERY STATUS

- ALL REQUIRED CIH HAS BEEN DELIVERED

ISSUES/CONCERNS

- NONE

BACKUP



STS-126/OV-105 Milestones

Overall to Launch Window Opening U/R Critical Path: <ul style="list-style-type: none"> • Parallel OPF & Integrated Flow with STS-125 • STS-400 requirement to be able to launch no later than 7 days after the HST launch • ET-129 delivery and processing 	Program Baseline Milestones (Ref Manifest 08A-10)			
	Processing Schedule	Milestones	Date	Status
	VAB/PAD	LAUNCH	10/16/08	U/R
	OPF	ORBITER/ET MATE	U/R	U/R
	ET/SRB CLOSEOUTS	ORBITER/ET MATE	U/R	U/R
	SRB STACKING	ET/SRB MATE	U/R	U/R
ET STANDALONE	ET/SRB MATE	U/R	U/R	

ISSUES / POTENTIALS

OPF PROCESSING														
OPF POTENTIALS														
APU 3 Drain Line Decay	U/R	Potential APU 3 R&R												
Radiator Flex Hose Retract Assembly	U/R	Potential freon coolant loop 2 deservice												
ET / SRB PROCESSING														
		ET-129 on dock under review												
LON STS-319 (LON on OV-103)	U/R	ET-130 delivery date under review												
<table style="width: 100%; border: none;"> <tr> <td style="width: 30px; text-align: center;">G</td> <td>No Significant Risk</td> <td style="width: 30px; text-align: center;">➔</td> <td>Remains Unchanged</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>Significant Risk Identified that Threatens a Program Milestone, Recoverable with Mitigation</td> <td style="text-align: center;">⬆</td> <td>Improving</td> </tr> <tr> <td style="text-align: center;">R</td> <td>Unachievable, Impact to a Program Milestone</td> <td style="text-align: center;">⬇</td> <td>Deteriorating</td> </tr> </table>			G	No Significant Risk	➔	Remains Unchanged	Y	Significant Risk Identified that Threatens a Program Milestone, Recoverable with Mitigation	⬆	Improving	R	Unachievable, Impact to a Program Milestone	⬇	Deteriorating
G	No Significant Risk	➔	Remains Unchanged											
Y	Significant Risk Identified that Threatens a Program Milestone, Recoverable with Mitigation	⬆	Improving											
R	Unachievable, Impact to a Program Milestone	⬇	Deteriorating											



OV-105/FLT 22/STS-126 Chits

<u>LI</u>	<u>CHIT</u>	<u>DESCRIPTION</u>	<u>STATUS</u>
1.	J5927	Body Flap Power Drive (PDU) Gearbox Fluid Level Inspection	Approved
2.	J6275A	IML Surface Corrosion Sampling	Approved
3.	J6295	1R Thermography Request	Complete
4.	J6306	Mid Fuselage Lock Bolt Inspection	Approved
5.	J6313	AMEC Power OFF Spurious Output Test (8 Functions)	Approved
6.	J6327	WLE RCC Joggle Inspection	Complete
7.	J6328	WLE Sensors Record Data During Jack Transfer	Approved
8.	J6330	Flight Pin Inst'l'n Into Secondary Passive Latches	Approved
9.	J6337	Air Flow Verification of Middeck Supply & Return Air Register Locations	Approved
10.	J6341A	Evaluation of OMS Pod Vernier Access Door (Stinger) Tile	Approved
11.	J6345	Installation of Temp Indicators on MLG Axles	Complete
12.	J6352	AMEC Power OFF Spurious Output Test (4 Functions)	Pending
13.	J6353	ODS Booster Fan Measure Air Flow	Pending
14.	JXXXX	External Airlock Fluid Line Heater Test	Draft
15.	JXXXX	Sky Genie Descent Line Assembly Inspection	Draft



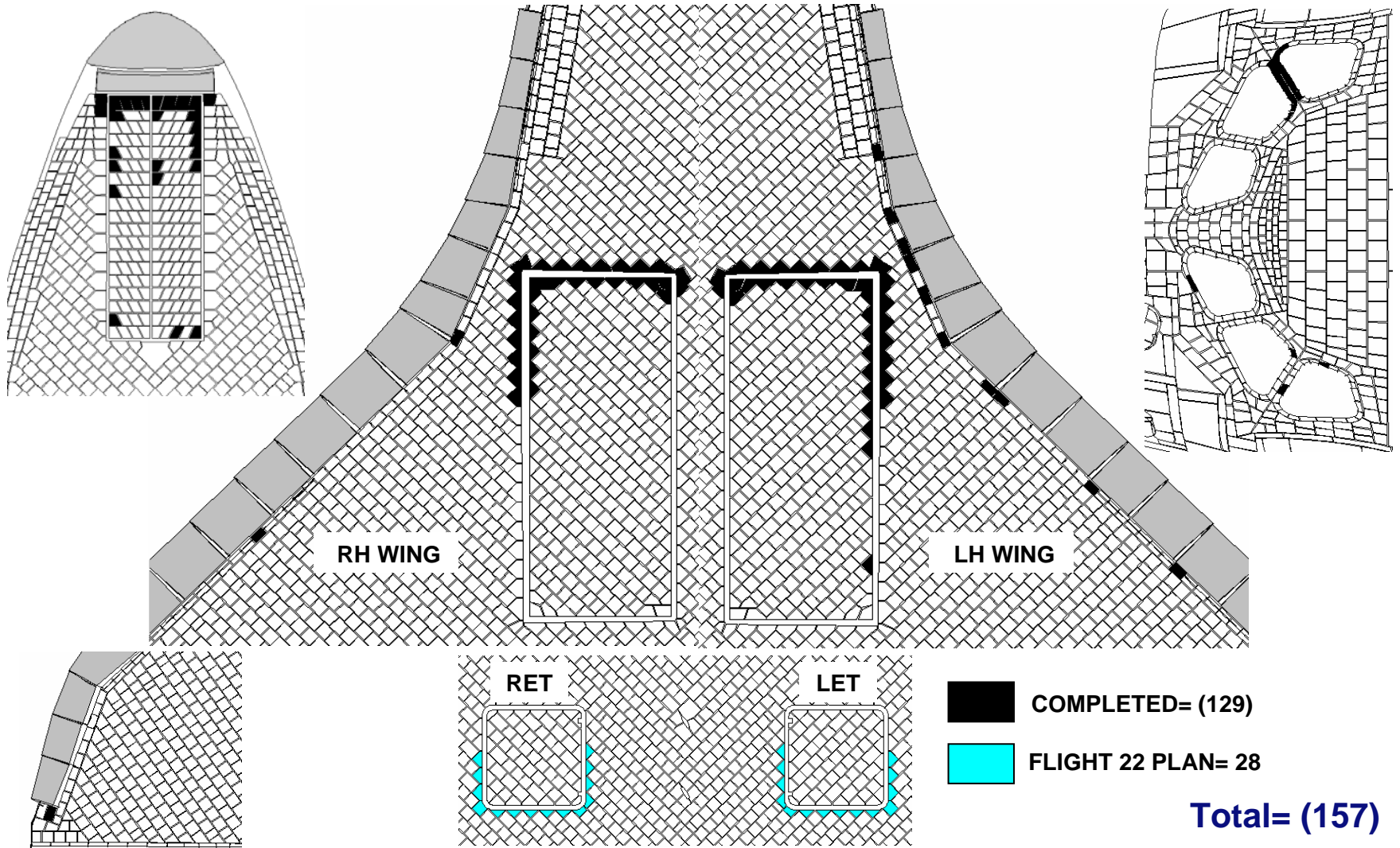
Modification Work Summary

Approved Baseline

- **30010** **Additional Base Plates for FCS Multi-Use Bracket**
- **30144** **Crew Seat Inertia Reel Changeout**
- **17222** **WLE Sensor System Firmware Upgrade**
- **30099** **Flipper Door Fastener Joint Gap Correction**



BRI Future Planning (105 Flight 22)



CONFIGURATION / Facilities

- **OV-105: Flight 22**
- **OMS Pods: LP03 / RP04**
- **ET: 129**
- **SRB: BI-136/RSRM 104**
- **SSME: TBD(#1), TBD (#2), TBD (#3) U/R**
- **Payload: ISS-ULF2, MPLM, PSSC, SPDU**
- **Flight Software: OI-33**
- **Firing Room: 4**
- **OPF Bay: 2**
- **MLP: 3**
- **VAB High Bay: 3**
- **Pad: B/A**





STS-126 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-08-08**

Overview

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

STS-126/STS-326/STS-400 Delta Launch Site Flow Review Flight Software Overview

Tom Stansel

PRCB 05/08/08

STS-126 Delta LSFR (FSWE)

- **STS-126/OV-105 is the First Scheduled Flight of Operational Increment (OI) 33 Flight Software (FSW)**
 - SASCBC SCR 98100A documents PASS and BFS OI-33 content
- **STS-126/OV-105 Flight Software Payload Support:**
 - ULF-2
 - Orbiter Interface Unit (OIU)
 - Sequential Still Video (SSV)
 - Orbiter Docking System (ODS)
 - Trajectory Control System (TCS)
 - Multi-Purpose Logistics Module (MPLM)
 - 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-126 Delta LSFR (FSWE)

- **STS-126 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 Downlist for Enhanced Accelerometer Operations
 - SCR 93215A - Protect Ascent Bearing Spec From MM 104 Retrograde Guidance Solution
 - DR 124995 - Runway Label Not Displayed Above Runway
 - DR 124997 - Wrong DEU for Spec 54 Auto Ascent to Entry Bearing Switch
 - DR 126166 I-Load Constraint Checker for STS 126 Failed with an Abend
- **STS-126 Source Changes/Edits for Primary Flight Software (ADTL)**
 - DR 126187 Entry Bearing Display not Displayed on CRTs with Unsupported MF after MM602 Transition
 - SCR 93252A Raise Fwd RCS Tank Temperature Limit
- **STS-126 Patch/Edit Implementation for Backup Flight Software (Base) (included on delivered Mass Memory)**
 - SCR 93223 - Change N2/02 BFS FDA K-Loads to I-Loads
 - DR 121410 - BFS Setting of Unused Bits in Feature Control Words

STS-126 Delta LSFR (FSWE)

- **Products**

- **STS-126/OV-105 Base Cycle Product delivery schedule (available to field)**
FPSB
 - **Shuttle Data Tape** Jan. 24, 2008 A
 - **Mass Memory** Feb. 28, 2008 A
- **STS-126/OV-105 ADTL Cycle Product delivery schedule (available to field)**
 - **Shuttle Data Tape** N/R
 - **Mass Memory** July 10, 2008
- **STS-326/OV-105/OI-32 deliveries will consist of the STS-123 OV-105 Base SDT/Mass Memory, STS-123 patches, STS-123 PASS GMEM, STS-323 Flight Specific I-Loads and post call-up changes if required**
 - **Living SCR 98096 Mod F, defines the Rescue LON Flight Software configuration for OV-105 (STS-326)**

STS-126 Delta LSFR (FSWE)

- **Products Cont.**
 - **STS-400/OV-105/OI-32 deliveries will consist of the STS-123 OV-105 Base Mass Memory, STS-400 Flight Specific SDT and I-Loads**
 - **Living SCR 98096 Mod F, defines the Rescue LON Flight Software configuration for OV-105 (STS-400)**
 - **STS-400 specific SDT Delivered March 17, 2008**
 - **SCR 93236/93211A – Update of SSMEC Downlist for Enhanced Accelerometer Operations**
 - **STS-400 Flight Specific Patch I-Loads SASCB approved March 13, 2008**
 - **Patch available on March 26, 2008**
 - **STS-400 Flight Specific Patch 2 I-Loads scheduled to be approved at the May 29, 2008 SASCB**
 - **Patch scheduled to be available on June 11, 2008**

STS-126 Delta LSFR (FSWE)

- **Open Items**
 - None
- **Concerns/Issues**
 - **STS-125 / STS-400 schedules require parallel flight processing.**
 - Updated STS-400 I-Loads will be required due to GRTLS Flight Control Requirements violations, and some Ascent heating issues.
 - A schedule has been established for generation and approval of these I-Loads (Base Patch 2).
 - FSWE verification of these later updates is planned to be accomplished with use of resources from other verification areas.
 - However, the risk of using overtime to complete verification has become a higher risk with the later I-Load approval.



SPACE SHUTTLE PROGRAM

Orbiter Project Office

NASA Johnson Space Center, Houston, Texas



STS-126 LSFR FLIGHT CREW EQUIPMENT/GFE	Presenter Kenneth Brown	
	Date May 1, 2008	Page 1

STS-126 LSFR FCE/GFE Status

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



SPACE SHUTTLE PROGRAM

Orbiter Project Office

NASA Johnson Space Center, Houston, Texas



STS-126 LSFR FLIGHT CREW EQUIPMENT/GFE	
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Presenter Kenneth Brown	
Date	May 1, 2008
Page	2

- Delivery dates are partnered
 - If STS-326 call up, hardware will come from OV-104
 - STS-400/126, hardware from OV-103



SPACE SHUTTLE PROGRAM

Orbiter Project Office

NASA Johnson Space Center, Houston, Texas



	Presenter Kenneth Brown	
	Date May 1, 2008	Page 3

Remote Manipulator System (RMS) End Effector Swap



SPACE SHUTTLE PROGRAM

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End Effector Swap

Presenter
Kenneth Brown

Date May 1, 2008

Page 4

- MDA is in the process of completing the first End Effector (EE) upgrade on S/N 302:
 - Change the raybestos brakes/clutches to a ceramic material (since raybestos is no longer available)
 - Implement two design modifications to address issues that occurred on STS-103 (back-up release stall)
- EE S/N 302 to be delivered to KSC this summer
 - Plan to swap/return to MDA EE S/N 303 for upgrade
- TO M072-544502 will need to be updated to reflect the new EE configuration



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STS-126 LSFR FLIGHT CREW EQUIPMENT/GFE

Presenter
Kenneth Brown

Date May 1, 2008

Page 5

BACKUP



SPACE SHUTTLE PROGRAM

Orbiter Project Office

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STS-126 LSFR FLIGHT CREW EQUIPMENT/GFE

Presenter
Kenneth Brown

Date May 1, 2008

Page 6

Hardware	Tech Order	KSC Need	JSC Planned	JSC Remarks	JSC Contact
A (port forward)	M072-750025-080	5/30/08	5/23/08	From STS-124.	Randall Moore
B (port aft)	M072-750025-081	5/30/08	5/23/08	From STS-124.	Randall Moore
C (starboard aft)	M072-750025-082	5/30/08	5/23/08	From STS-124.	Randall Moore
D (starboard forward)	M072-750025-083	5/30/08	5/23/08	From STS-124.	Randall Moore
Payload Ops camera	M072-340109-002	5/19/08	5/19/08	From STS-124	Randall Moore
SRMS elbow camera	M072-544504-009	5/23/08	5/23/08	From STS-124.	Randall Moore
SRMS wrist camera	M072-544504-010	6/02/08	5/23/08	From STS-124.	Randall Moore
Centerline Airlock Camera (stowed)	M072-660828-002, CCCD			On-dock, from STS-123.	Randall Moore
Lefthand Umbilical Camera (aft)	M072-705001-016	7/07/08	7/07/08	Camera not available for 326. Two units in inventory, installed for STS-124/125	Randall Moore
Page 84 of 107					



SPACE SHUTTLE PROGRAM

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STS-126 LSFR FLIGHT CREW EQUIPMENT/GFE		Presenter Kenneth Brown
Date	May 1, 2008	Page 7

Hardware	Tech Order	KSC Need	JSC Planned	JSC Remarks	JSC Contact
Righthand Umbilical Camera	M072-705001-028	7/28/08	6/19/08		Randall Moore
Digital Television (DTV)	M072-710570-007			Installed hardware.	Randall Moore
MCIU/RMS Situational Awareness Display (RSAD)	M072-710543-001			Installed hardware.	Larry Schmidt
Portable Foot Restraint (PFR)	M072-661568-029	5/5/08	5/5/08		Sandy Peterson
Tools for Rendezvous and Docking (TRAD)	M072-730021-020			Installed hardware.	Larry Schmidt
Tool Stowage Assembly (TSA)	M072-660853-002 M072-660850-005	5/21/08	5/21/08		Sandy Peterson
Video Processing Unit (VPU)	M072-710338-006			Installed hardware.	Larry Schmidt
Winches	V070-650007-085			Installed hardware.	Sandy Peterson



SPACE SHUTTLE PROGRAM

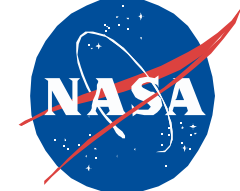
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STS-126 LSFR FLIGHT CREW EQUIPMENT/GFE		Presenter Kenneth Brown
Date	May 1, 2008	Page 8

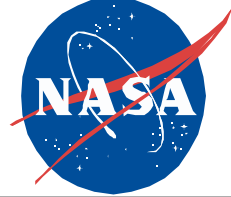
Hardware	Tech Order	KSC Need	JSC Planned	JSC Remarks	JSC Contact
Wireless Video System (WVS)	M072-744007-001 UHF M072-344828-001 mount M072-744004-013 S-BAND M072-744004-012 S-BAND M072-744004-015 S-BAND M072-744004-017 S-BAND M072-744004-018 S-BAND M072-744004-016 S-BAND M072-794026-016 AIRLOCK M072-794026-017 WVS			Installed hardware.	Randall Moore
Space to Space Orbiter Radio (SSOR)	M072-344828-002 M072-740828-002 antenna			Installed hardware.	Larry Schmidt
RMS Sideview Camera (RSC)	M072-710281-002 M072-000416-004 camera	6/2/08	6/2/08	OPF install.	Randall Moore
Wing Leading Edge (WLE) Instrumentation - Left Wing	M072-756111-007	5/12/08	5/12/08	Upgraded firmware.	Gary Cox
Wing Leading Edge (WLE) Instrumentation - Right Wing	M072-756111-008	5/12/08	5/12/08	Upgraded firmware.	Gary Cox
OBSS Sensor package1	M072-710282-008	5/19/08	5/19/08	OPF install.	
SCU	M072-661606-012			Installed hardware.	Sandy Peterson
OBSS Sensor Package 2	M072-710282-006	5/19/08	5/19/08	OPF install.	Larry Schmidt
Airlock Adapter Plate	SJD32101440-302			Installed hardware.	Sandy Peterson



EVA Status

STS-126/ULF-2 Launch Site Flow Review

**XA/Maria Tullar
Johnson Space Center
May 8, 2008**



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

- **Winches**
 - Forward Winch, SED33101570-327
 - Aft Winch, SED33101570-325

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

STS-126 Delta Launch Site Flow Review

ULF-2
STS-126
MPLM/LMC

KSC ISS & Spacecraft Processing
Joseph T. Delai, NASA, KSC Mission Manager
Mike Kinslow, Boeing, KSC Flow Manager
May 8, 2008



Planned Processing Milestones

PRE-SHUTTLE INTEGRATION ACTIVITIES

Space Station Processing Facility

- ULF-2
 - LMC/ORU Processing 02-14-08 to 09-12-08
 - MPLM Rack Integration 06-09-08 to 07-25-08
 - MPLM Internal/External Closeouts 07-25-08 to 09-12-08
 - Internal CEIT 07-28-08
 - MPLM/LMC ICD Walk down 08-13-08 to 08-26-08
 - Hatch Closure 08-27-08
 - External CEIT 09-05-08
 - Payload to Pad 09-18-08 U/R



Planned Processing Milestones

SHUTTLE INTEGRATION ACTIVITIES

Orbiter Processing Facility

- PICOSAT Integration 07-10-08

PAD

- Payload to Pad 09-18-08 U/R
- Payload installed into Orbiter 09-24-08 U/R
- Payload IVT 09-25-08 U/R
- Payload Closeouts 10-06-08 U/R
- LAUNCH 10-16-08



KSC/ISS Processing Summary

Watch Items:

- Change Request 10534 = Accelerate the delivery dates for 6-person crew habitability hardware
- PRAB Risk 5108 = Technical challenges in the development of the 6-person crew habitation hardware

The KSC STS-126/ULF2 - ISS Mission Processing Team is ready to proceed with processing the STS-126 Mission payload complement.





STS-126 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-08-08**

Backup Material

- **SSP Systems Drawings** **Attachment 1**
- **SSP Authorized Modifications/Non-Standard Work** **Attachment 2**
- **SSP OMRS Waivers and Exceptions** **Attachment 3**
- **Launch Window** **Attachment 4**
- **Open Configuration Waivers** **Attachment 5**



STS-126 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-08-08**

SSP System Drawings

The Drawings Baseline Was Released By PRCB S115126 on 12-05-07

- V072-000001-276 (Rev. VH01) Space Shuttle System (Rel. 03-05-08)
 - V072-200206-001 (Rev. B01) Mission Equipment Cargo Support (Rel. 03-19-08)
 - SGD32104492-501* (Rev. NC) Crew Compartment Configuration (Rel. 03-12-08)
 - 502 Descent
 - V070-000001-005 Orbiter General Assembly
 - V070-410100-018 SSME Installation
 - 10100-0061-172 Integrated SRB General Assembly (BI-136)
 - 80901000000-529 External Tank Assembly (ET-129)
- STS-126 CIR + 70 days Mission Configuration Product Plan (MCP) was published on 02-11-08 and will be republished at ORR -14 days on TBD.
- *STS-400 CCD for LON mission for STS-125. Upon Stand down of STS-400, STS-126 CCD is SGD32104449-501 (Rev. NC) released 01-07-08.



STS-126 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-08-08**

SSP System Drawings – (Continued)

Ferry Configuration

- **V072-000001-277** (Rev. VF01) Space Shuttle System Drawing (Rel. 12-13-07)
 - **V072-200206-002** (Rev. B01) Mission Equipment Cargo Support (Rel. 03-19-08)
 - **SGD32104492-001** (Rev. NC) Crew Compartment Configuration (Rel. 03-12-08)
 - **V072-300055-014** (Rev. BN01) Ferry Flight Configuration (Rel. 02-20-08)

SCA 905

LW MAR
SJD32108929-TBD

MODULAR LOCKER LAYOUT ASCENT

LEADER: KEITH CAMPBELL
 DATE: 12-13-07
 LAUNCH: 09-18-08
 FLIGHT: STS-126/ULF2 MPLM
 VEHICLE: OV-105
 CREW: 7 MAN 15 + 1 + 2 DAYS
 RQMTS: SRMS, ERGOMETER,
 SORG, NO RCRS,
 SLEEPING BAGS

MD CEIL (PORT 1)	0275 -TBD
RCC REPAIR HDWR TILE REPAIR HDWR	
MD CEIL (PORT 2)	9895 -TBD
RSK/ACES	

CDR CHRIS FERGUSON
 PLT ERIC BOE
 M/S #1 DON PETTIT
 M/S #2 STEVE BOWEN
 M/S #3 HEIDE STEFANYSHYN-PIPER
 M/S #4 SHANE KIMBROUGH
 M/S #5 (UP) SANDY MAGNUS
 M/S #5 (DN) GREG CHAMITOFF

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

MF43C 1900 -308 CDR CLOTHING	MF57C SAL KIT(2) BLOOD KIT(2) ACTWATCH(5) LOGBOOK(4) KUBIK/ PADIAC/ ROAD	MF71C 1901 -305 PLT CLOTHING
---------------------------------------	---	---------------------------------------

MIDDECK FORWARD

MF14E 2760 -306 FRESH FOOD FRESH FOOD	MF28E/G TBD -301 GLACIER	MF43E 5473 -305 ORBITER FDF	MF57E 6240 -311 ORBITER FDF SODF (ZIPLOCK)	MF71E 8965 -TBD CONDENSATE COLL SUPA INGRESS HDWR O-RINGS STS CSA-CP
MF14G 2761 -308 FRESH FOOD MENU FOOD		MF43G 1902 -308 M/S #1 CLOTHING	MF57G ENOSE/ICE-CELL BLOOD COLL KIT SALIVA COLL KIT ALENDRONATE KIT (CTB)	MF71G 1903 -305 M/S #2 CLOTHING
MF14H 2763 -304 MENU FOOD MENU FOOD	MF28H 6684 -330 MED KITS ALTIMETER	MF43H SOMS RESCUS/ CDM G-SUIT(4) 8739-TBD	MF57H 8969 -TBD POST INSERTION #1	MF71H 8969 -TBD POST INSERTION #2 G-SUIT(2) (CTB)
MF14K 2764 -306 MENU FOOD MENU FOOD	MF28K TBD -TBD MENU FOOD	MF43K 1904 -307 M/S #3 CLOTHING	MF57K 6291 -310 SODF (CTB)	MF71K TBD -TBD CHECS (CTB)
MF14M 2765 -304 MENU FOOD MENU FOOD	MF28M MENU FOOD	MF43M ENTRY GARMENTS	MF57M 6015 -326 DC VAC (CTB)	MF71M 3005 -304 M/S #4 CLOTHING
MF14O 2766 -305 MENU FOOD MENU FOOD	MF28O 2767 -304 MENU FOOD			MF71O 1908 -309 CREW SUPPORT

MIDDECK AFT

MA16D 8737 -306 RCC COLD BAG ASSY	MA16D 5452 -324 IFM BREAKOUT BOX TURNBUCKLES AIR BOTTLES WWD FLT/RMS KIT FOAM APPL ASSY(2)
MA16F 8723 -302 PHOTO/TV STOW&GO (CTB)	6300 -345 MA16F 6250 -345 IFM TOOLS 2163-302 2161-305 2162-306 MULTIMETER
MA9D TBD -TBD PGSC	MA16G 6299 -318 COAS/FLUOR LT SHIELDS/DCS 760 AUDIO DOSIMETER BTA
MA9F 6066 -326 COLOR PRINTER & PAPER (CTB)	MA16J 6687 -325 HH LIDAR W/NIGHTSCOPE 2ND HHL (TRAD)/SSV/BPSMU
5962 -303 MA9G 6269 -307 PRINTER TRAYS IODINE REMOVAL 6256-303	MA16L PCS LAPTOP PCS ACCESSORIES PGSC ACCESSORIES CD STORAGE CASE ACCESS POINT
4575 -314 MA9N 7432-317 SOFT STWG BAGS PHKS (6) 4980-309 CCK/LIGHT STICKS/COMM PHK 8071-312 RESTRAINTS/RE-ENT FIBERSCOPE 8070-302	MA16N 3006 -304 M/S #5 CLOTH (UP) M/S #5 CLOTH (DN)

MD CEIL (STBD 1)	TBD
CLOTHING-6 HCTB HYGIENE	
MD CEIL (STBD 2)	6665 -TBD
IELK RUNNING SHOES	

MD FLOOR (PORT 2)	TBD -301
CREW CARE PKG AMIA IODINE CWC(10) CSA-CP RESUPPLY(2) HCTB-G5C(9)	
MD FLOOR (PORT 1)	0297 -TBD
LTA/LOWER ARM(2) ECOK/COM CAP(2) LEG ASSY/BOOT ARM SIZE RING 0.5"(2) THIGH SIZE RING(PR) 0.5" LEG SIZE RING(PR) 1.0" LEG SIZE RING(PR) DIDB(6)	

MD FLOOR (STBD 2)	TBD -301
ISS RESERVE	
MD FLOOR (STBD 1)	TBD -301
HYGIENE IPT RESERVE	

ML60B 6013 -310 PRIME C/L CAM GFE TV CONTROL
ML60E TBD TRAD PGSC PGSC ACCESS
ML60M 6014 -312 B/U C/L CAM ULTRA SONIC LEAK DETECTOR

VOL B (MA73J)
REQUEST NOT TO BE INSTALLED

VOL 3B (MA73J) 7425
-320
QUICK DON
MASKS(2)/CABIN AIR
CLEANER/AUD.DOS.
BTA/LCD MONITOR/
DCS 760 CAM/SPOT-
LIGHT/400MM LENS/
PD100 CAMCDR/FLASH
28-70MM LENS

A16 8706 -310 PGSC DESK/ CAM BAG PILOT LEG BAR ASSY BOGAN ARMS
--

A17 7424 -304 CORE CC SYS BAG DTV CAMERA BAG QUICK DON MASK(4) HATCH TOOL
--

VOLUME D (MD52C) -TBD 85' SAFETY TETH(2) B/U DTV HDWR NH3 DETEC KIT B/U OCA CBL/BRT EMU BATTERY RCC REPAIR PALETT(2)
--

VOLUME F (MD76M) 1403 -306 WET TRASH
--

VOLUME G (MD80R) 1800 -346 CONT UCDS WASTE MGMT
--

VOLUME H (MD23R) 8068 -TBD EVA ACCESS (INBD) EVA ACCESS (OBD) 8065 -TBD

WMC (MA82H) 0914 -332 TOWELS AND RESUPPLY ITEMS WMC DISPENSER 1st DAY CLOTH SUPA (1) 1641-330
--

EXT AIRLOCK TBD 2-EMUs EXT A/L FLOOR CCC(2) LCVG(5)/GLOVES(4PR) LCVG(2) MINIWORKSTATION RETS

31 LIOH: 29 + 1 ATCO IN LIOH BOX, 2 INSTLD (7435-TBD)

WINDOW SHADE BAG - WINDOW SHADES (5548-345) IFM CABLES & HOSES (4259-343) MONITOR SHIELDS

L10A1: AVIU (6686-324) L10A2: DTV MUX L10A3: DTV VTR/VIP L1: PDIP 2 OIU 1/2 L12A1: SSP 1 L12A2: SSP 2 L12A3: PDIP 1 R12A1: VPU R12A2: OBSS/OPP
--

* NOT APPROVED LATE LOAD SWAP TRANSFER TO ISS CTB-CARGO TRANSFER BAG HCTB-HALF CARGO TRANSFER BAG
--

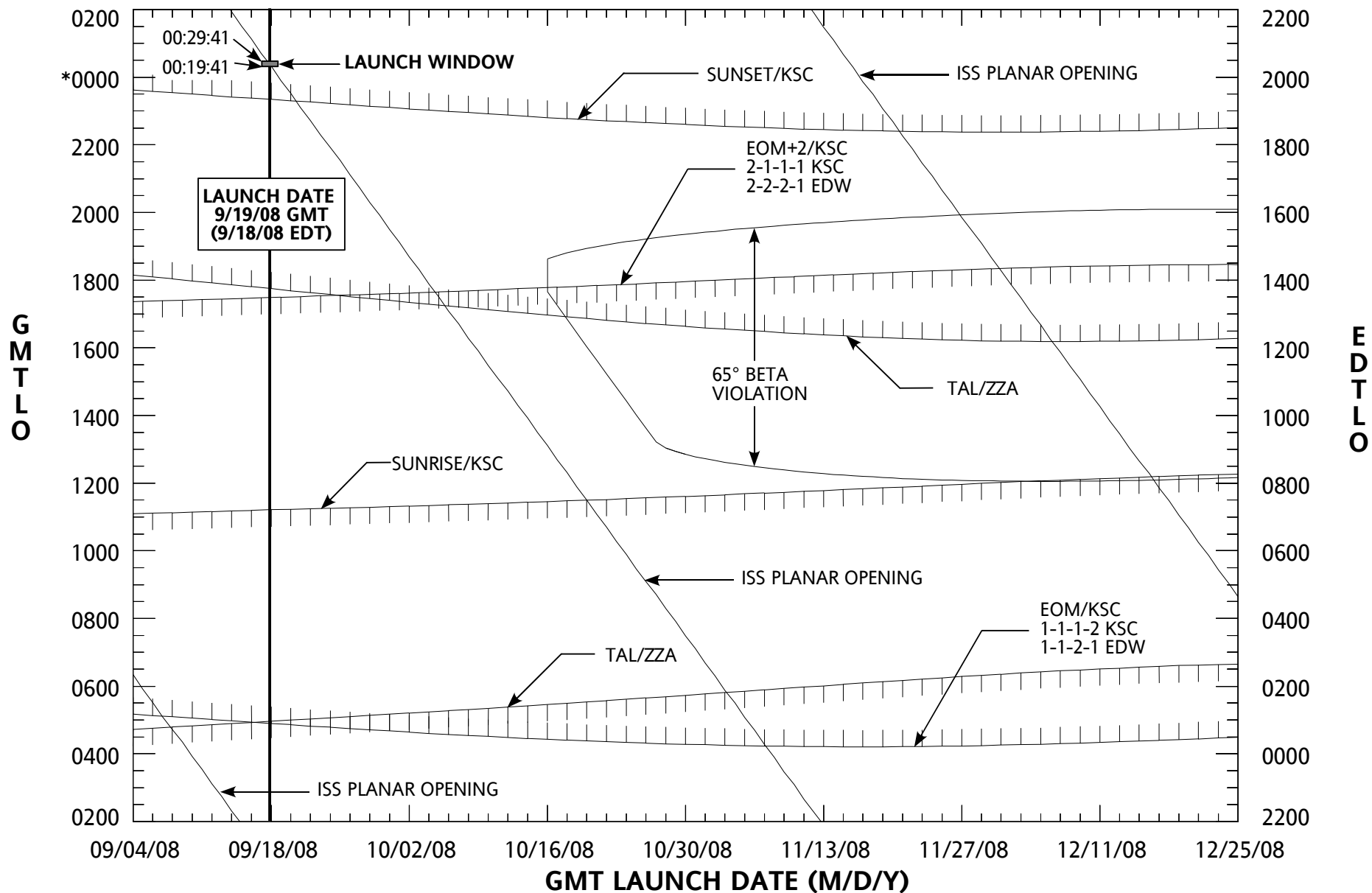
C/D JSC TBD P/D JSC TBD C/D KSC TBD P/D KSC TBD CEIT KIT TBD MDK LBL TBD DWG NO. SGD32104449 /USR/DWGS/LOCKER/STS126 CCMM: M. McDONALD 483-1384

NOTE: LOCKER LAYOUTS ARE FOR REFERENCE ONLY AND ARE NOT RELEASED DRAWINGS.
FOR RELEASED DRAWINGS, REFER TO CCCD DRAWING # SGD32104449

Mission Duration = 15+1+2
 Inclination = 51.6°
 OMS2 ha/hp = 124 x 85 nmi.
 Target ha/hp = 195 x 184 nmi.

STS-126 OCF LAUNCH WINDOW

C. Osgood/USH-483L
 M. Jamroz/USH-483L
 October 9, 2007



Note: EOM lighting lines, based on an OMS2 phase angle of 278 deg, are representative only.
 The ISS beta angle ($|\beta| < 65^\circ$) for mated operation is based on the start of the mission (FD3 Rendezvous) and ending ~ 13/15:19:00 MET
 * Indicates the dateline. Launch times above this point are on subsequent days from the date indicated on the corresponding date axis.



STS-126 Delta Launch Site Flow Review	Presenter MK-SIO / A. Swift	
	Date 5-1-08	Page 1

Mandatory RCNs:

NONE

Non-Mandatory Value Added RCNs:

NONE



STS-126 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-08-08**

Modification Impact Report

- **Mission Equipment Modifications and Orbiter Modifications analyzed for impacts to OMRSD, LCC, ICD, EMI, Software, and GSE.**
- **A total of 3 MCR/TADs have been approved and/or pending mods**
- **Current MCR/TAD impact status:**
 - **No impacts for all six disciplines** **4**
 - **One or more disciplines with impacts, documentation approved and/or pending approval** **1**
 - **MCR 17222**
 - **Possible impacts still under review** **0**

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
017222	AUTH KSC	TCTIM0017222REF	0003 008	WLE SENSOR SYSTEM FIRMWARE & SOFTWARE UPGRADE ADDED BY V886-000001 A13. (DEBASELINED FROM STS-123)	S063708R2 2008-04-21	MAND 022
030091	DEFR KSC	K439-774105-001	0001 000	PROVISIONS FOR BOUNDARY LAYER TRANSITION (BLT) ASSESSMENT ADDED PER V439-774001 A11, TO BE DEBASELINED AT DL SFR? - DEFRD PER STS-126 LSFR		MAND 022
	DEFR KSC	TCTIM1930091REF	0002 000	BOUNDARY LAYER TRANSITION, TILE ADDED PER V880-191011 NEW DEF RD PER STS-126 LSFR		MAND 022

TOTAL MODS = 3

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
	SITE	TCTI NUMBER	EISN NO.		AUTHDATE	FLT
	AUTH KSC	J5765	0105 001	WSB POST FLIGHT TANK OFFLOAD QUANTITY	ORB-0077 B 2005-03-09	MAND 022
	PLND KSC	J5927	0105 001	BODY FLAP PDU GEARBOX FLUID LEVEL INSPECTION	ORB-0077R01 2005-08-11	SCHD 022
	AUTH KSC	J6275A	0105 000	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 022
	PLND KSC	J6295	0105 001	OV-105 IR THERMOGRAPHY REQUEST	S-J6295 2007-11-07	MAND 022
	PLND KSC	J6306	0105 001	OV-105 MID FUSELAGE LOCK BOLT INSPECTION	S-J6306 2007-11-27	MAND 022
	PLND KSC	J6313	0105 000	STS-124 OV-103, STS-125 OV-104, STS-126 OV-105 AMEC POWER OFF SPURIOUS OUTPUT TEST	S-J6313 2008-01-09	MAND 022
	PLND KSC	J6327	0105 000	WLE RCC JOGGLE INSPECTION	S-J6327 2008-02-14	MAND 022
	AUTH KSC	J6328	0105 000	WING LEADING EDGE STRUCTURAL NOISE MEASUREMENTS DURING OFF OR MDD VEHICLE TRANSFERS	S-J6328 2008-02-12	MAND 022
	PLND KSC	J6330	0105 000	FLIGHT PIN INSTALLATION INTO LMC SECONDARY PASSIVE LATCHES IN SUPPORT OF STS-400 LAUNCH CONFIGURATION	S-J6330 2008-02-28	MAND 022
	PLND KSC	J6337	0105 000	AIR FLOW VERIFICATION OF MIDDECK SUPPLY AND RETURN AIR REGISTER LOCATIONS	S-J6337 2008-03-19	MAND 022
	PLND KSC	J6341A	0105 000	EVALUATION OF OMS POD LI-900 TILE INSTALLED ON 0.090" SIP	S-J6341A 2008-04-09	MAND 022
	PLND KSC	J6345	0105 000	INSTALLATION OF TEMPERATURE INDICATORS ON MAIN LANDING GEAR (MLG) SHOCK STRUT AXLES	S-J6345 2008-04-09	MAND 022
030010	PLND KSC	TCTIV6530010REF NOT REQUIRED	0105 000	FLIGHT DECK BOGEN BRACKET QUICK SHOE FITTING RELOCATION ADDED BY EDS I/F & V070-650505 D01 REPLACES PLCHLDR RECORD 030010,0105,1	S115126AR2 2008-04-04	MAND 022
030091	DEFR KSC	VK70-100055-001 NOT REQUIRED	0105 000	BRACKET - TRJ (BLT), WING KIT ADDED BY EDS I/F & VR70-100168 NEW DEFDR PER STS-126 LSFR		MAND 022
	DEFR KSC	VK70-776005-001 NOT REQUIRED	0105 000	MOD KIT - BOUNDARY LAYER TRANSITION ASSESSMENT ADDED BY EDS I/F & V070-776551 A04 & -776553 A04 DEFDR PER		MAND 022

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIOR
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
	PLND	H0878R1	B136 000	THERMOGRAPHIC WEATHERSEAL INSPECTION	S052924AV	MAND
	KSC		NSW		2008-04-07	022

TOTAL MODS = 1

Approved STS-126 OMRS Waivers and Exceptions

		PRCBD NUMBER		STS		
WVR	ELEMENT	WAIVER# (STAT)	ABSTRACT	EISN	BEG	END
EXC	PROJECT	(INITIAL STS)	RAS REQUIREMENTS	PAYLOAD		
+	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
		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 SYSTEM FREQUENCY DI VISIONMULTIPLEXER 2 MUX CH. 1 DATA SHIFT OV-105 (WK10540)	105	020 026

	S053299DQ WK10614	(A)	OMRSD WAIVER REQUEST - MODULAR AUXILIARY DATA SYSTEM FREQUENCY DI VISIONMULTIPLEXER-M1A, NOISE RATIO/NOISE LEVEL (WK10614)	105	021 026
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

-
1

Date: 04/22/08 14:28

PCASS

Page: 2

FLIGHT-SPECIFIC

Approved STS-126 OMRS Waivers and Exceptions

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

+-----+-----+-----+-----+-----+-----+													
o		o	Waivers	o	Except	o	Deviat	o	Cannib	o	Total	o	
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o	Total	Extracted	o	10	o	1	o	0	o	0	o	11	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>	<p>OV-105, Flight 21</p>	