



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



STS-127 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **10-23-08**

Program Freeze Point

PRCB Presentation

S115127B(Replacement Charts)



STS-127 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 S115127B dated 09/30/08. This CR and the Associated Data Package were reviewed at the 10-20-08 FRWG.

Flight Management*

MO3/USA-PI

Orbiter Engineering*

USA-OE

KSC ISS and Payload Processing

UB-R3

Shuttle Processing*

PH-A

Status in BackUp

KSC Integration*

MK-SIO

Flight Software

USA-FSW

Orbiter GFE

MV5

EVA

XA

Payload/Cargo Engineering

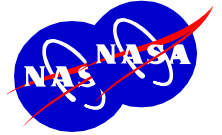
USA-PI

SSME

Status at DLSFR

MP21

***Backup Material**



STS-127 LAUNCH SITE FLOW REVIEW

Presenter

Ann Patterson

Date

23 October 2008

STS-127/2J/A

Launch Site Flow Review (LSFR)

Flight Requirements Status

PRCB 23 October 2008

Ann M. Patterson, STS-127 MIM

James Flores, USA Flight Mgr.

Adam Richards/Boeing Mass Properties



STS-127 LAUNCH SITE FLOW REVIEW

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LAUNCH

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

ORBIT

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

CONFIGURATION

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

CONSUMABLES

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

PAYLOAD

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

LANDING

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



STS-127 LAUNCH SITE FLOW REVIEW

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PERFORMANCE MARGIN

• SIMULATION MARGIN (CIRAF127)		+3026
• WEIGHT CHANGES SINCE SIMULATION		
• PAYLOAD	+279	
• OPERATOR	+183	
• ORBITER	-8	
• CREW COMPARTMENT	+9	
• TOTAL WEIGHT CHANGES	+463	-463
• OTHER PERFORMANCE PROJECTIONS		
• RENDEZVOUS ALT OF 195 NM		+580
• PROTECTION FOR DOL DISPERSIONS		-700
• 05/15/09 LAUNCH DATE (PMBT & ATMOS)		+120
• INCREASED OMS BALLASTING		-350
• SRB – M.P. UPDATES		-212
• SRB – BR / 1.85 MIL LOWER THAN 0.3705 AVG		-666
• PROJ TO 5 MIN WINDOW FROM INPLANE		-600
• PERFORMANCE CHANGES ADJUSTMENT		+32
• CURRENT BASELINED APM (10/14/08)		+767

VOLUME III: ASCENT PERFORMANCE MANAGER'S RESERVE GUIDELINE AT FPSR/CIR IS 800 LBS



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FLIGHT MASS PROPERTIES

<u>CASE</u>	<u>TOUCHDOWN</u>	<u>MACH 3.5</u>
	<u>WEIGHT pounds (LIMIT)</u>	<u>X C.G. inches (LIMIT)</u>
NOMINAL	215335 (233000)	1087.8 (1075.7)
RTLS	236578 (245000)	1079.6 (1077.2)
TAL	235199 (244000)	1079.7 (1077.2)
AOA	231395 (242000)	1077.1 (1075.7)
CONT RTRN	220944 (233000)	1076.4 (1075.7)

**NOTE: RTLS INCLUDES 185 SEC ARCS & 25 SEC FRCS DUMP
TAL INCLUDES 120 SEC ARCS & 65 SEC FRCS DUMP
2714 LBS AFT FUSELAGE BALLAST**

ESTIMATES BASED ON CIRAF127 AND MODIFIED FOR WEIGHT CHANGES THRU 10/14/08.

STS-127 OV-105 Flight 23 LSFR Orbiter Element

Kim Guodace
Greg Manuel

USA/OE
Boeing / VMMO

October 23, 2008

STS-127, OV-105 Flight 23 LSFR Orbiter

Purpose:

- **Obtain program authorization for baseline of modifications to be performed prior to STS-127, OV-105 Flight 23.**
 - Mandatory Mods – No new requirements
 - Mission Kit Mods – Dragon Eye DTO
 - Potential Mods – Bay 4 Longeron

- **Present summary of other requirements**
 - RCNs and Chits

Back-up

- **Modification Matrix**
- **Description of mods previously baselined at LSRR**

STS-127 OV-105 Flight 23 - LSFR Baseline

Mission Kit modification

- **30234 – Dragon Eye DTO Implementation**
 - Installs DTO box with flash LIDAR and data acquisition unit on ODS truss
 - Update additional tech order
 - M072-363838-003 (was -001) – added post LSRR

STS-127 OV-105 Flight 23 – Potential 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
- **Six options proposed by PRT**
 1. Install Bridges from STS-125 on STS-127 (Do nothing/adjust schedule)
 2. Modify a set of Bay 3 Longeron Bridges
 3. Repair damaged Bay 4 Longeron Bridges from STS-107
 4. Build to print another set of Bay 4 Longeron Bridges from Titanium forgings
 5. Build another set of Bay 4 Longeron Bridges from Titanium plate
 6. Build another set of Bay 4 Longeron Bridges from Aluminum
- **Summary**
 - Only Option 2 supports current schedule
 - Stress analysis shows modified bridge will work with 2.0 Safety Factor

STS-127 OV-105 Flight 23 – Potential Modifications

Significant Attrition Modifications

- **18985 – Installation of refurbished MO10W Panel**
 - Installation required to replace faulty N2/O2 Crossover valve contained in present MO10W Panel
 - Updated panel includes new design flow meters
- **TPS priorities including repairs**
 - To be addressed at Delta LSFR

RCNs/Chits

RCNs and Chits are presented for information only

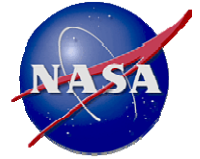
RCN No.	Title	Description
OV17793R1	ET Door Bell Crank TPS Clearance – Verifies Gap Between Bellcrank and Tile	In Approval cycle
OV17787	MLG Door Seal update - Specifies Minimum door seal bulb diameter to ensure permanent set does not affect door sealing	Preliminary in review

RCNs/Chits

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
J6410	Aft Stub Cracked Tile Inspection	Approved – To be worked in vertical: VAB or Pad
J6414	Rudder Speed Brake Thermal Tab Inspection	In Assessments
J6417A	WLE IR Thermography Statistical Study	In Draft
J6419	Putty Repair Tile Removal	Approved
J6420	Sampling of OV-105 APU System 3 Lube Oil	Approved
J6423	DRAGONEYE Interface Plate Fit Check	Approved
J6425	Acquisition of Certification Data for the Integrated Window Inspection Tool (IWIT) on OV-105, Flow 23	In Assessments
J6429	ET Door Drive Actuator Changeout and Refurbishment	In Assessments
J6430	Middeck Partition Inspection	Approved
J6433	STS-127 Port and Starboard Sill Requirements	In Assessments
JXXXX	Parallel Latch Harness Bench Testing	In Draft



ISS-2JA / STS-127 Launch Site Flow Review



KSC International Space Station and Spacecraft Processing

JAXA EF

JAXA ELM-ES w 3 EF Payloads

ICC-VLD w 9 ORUs

ANDE-2

DRAGONSAT

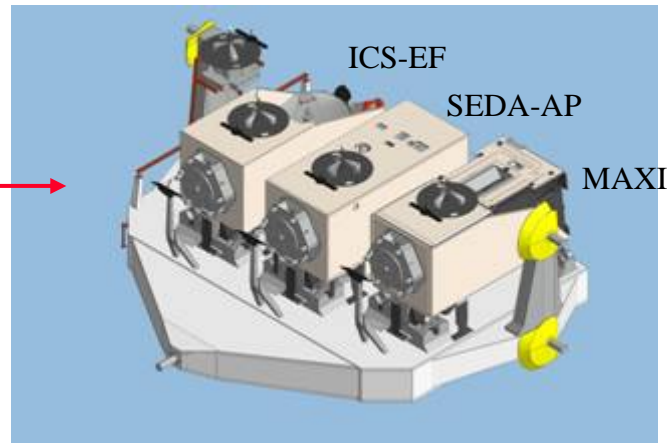
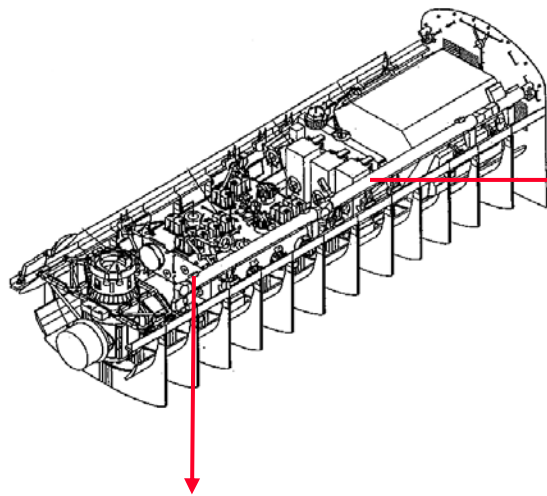
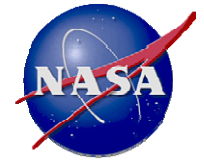
Scott Higginbotham / UB-R

2JA NASA-KSC Mission Manager

October 23, 2008



Flight 2J/A JAXA Hardware EF, ELM-ES, ICS-EF, SEDA-AP, and MAXI



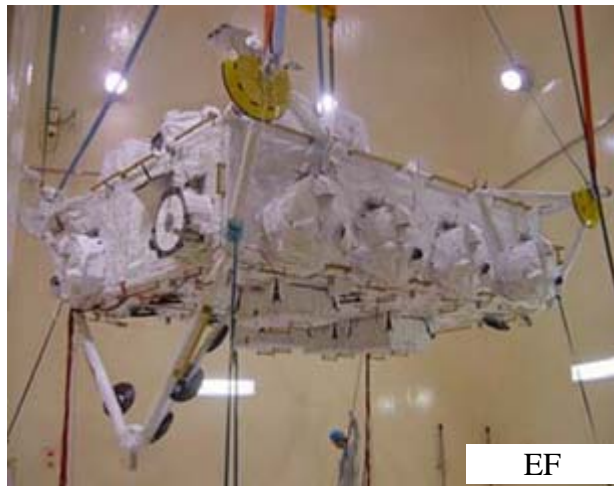
ICS-EF



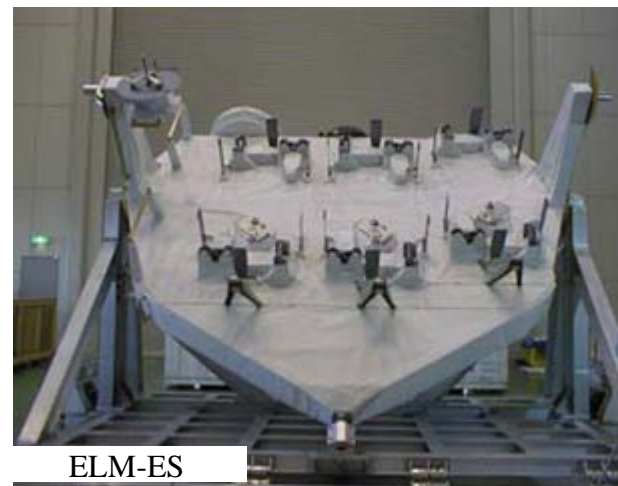
SEDA-AP



MAXI



EF

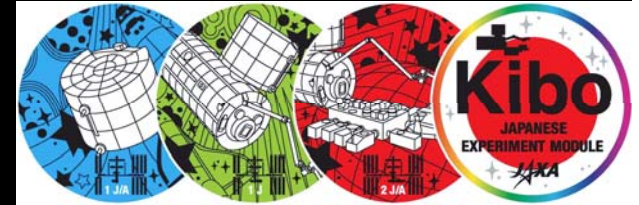


ELM-ES

JEM "Kibo"

Experiment Logistics
Module-Pressurized Section
(ELM-PS)

1JA / STS-123



Remote Manipulator System
(JEMRMS)

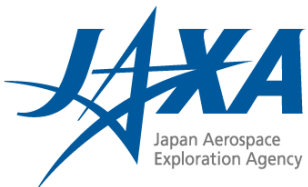
1J / STS-124

Pressurized Module
(PM)

Exposed Facility
(EF)

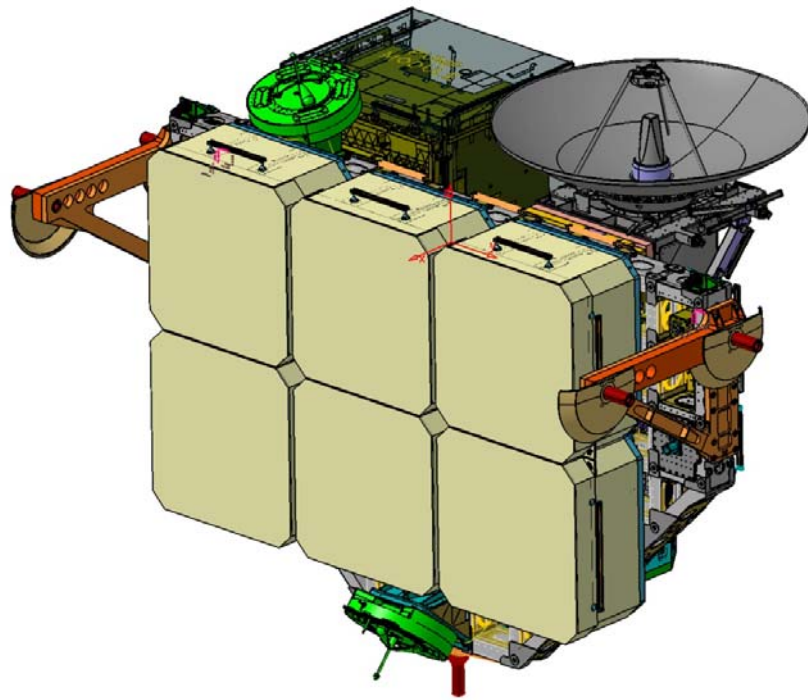
2JA / STS-127

Experiment Logistics
Module-Exposed Section
(ELM-ES)



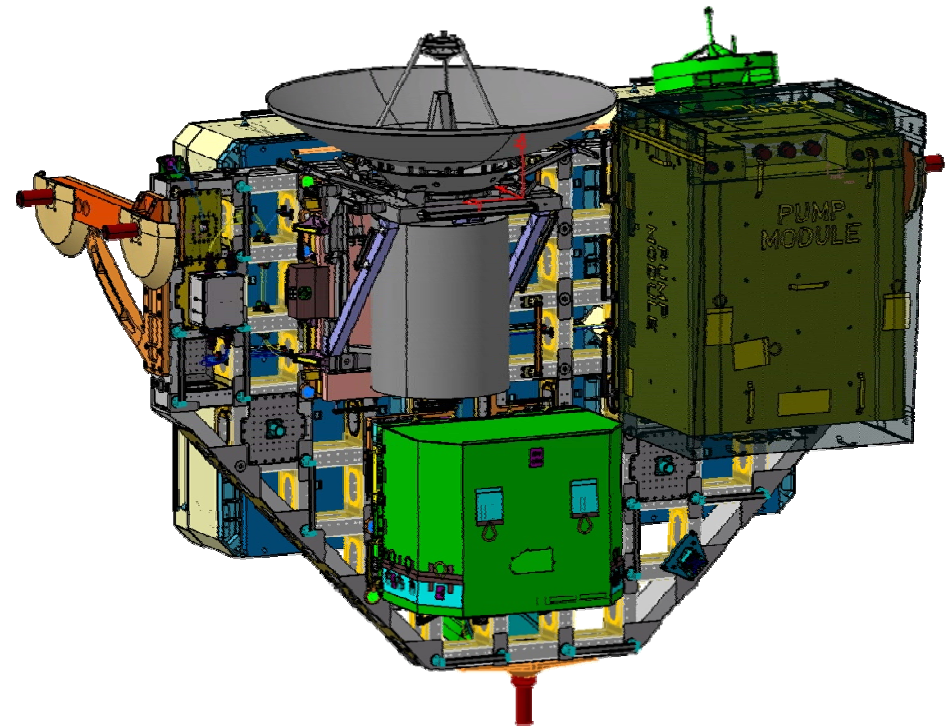


Flight 2J/A ICC-VLD Launch Configuration



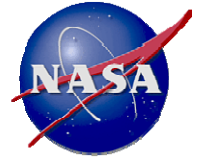
+X-Side
6 Batteries

-X-Side
PM, SGANT and LDU





Hardware Processing Status Summary



JAXA EF / ELM-ES and EF Payloads

- Offline SSPF processing of EF, ELM-ES, and ICS-EF is underway
- MAXI and SEDA-AP are due to arrive at KSC in late October and early November, respectively

ICC-VLD

- Astrium standalone carrier preparations are underway at the SPPF
- All six battery ORUs are at the vendor (Loral)
- LDU ORU is ready for integration
- LDU FSE / SAPA integration is complete
- Pump Module ORU has been serviced and is ready for integration
- Pump Module FSE / LAPA integration is underway
- SGANT ORU is ready for integration
- SGANT FSE / SAPA integration is complete

Sidewall Payloads (ANDE-2 and DRAGONSAT)

- Advance technical/support planning is continuing



2JA Processing Milestones



EF / ELM-ES and EF Payloads

- ICS-EF on dock KSC 9 September (A)
- EF / ELM-ES on dock KSC 24 September (A)
- MAXI on dock KSC 30 October
- SEDA-AP on dock KSC 7 November
- ELM-ES payload installation complete 19 December
- CEIT multiple dates
- ICD Walkdown TBD March
- EF weight and c.g. measurement / canister installation 8 April
- ELM-ES weight and c.g. measurement / canister installation 9 April

ICC-VLD and ORUs

- Pump Module turnover to Astrium 27 October (U/R)
- LDU turnover to Astrium 29 October (U/R)
- SGANT turnover to Astrium 3 November (U/R)
- Battery turnover to Astrium 23 January
- CEIT 13 March
- ICD Walkdown TBD March
- ICC-VLD on dock KSC / canister installation 10 April



2JA Processing Milestones



Sidewall Payloads

- ANDE-2 on dock KSC 17 February
- DRAGONSAT on dock KSC 19 February
- ANDE-2 transfer to OPF / installation into Orbiter 24 February
- ANDE-2 to Orbiter IVT 25 February
- DRAGONSAT transfer to OPF / installation into Orbiter 26 February
- DRAGONSAT to Orbiter IVT 26 February
- Orbiter CEIT 13 March

Integrated Operations

- EF / ELM-ES / ICC-VLD transfer to Pad A 14 April
- SSV transfer to Pad A 17 April
- EF / ELM-ES / ICC-VLD transfer into Orbiter 18 April
- EF / ELM-ES / ICC-VLD to Orbiter IVTs 19 April
- Flight Crew walkdown 22 April
- Launch Package closeouts 23 April
- Final payload bay door closure 23 April
- Middeck experiment late stow / Orbiter IVTs 14 May
- Launch 15 May

KSC Launch and Landing Project

STS-127

Launch Site Flow Review

October 23, 2008





Multi Flow

K. Tenbusch

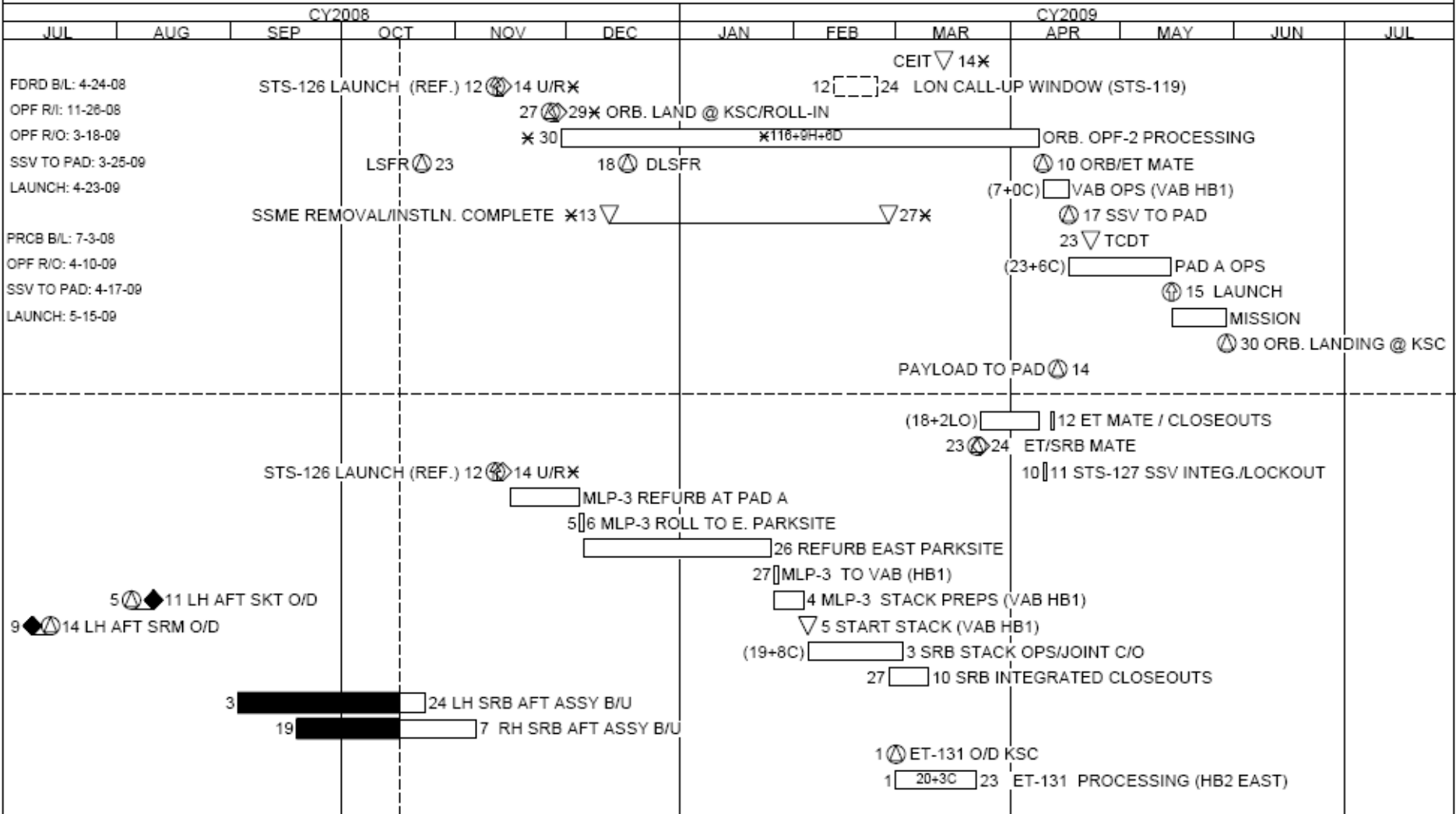


STS-127 KSC Milestone Interface Chart

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

OV-105/23/ ISS-29-2J/A
CREW / DURATION: 7 / 15
ET 131/ B1138 / RSRM 106 / MLP-3/ PAD-A / VAB HB-1

SSP APPROVED MANIFEST PRCB 7-3-08 (REF. CR #SO42013HK)
Status as of:
10/17/2008



THREATS:

NOTES: 1. TWENTY-NINTH ISS/SSP FLIGHT
2. LAUNCH DATE WOULD BE 5/13/09 TO SUPPORT
LON FOR STS-119 IF CALLED UP

Flight Element Processing

R. Goodman

STS-127 LSFR
J. F. Kennedy Space Center



Flight Element Processing Overview

- **Processing Deltas** **Presented**
- **OPF Flow Milestones** **Presented**
- **Issues and Concerns** **Presented**
- **TPS Work Content** **Presented**
- **Integrated Operations Summary** **Presented**
- **Configuration/Facilities** **Backup**



Processing Deltas

- **Mods:**
 - Airlock Upper Hatch Decal/Blanket Mod
 - Mid-Deck Partition Lexan Covers
 - APU GN2 QD Heater Mod
 - Expanding Payload Retention Active Latch Control Capability (Mission Kit Mod)
- **Time & Cycle**
 - PLB Vent Door Filters R/R (14 Each)
 - GPS Batteries R/R (3 Each)
- **Deferred to Flight 23**
 - MO10W Panel R/R
 - UHF Transceiver R/R
 - Wireless Video System Antenna Radome Repair Scratches
 - Forward/Aft Radiator retract Flexhoses **Potential** R/R (Flt to Flt inspection)
 - NLGD Captive Gap Filler Fabric is Torn
 - LH Pod Y-Web Door FIB



Processing Deltas

<u>LI</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
3.	J6306	OV-105 Mid Fuselage Lock Bolt Collar Inspection	Approved
4.	J6321A	ASA & ATVC R&R For Tin Whisker Remediation	Approved
5.	J6327	WLE RCC Joggle Inspection	Approved
6.	J6341A	Evaluation Of OMS Pod LI-900 Tile Installed on 0.090" SIP	Approved
7.	J6402	Micro Inspection Of Captive Gap Fillers	Approved
8.	J6410	Aft Stub Cracked Tile Inspection	Approved
9.	J6414	RSB Thermal Tab Inspection	Pending
10.	J6417	WLE IR Thermography Study	Rewrite
11.	J6419	Putty Repair Tile Removal	Approved
12.	J6420	Sampling Of APU Sys 3 Lube Oil	Approved
13.	J6423	Dragoneye Interface Plate Fit Check	Approved
14.	J6425	Acquisition of Certification Data for IWIT	Pending
15.	J6429A	ET Door Drive Actuator Changeout & Refurbishment	Pending
16.	J6430	Mid Deck Partition Inspectin	Approved
17.	J6433	Port & Starboard Sill Measurements	Draft
18.	JXXXX	Parallel Latches Bench Test	Draft

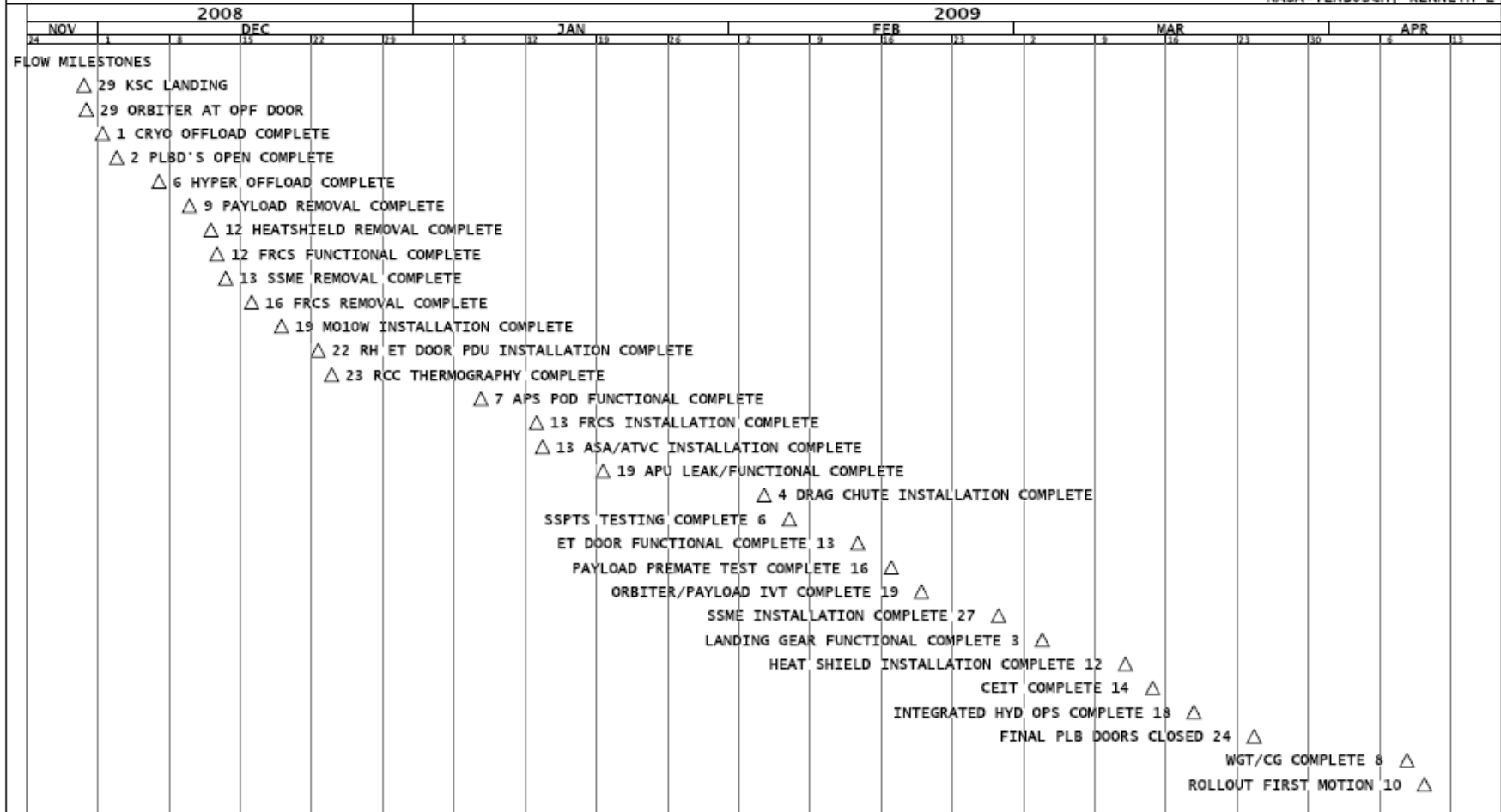


STATUS	
USA	NASA
C	C
C=CONCUR	NC=NOT CONCUR

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: 20-OCT-2008
 Revision :B

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



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

STATUS DATE: 20-OCT-2008:1 PLOT DATE: 20-OCT-2008, 3.13 pm NETWORK: OPF127.706 CONTACT: TUTEN, LINDA ,1-0673 OPF BAY-2 EXE: CUSOPFSU.27

STS-127 LSFR
 J. F. Kennedy Space Center



Issues and Concerns

- **High Work Content/Growth**
 - Payload Download/Upload
 - Longerons (12 Each)
 - Keels (3 Each)
 - Sidewall Payloads (7 Each)
 - Parallel Processing With STS-128 Flow (OV-104)
 - Potential Problem Areas:
 - Chin Panel
 - Windows
 - FRCS F5R Leakage
 - Bay 4 Longeron Bridges
 - Radiator Retract Flexhoses
 - ASA & ATVC R/R



STS-127 Cavity Estimate

<u>Priority</u>	<u>Description</u>	<u>Proposed</u>
Mandatory	Deferred Tile/Fib for 1-Flight (Minimum)	7
Mandatory	In-Flight Tile/Fib Damage/Putty Grind Outs	50
Mandatory	Highest Priority Putty Repairs (9A)	1
Mandatory	Operational (Adjacent Ops,C/P Ops,Veh Suppt)	20
10	2nd Subset Putty Repair Removals (3 NLGD)	8
11	Structure IML Surface Corrosion Inspection	12
15	Base Heat Shield 9lb/90 SIP Tile Upgrade	9

BRI Implementation

None

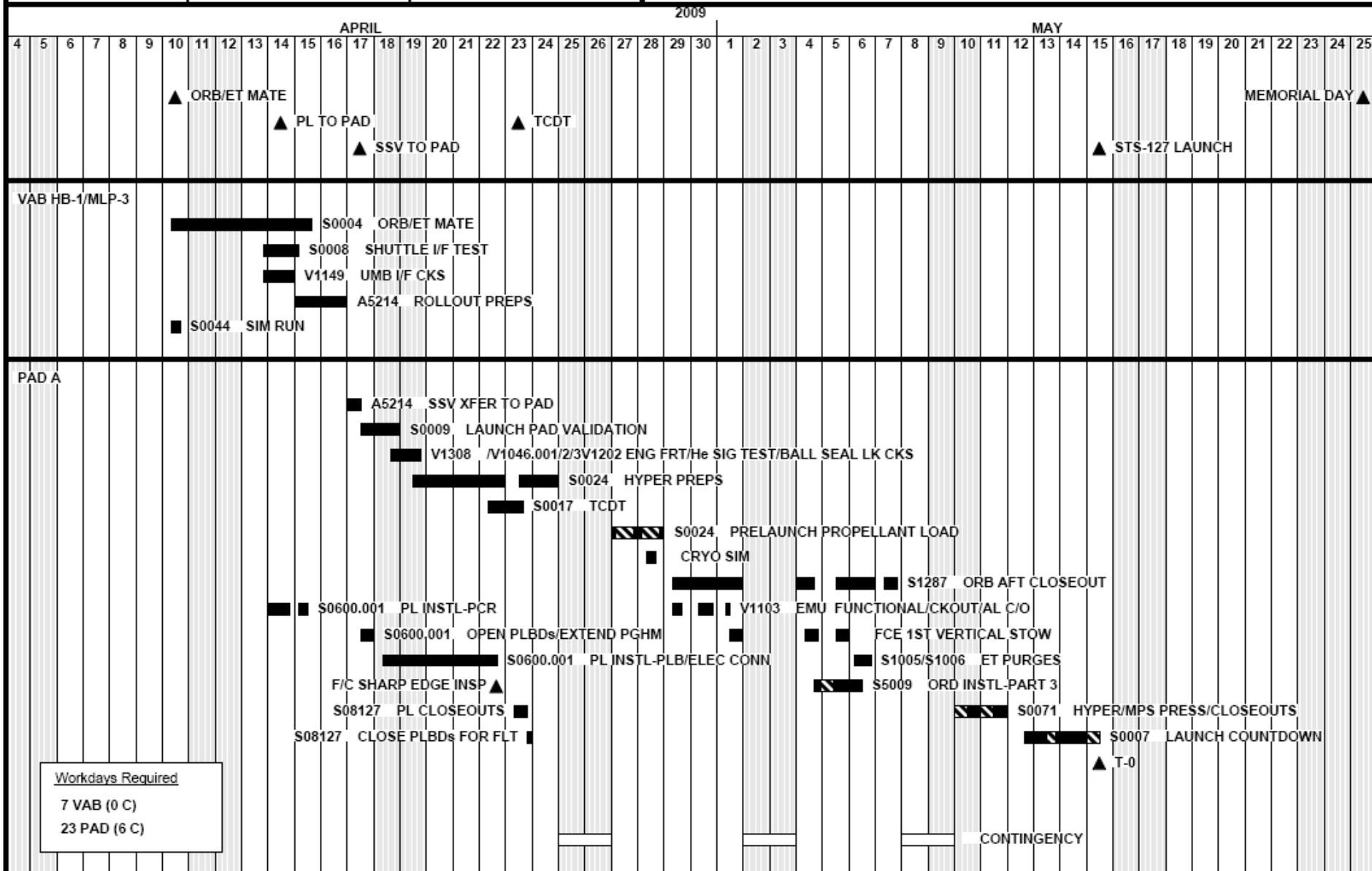
TPS Removal TOTAL (Estimate)

***107**

***Final TPS Work Content Will Be Baselined At The Delta LSFR**



STATUS		OPR: USA - J. Taylor, INTEG FM (1-7420) NASA - K. Tenbusch, PH-O (1-9318)		STS-127 / OV-105	
USA	NASA	CONCUR			
C	C			Creation Date: 3 JUL 08 Revision Date: Revision:	
C=Concur NC=Non-Concur					





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



STS-127 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **10-23-08**

Backup Material

FRWG Presentation (With Minor Changes)



STS-127 LAUNCH SITE FLOW REVIEW

Presenter
Ann Patterson
Date
23 October 2008

<u>Documentation</u>	<u>Status</u>	<u>ECD/Date</u>
• <u>MIP – NSTS 21434, Basic, Chg 1(6/20/08)</u>	CR-0005 (Not out for review): Update Task Priority Table Add DragonEye CSR Requirements TBD items	Post LSFR
• <u>PIP – DRAGONSAT, Basic (12/12/07)</u>		
• NSTS 21540	No Open CRs	
• <u>PIP – ANDE-2, Basic (7/13/07)</u>		
• NSTS 21544	No Open CRs	
• <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>	SO72127A: Add SIMPLEX to STS-127	Post LSFR
•		



STS-127 LAUNCH SITE FLOW REVIEW

Presenter

Ann Patterson

Date

23 October 2008

- STS-127 FRD Latest Revision: 003, dated September 5, 2008 (<http://sspweb.jsc.nasa.gov/efrd>)
 - CRs in work:
 - FRD17462-127-0013: Add DragonEye to Applicable Documents and Update TCS Configuration
- CRs posted at <http://sspweb.jsc.nasa.gov/icbdata>

Modifications Matrix

MCR NO.	MCR TITLE	KIT/ MOD RECORD & DESCRIPTION	TECH ORDER IMPACT
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Mods Previously Baselined at LSRR

30099	D-Hatch Decals Relocation Replaces Decal for hatch handle location when closing. Replaces MR decal from STS-126	TCTIM0030099REF, 0003, 1	M072-364828-005, was -002 M072-593828-005, was -001 Model MV0828A
30179	Mid Deck Partition Impact Protection, OV-105 Installs lexan panels to protect thin structural walls in crew module near the external airlock hatch	VK70-334795-001, 0105, 0	None
30189	APU QD Heating Modification Installs heaters on GN2 fill QDs to help preclude leakage on-orbit	030189, 0105, 0	None

Mission Kit Mods Previously Baselined at LSRR

23029	Payload Retention Sys-Active Latch Control Capability	VK73-774010-001, 0001, 0	M072-544101 M072-544201 Model MV0073A
30234	DRAGONEYE DTO Implementation	030234, 0105, 0	M072-341828-0XX, was -026 M072-730021-022, was -020 Model MV0828A
30099	External Airlock Ducting Configuration Change	None	M072-643402 Model MV0828A
17222	RMS Elbow camera installation	None	M072-544504-015 (is) -009 (was) Model MV0082A

Mission Kit Mods to be Baselined at LSFR

30234	DRAGONEYE DTO Implementation	030234, 0105, 0	M072-363838-003 (is), -001 (was)
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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
- Tech Order Updates Required:
 - M072-364828 and M072-593828

New Decal

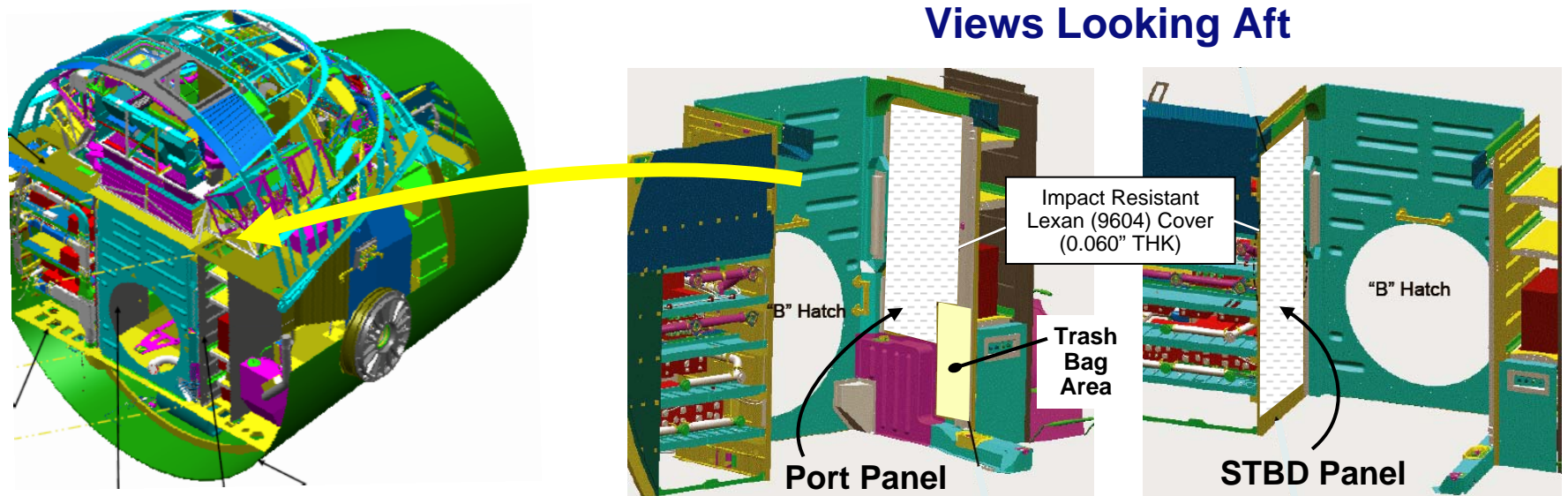


STS-127 OV-105 Flight 23 – Approved Mods

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

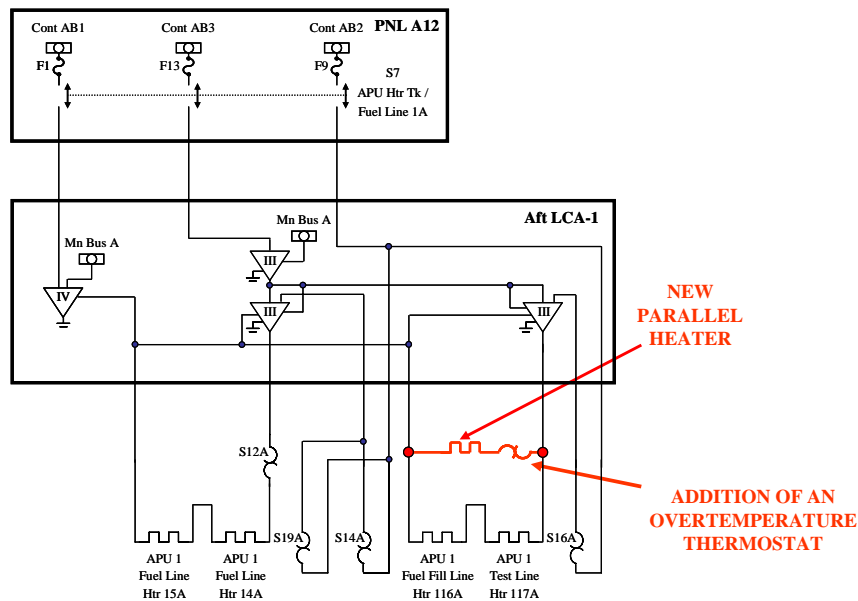


STS-127 OV-105 Flight 23 – Approved Mods

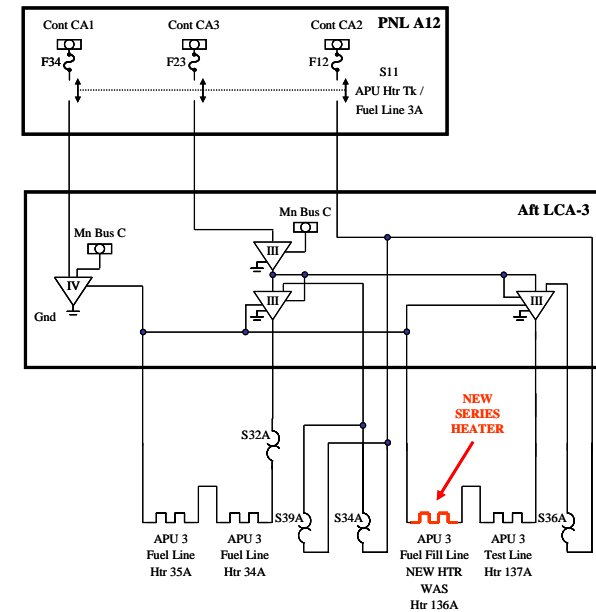
Mod baselined at LSRR

- **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 over-temperature 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



STS-127 OV-105 Flight 23 – Approved Mods

Mission Kit mod baselined at LSRR

- **23029 – Expanding PL Retention Active Latch Control Capability**
 - Some ISS Flights exceeded the Payload Latch Control Capability. New Payload Latch Control harnesses were designed and built to expand the Payload Latch Control Capability beyond the 15 active latches controlled today.
 - However, the released System 2 harness engineering was incorrect. As a result, some legs of the System 2 latch harnesses were built too short to reach their interface point.
 - Updates two tech orders and MECSLSI
 - M072-544101 and M072-544201
 - Currently, STS-127 requires 18 latches. Modification of as built harnesses to meet STS-127 requirement is in work.

STS-127 OV-105 Flight 23 – Approved Mods

Mission Kit mods baselined at LSRR

- **30234 – Dragon Eye DTO Implementation**
 - Installs DTO box with flash LIDAR and data acquisition unit on ODS truss
 - Updated two tech orders and MECSLSI
 - M072-341828 and M072-730021
- **30099 External Airlock Ducting Configuration Change**
 - Revised configuration to launch with ducting installed versus stowed
 - Updates one tech order and MECSLSI
 - M072-643402

BACKUP

STS-127 LSFR
J. F. Kennedy Space Center



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 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **10-23-08**

SSP ICD Changes

- The Following ICD Changes, Program Designated for STS-127, are in the Review/Approval Cycle:

<u>IRN #</u>	<u>Description</u>	<u>Status</u>
IO-3321/ICD-2-0A001	These IRNs are permanent waivers allowing the ground main and pre-flight test bus DC power supplies to exceed the present ICD impedance requirements. These IRNs will replace the present expiring ICD waivers on these requirements. CR S063880A has been released for evaluation and program approval.	In Work
IO-3322/ICD-2-0A002		Awaiting
IO-3323/ICD-2-1A001		Program OSB
IO-3324/ICD-2-1A002		Approval
IO-3325/ICD-2-1D003		



STS-127 Launch Site Flow Review	Presenter Kenneth Nowak	
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Mandatory RCNs:

NONE

Non-Mandatory Value Added RCNs:

OV17793	V56 – ET Door Bell Crank/TPS Clearance	11/07/08
OV17787	V31 – MLG Door Seal Update	Preliminary

STS-127

Launch Site Flow Review

Flight Software Overview

Judi Powell
Flight Software
PRCB

STS-127 LSFR (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 LSFR (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**
 - **None**

STS-127 LSFR (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 LSFR (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/OV-105 ADTL software production schedule (available to field)**
 - **This cycle may not be required.**
 - **Decision to deliver this set of products will be made in November, 2008**
 - **Shuttle Data Tape** **February 5, 2009**
 - **Mass Memory Unit** **February 19, 2009**

- **Open Items**

- **None**

- **Issues or Concerns**

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



SPACE SHUTTLE PROGRAM

Orbiter Project Office

NASA Johnson Space Center, Houston, Texas



STS-127 LSFR FLIGHT CREW EQUIPMENT/GFE	Presenter Kenneth Brown	
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STS-127 LSFR FCE/GFE Status

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



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- Delivery dates are partnered



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BACKUP



SPACE SHUTTLE PROGRAM
Orbiter Project Office
 NASA Johnson Space Center, Houston, Texas



STS-127 LSFR FLIGHT CREW EQUIPMENT/GFE		Presenter Kenneth Brown
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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	O	11/19/08	11/19/08		Randall Moore
B (port aft)	M072-750025-081	10/20/08	07/06/07	O	11/19/08	11/19/08		Randall Moore
C (starboard aft)	M072-750025-082	10/20/08	07/06/07	O	11/19/08	11/19/08		Randall Moore
D (starboard forward)	M072-750025-083	10/20/08	07/06/07	O	11/19/08	11/19/08		Randall Moore
Payload Ops camera	M072-340107	1/27/09		O	2/27/09	2/27/09		Randall Moore
SRMS elbow camera	M072-544504-015	10/20/08	3/3/09	O	11/19/08	11/19/08		Randall Moore
SRMS wrist camera	M072-544504-010	1/2/09	3/3/09	O	11/19/08	11/19/08		Randall Moore
Centerline Airlock Camera (stowed)	M072-660828-002, CCCD			C				Randall Moore
Lefthand Umbilical Camera (aft)	M072-705001-016	3/3/09	06/07/07	C	4/3/09	4/3/09		Randall Moore
						Page 53 of 83		Randall Moore



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Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	Cert O/C	KSC Need	JSC Planned	JSC Remarks	JSC Contact
Righthand Umbilical Camera	M072-705001-028	3/3/09		O	4/3/09	4/3/09	.	Randall Moore
Digital Television (DTV)	M072-710570-007			C			Hardware is still on the vehicle.	Randall Moore
MCIU/RMS Situational Awareness Display (RSAD)	M072-710543-001		03/07/00	O			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	11/19/08	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)	M072-710338-006		07/05/01	C			Installed hardware.	Larry Schmidt
Winches	V070-650007-085		11/19/04	C				Sandy Peterson



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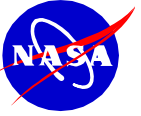


STS-127 LSFR FLIGHT CREW EQUIPMENT/GFE		Presenter Kenneth Brown
Date	Oct 23, 2008	Page 6

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 M072-794026-16 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 M072-794026-017			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 M072-000416-004 camera	12/07/07	11/24/04	C	4/19/09	4/19/09		Randall Moore
Wing Leading Edge (WLE) Instrumentation - Left Wing**	M072-756111-003			O				Gary Cox
Wing Leading Edge (WLE) Instrumentation - Right Wing**	M072-756111-004			O				Gary Cox
								Gary Cox
OBSS Sensor Package 2	M072-710282-006			O	1/30/09	1/30/09		Larry Schmidt
Airlock Adapter Plate				O			Installed hardware.	Sandy Peterson



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STS-127 LSFR FLIGHT CREW EQUIPMENT/GFE		Presenter Kenneth Brown
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Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	Cert O/C	KSC Need	JSC Planned	JSC Remarks	JSC Contact
RMS				O			Installed hardware.	Kenneth Ruta
OBSS Sensor Package 1	M072-710282-008			O	1/30/09	1/30/09		Randall Moore
OBSS	M072-544506-002 M072-544505-013			O			Installed hardware.	Kenneth Ruta



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

**Bridget Ziegelaar
EVA Office
Johnson Space Center
October 23, 2008**

- **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
- **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 January 2010

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

Payload Cargo Engineering Status

MICHAEL BARIDO

281.212.6072

OCTOBER 23, 2008

STS-127 LSFR

Engineering Flight Product Status

<u>Drawing No</u>	<u>Title</u>	<u>Rev</u>	<u>EO</u>	<u>Released</u>
V072-200207	MECSLSI	A	A01	10-13-08
VA72-200207	Cargo Arrangement	A	A01	10-14-08
VD72-200207	Avionics Diagram	A	A01	10-13-08
VS72-200207	Integrated Schematic	A	A01	10-13-08
VS70-540345	Retention Schematic	A	A01	10-13-08

Rescue Flight Status

- STS-128 Reconfiguration Engineering Products will be developed by the Engineering Order To Follow (EOTF) process.

Engineering Open Work

- FRED Tech Orders 10-24-08

Standardization

- Mission configuration does comply with NSTS 60523 Orbiter/Payload Integration Standardization Document except for the following 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 LSFR

OMRS Status

Open Work

ECD

- **Baseline OMRS**
 - **FII, V2 Post Mate**
 - PP17749R2 P434 – ISS-2J/A BASELINE 11/04/08
 - PP17XXX P434 – ADD. OF PWRD MIDDECK PAYLOADS 01/13/09
 - PP17738R2 P1540 – SSPL/DRAGONSAT BASELINE 11/04/08
 - PP17737R2 P544 – ANDE2 BASELINE 11/04/08
 - **FII, V4 Pre-mate**
 - PS17XXX Mission Unique List 12/02/08
 - PS17XXX FIII MUL 12/02/08
 - PS17XXX Adjacent Pin 12/02/08
 - PS17796 S07 – PARALLEL RETENTION LATCHING 10/28/08
 - **FII, V6 Shuttle Experiments**
 - PX17XXX 701B – DRAGONEYE BASELINE 12/16/08

Issues/Concerns

- None

STS-127 LSFR

Annex 1

Baselined Files

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

Open Work

ECD

- NSTS 21434 ISS-2J/A MIP Annex 1 11/24/08
 - Update ICC-VLD Static length, 2J/A Mechanical Drawings, Safety Critical Switch List, ICC-VLD launch and Landing configuration figure, Functional Flow Diagrams, Schematic Diagrams, Safety Critical Circuit diagrams, c.g. figures
- NSTS 21540 DRAGONSAT PIP Annex 1 10/27/08
 - Modify DRAGONSAT part number, update deploy profile figure

Issues/Concerns

- None

STS-127 LSFR

TGHR Status

Customer Submittal	01/15/09
Release For Review	02/13/09
Baseline	03/16/09

Issues/Concerns

- None

STS-127 LSFR

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>
A05657	ANDE 2/ICD-A-21544	ANDE 2 Cable I/F U/D	10/15/08
TBD-06	ANDE 2/ICD-A-21544	CAD Model U/D	10/20/08
TBD-004	ICC-VLD/ICD-A-21434	ICC-VLD Keel Camera Target	11/11/08
TBD-005	ICC-VLD/ICD-A-21434	Return Power Requirement	10/23/08
A04368	JEM ES/ICD-A-21434-ES	Baseline Exceedances	1/23/09
TBD-014	JEM ES/ICD-A-21434-ES	Final CAD Model U/D	12/16/08
A04370	JEM EF/ICD-A-21434-EF	Baseline Exceedances	1/23/09
A05651	JEM EF/ICD-A-21434-EF	Revise Wiring Figures	9/30/08
TBD-016	JEM EF/ICD-A-21434-EF	Cargo Validated Model/ DPA Data U/D	12/19/08
A05608	ODS ISS/ICD-A-21342	DRAGONEYE & TRIDAR Config U/D	11/07/08

STS-127 LSFR

Cargo Close Clearance Process

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

STS-127 LSFR

Cargo Integration Hardware Status

Delivery Status

- **CIH delivery to KSC**
 - 5 Wire Harnesses **ECD: 10/28/08**
 - 1 Harness Support Bracket Assy **ECD: 10/28/08**

Open Work

- **Working STS-125/127 possible Cargo Integration hardware interdependencies**
 - Workarounds may solve problem. Evaluation inwork, assessment to be complete by 10-24-08
 - Completion dependent on final engineering release on 10-24-08



STS-127 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **10-23-08**

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-127 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **10-23-08**

SSP System Drawings

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

- V072-000001-278 (Rev. VK) Space Shuttle System (Rel. 08-25-08)
 - V072-200207-001 (Rev. NEW) Mission Equipment Cargo Support (Rel. 07-10-08)
 - SGD32104450-501 (Rev. NEW) Crew Compartment Configuration (Rel. 09-26-08)
 - 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 CIR + 70 days Mission Configuration Product Plan (MCP) and LSRR +18 days will be published on 10-17-08.



STS-127 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **10-23-08**

SSP System Drawings – (Continued)

Ferry Configuration

- V072-000001-279 (Rev. VK) Space Shuttle System Drawing (Rel. 08-25-08)
 - V072-200207-002 (Rev. NEW) Mission Equipment Cargo Support (Rel. 07-10-08)
 - SGD32104450-001 (Rev. NEW) Crew Compartment Configuration (Rel. 09-26-08)
 - V072-300055-026 (Rev. BR) Ferry Flight Configuration (Rel. 09-24-08)

SCA 911



STS-127 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **10-23-08**

Modification Impact Report

- Mission Equipment Modifications and Orbiter Modifications analyzed for impacts to OMRSD, LCC, ICD, EMI, Software, and GSE.
- A total of 5 MCRs have been approved and/or pending mods
- Current MCR impact status:
 - No impacts for all six disciplines 2
 - Possible impacts still under review 3
- MCR's 23029, 30234, and 30189 are being reviewed for all impacts

MCR/ECP	STAT	ITEM/KIT NUMBER	EISN	SEQ NO.	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
023029	AUTH KSC	VK73-774010-001 NOT REQUIRED	0001	000	PAYLOAD RETENTION SYS-ACTIVE LATCH CONTROL CAPABILITY ADDED PER MCR BASIC.	S115127A 2008-10-06	MAND 023
030099	AUTH KSC	TCTIM0030099REF	0003	001	D-HATCH DECALS RELOCATION ADDED PER V828-000002 F18 & V828-360179 A02	S115127A 2008-10-06	MAND 023
030234	AUTH KSC	030234	0105	000	DRAGON EYE DTO IMPLEMENTATION ADDED PER S. COPENHAVER REQUEST FOR STS-127 LSRR	S115127A 2008-10-06	MAND 023

TOTAL MODS = 3

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	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
	AUTH 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
	AUTH KSC	J6327	0105 001 SPAR	WLE RCC JOGGLE INSPECTION	S-J6327 2008-02-14	MAND 023
	AUTH KSC	J6341A	0105 001 SPAR	EVALUATION OF OMS POD LI-900 TILE INSTALLED ON 0.090" SIP	S-J6341A 2008-04-09	MAND 023
	AUTH 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	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
	AUTH 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 AREA WITH TRAJ CONTROL SYS CARRIER ASS'Y	S-J6423 2008-10-08	MAND 023
	AUTH KSC	J6430	0105 000 SPAR	MIDDECK PARTITION INSPECTION	S-J6430 2008-10-14	MAND 023
030179	AUTH 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	S115127A 2008-10-06	MAND 023

030189	AUTH 030189	0105 000	APU QD HEATING MODIFICATION	S115127A	MAND
	KSC	CONTR	ADDED PER S. COPENHAVER'S REQUEST FOR STS-127 LSRR	2008-10-06	023

TOTAL MODS = 15

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIORIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
008840	APPD	K725-710086-001	0001 000	KIT - INTEG H/W; ICC-VLD (VERTICAL LIGHT DEPLOYABLE)	NOT REQD	
	KSC	NOT REQUIRED		ADDED BY EDS I/F & KIT EO NEW		023
	APPD	K845-774022-001	0001 000	KIT - INTEG H/W, ICC-VLD	NOT REQD	
	KSC			ADDED PER V845-774980 NEW & V845-774981 NEW		023

TOTAL MODS = 2

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

TOTAL MODS = 2

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

ML60E 0646 -TBD

STS1=OCA
 STS2=WINDECOM
 STS3=KFX

STS5=RPOP
 STS6=RPOP2
 STS7=WLES
 ACCESS PT
 ACCESSORIES

PCS LAPTOP
 PWR SPLY
 CD-ROM

ML60M 6014 -TBD
 B/U C/L CAM
 LEAK DETECTOR

MIDDECK FORWARD

MF14E FRESH FOOD TBD -TBD	MF28E ADVANCED PLANT EXPERIMENT (APEX) TBD -TBD	MF43C MED KITS TBD -TBD	MF57C DC VACUUM CLEANER 4033 -303	MF71C HYGIENE CREW PREF TBD-TBD HCTB
MF14G MENU FOOD TBD -TBD	MF28G MENU FOOD 2767 -TBD	MF43E CDR 1900 -308	MF57E PLT TBD -TBD	MF71E SODF CREW CARE PKG TBD-TBD HCTB
MF14H MENU FOOD 2763 -304	MF28H MENU FOOD 2767 -TBD	MF43G IFM TOOLS 6300 -337 6250 -345 2163-302 2161-305 2162-307 MULTIMETER	MF57G ORBITER FDF SODF 6240 -311	MF71G M/S #5 UP CLOTHING M/S #5 DN CLOTHING TBD -TBD
MF14K MENU FOOD 2764 -306	MF28K IFM BREAKOUT BOX TURNBUCKLES AIR BOTTLES WWD FILTER RMS KIT ALTIMETER ON LOCKER DR 5454 -327	MF43H M/S #1 1904 -305	MF57H M/S #2 1903 -305	MF71H ORBITER FDF 5473 -305
MF14M MENU FOOD 2765 -304	MF28M CREW SUPPORT TBD -TBD	MF43K POST INSERTION 6231 -TBD	MF57K SODF CTB TBD-TBD	MF71K ISS RESERVE CTB TBD -TBD
MF14O MENU FOOD 2766 -305	MF28O SHUTTLE CSA-CP SUPA (16)/FMK CONDENSATE HOSE/CWC DOCKING KIT/O-RINGS BRAYCOTE 7521 -TBD	MF43M M/S #3 1904 -307	MF57M GIRA SOMS RESUSCI-TATOR 0235-303 TBD-TBD	MF71M M/S #4 CLOTHING 3005 -304

MIDDECK AFT

MA9D/F T-RAD DTV MUX & TOOLS SPARE DSR-25 VTR SPARE VIP 9882 -302	MA16D RCC NOAX TUBES DOUBLE COLD BAG 8737 -305
MA9G ISS SAMPLES DOUBLE COLD BAG TBD -TBD	MA16G STOW-N-GO CTB TBD -TBD
MA9J COLOR PRINTER AND PAPER INK CARTRIDGES CTB 6066 -321	MA16J/L GLACIER TBD -TBD
MA9L PRINTER TRAYS COMMUNITY PHK BPSMU/SSV 9894-TBD	MA16N COAS/BTA FLUOR LT/LT SHADES/DCS760 AUDIO DOSIMETER 6299 -313
MA9N SOFT STWG BAGS PHK'S BRKTS/CKK/RE-ENT LIGHT STICKS RSTRN/RE-ENT FIBERSCOPE 7432-315 4980-309 8071-311 8070-302	EXT AIRLOCK 2-EMUs EXT A/L FLOOR TETHERS EMU BATTERY/DIDBS SAFER TRQ WRENCH BAG TBD -TBD

VOL B (MA4D/J) TBD
 NOT INSTALLED ✖

VOL 3B (MA75/J) 7425 -307
 QUICK DON MASKS(3)
 CABIN AIR CLEANER
 SPOTLIGHT/BATTS
 PD100
 LCD MON/DCS 760
 400 MM LENS

A16 8706 -TBD
 35MM CAMERA BAG
 CORE CC BAG
 DTV CAMERA BAG

A17 7424 -TBD
 HHL w/NITE SCOPE
 BINOCULARS
 4 QUICK DON MASKS
 HATCH TOOL
 PILOT HAND CONTROL

VOL D (MD52C) TBD

VOLUME F (MD76M) 1403 -306
 WET TRASH

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

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

WMC (MA82H) 4575 -309 0914 -331
 TOWELS AND RESUPPLY ITEMS
 WMC DISPENSER
 1st DAY CLOTH
 1641-323

MD CEIL (PORT 1) LATE INSPECTION REPAIR TBD	E
MD CEIL (PORT 2) RSK-7 ACES G-SUITS 9895 -302	F
MD CEIL (STBD 1) RCC REPAIR KIT GEL BRUSH KITS B/U EVA HDWR 9022 -302	G
MD CEIL (STBD 2) BACKUP C/L CAMERA RCC CRACK BAG 85 FT TETHERS ULTRASONIC LEAK DET. 8992 -301	H
MD FLOOR (PORT 2) IELK KOPRA ATHLETIC SHOES TBD	B
MD FLOOR (PORT 1) ENTRY GARMENTS ISS ITEMS IMAKs IPT RESERVE (2MLE) TBD	A
MD FLOOR (STBD 2) ISS RESERVE TBD	D
MD FLOOR (STBD 1) ISS PHOTO/TV (CTB) T61P LAPTOPS (3) ISS ITEMS (TBD) TBD	C

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
 CARGO TRANSFER BAG
 SWAP
 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
 CCM: 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)

Approved STS-127 OMRS Waivers and Exceptions

WVR EXC	ELEMENT PROJECT	PRCBD NUMBER	ABSTRACT RAS REQUIREMENTS	EISN PAYLOAD	STS	BEG	END
		WAIVER# (STAT) (INITIAL STS)					
+	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	EISN PAYLOAD	STS 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	Total Extracted	o	13	o	1	o
				o	0	o
				o	0	o
				o	14	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 data-bbox="567 276 1365 730">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 data-bbox="567 763 840 795">P/N MC450-0016-0029</p> <p data-bbox="567 828 1218 893">S/N U6F0002, U6F0003, U6F0004, U6F0006, U6F0007, U6F0009, U6F0010 and U6F0011</p> <p data-bbox="567 925 1407 958">***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****</p>	<p data-bbox="1365 276 1848 373">OV-103, Flight 35 OV-104, Flight 30 OV-105, Flight 21</p>	
345	S115123AR5	03/03/08	<p data-bbox="567 990 1365 1055">The following requirement is waived to allow OV-105 to fly with the following out-of-configuration condition:</p> <p data-bbox="567 1088 1365 1185">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 data-bbox="567 1218 1365 1356">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 data-bbox="1365 990 1848 1023">OV-105, Flight 21</p>	

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	08/22/2008	<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 border="0"> <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> </table> <p>Latches changed from secondary to primary:</p> <table border="0"> <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> </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																