



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



# **STS-335 Delta Launch Site Flow Review**

Presenter **Kenneth Nowak**

Date **07-22-10**

## **Program Freeze Point**

## **PRCB Presentation**

## **S115335C**



# STS-335 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-22-10**

**Baseline the STS-335 Mission Specific Requirements and Flow Plans.**

**The STS-335 Integrated Launch Site Requirements were established by PRCBD S115335R1 dated 05-20-10. This CR and the Associated Data Package were reviewed at the 07-19-10 FRWG.**

**Flight Operation & Integration**

**Orbiter Engineering\***

**Requesting Approval**

**MO3/USA-PI**

**USA-OE**

**Orbiter GFE**

**MV5**

**Payload/Cargo Engineering\***

**USA-PI**

**SSME**

**Requesting Approval**

**MP21**

**Launch Vehicle Processing\***

**PH-A**

**Status in BackUp**

**KSC Integration\***

**MK-SIO**

**Flight Software**

**USA-FSW**

**EVA**

**XA**

**KSC ISS and Payload Processing**

**UB-R3**

**\*Backup material included**



	Presenter <b>MO3/Phyllis Grounds</b>
	Date <b>July 22, 2010</b>   Page <b>1</b>

# **STS-335**

## **Delta Launch Site Flow Review (DLSFR)**

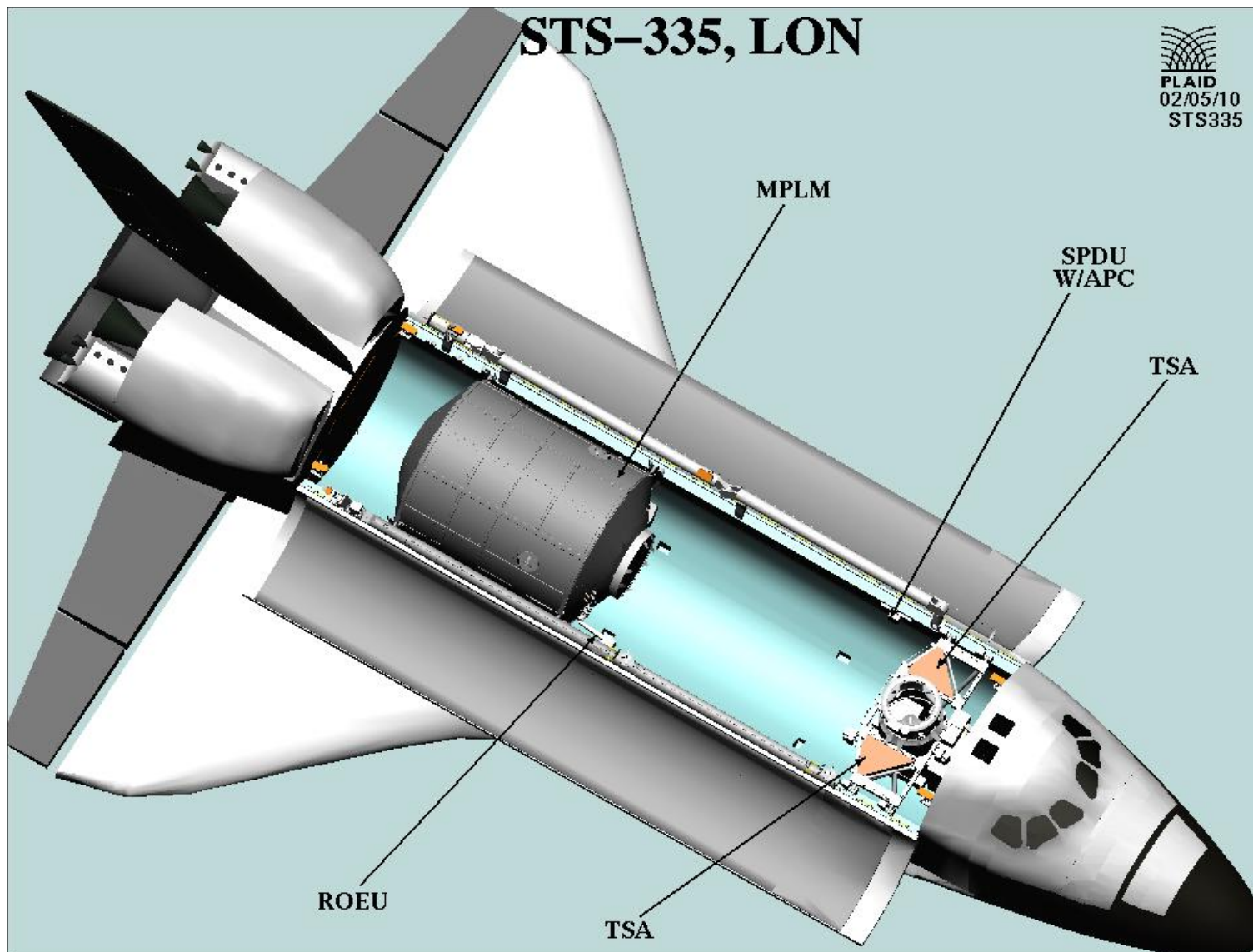
### **Flight Requirements Status**

**PRCB July 22, 2010**

**Phyllis Grounds, MO3 MIM**  
**Robert Reynolds, USA Flight Mgr**



STS-335 Delta Launch Site Flow Review		Presenter <b>MO3/Phyllis Grounds</b>	
		Date <b>July 22, 2010</b>	Page <b>2</b>





<h1>STS-335 Delta Launch Site Flow Review</h1>	Presenter <b>MO3/Phyllis Grounds</b>	
	Date <b>July 22, 2010</b>	Page <b>3</b>

**LAUNCH**

4/28/11  
 39A/ MLP 3  
 CREW SIZE: 4 UP/10 DN

**ORBIT**

51.6 DEG  
 122 NM  
 DIRECT INSERTION  
 DURATION: 11 + 1 + 2 DAYS

**CONFIGURATION**

OV-104(33)  
 LP04;RP01  
 ET-122  
 BI-146  
 RSRM-114  
 PROPOSED: (1) 2045 (2) 2060 (3) 2047  
 OI-34  
 SRMS, ODS, OBSS, APCU'S  
 ROEU, SPDU

**CONSUMABLES**

CRYO TANK SETS	5 (FULL)
GN2 TANKS	5 (FULL)
PAD HOLD	~95 hrs (H2 limited)
FWD RCS	2175# (MIDPOINT)
AFT RCS	4970# (FULL)
OMS	22760# (FULL)

**PAYLOAD**

MPLM

**LANDING**

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

***FDRD UPDATE REQUIRED TO MANIFEST SSME'S***



**STS-335 LON-MPLM Mission Overview**

Presenter **MO3/Phyllis Grounds**

Date **July 22, 2010**

Page **4**

**Mission Objectives:**

- **Transfer stranded crew and critical support equipment/supplies required for return of the stranded Shuttle crew from the ISS to the rescue Orbiter**
- **Transfer available water from Shuttle to ISS**
- **Berth MPLM FM2/ to ISS Node 2 nadir port, activate and checkout the MPLM**
- **Replenish depleted crew supplies from ISS (per transfer priority list)**
- **Transfer ISS System/Science Racks, RSP, RSR , and ISP (TBD quantity) racks to ISS**
- **Transfer O<sub>2</sub>, N<sub>2</sub> (if consumables allow)**
- **Miscellaneous Items**
  - **FD4 Rendezvous**
  - **TPS Inspection**
    - **FD2 TPS inspection**
    - **Rbar Pitch Maneuver with ISS imagery**
    - **Focused Inspection (if required)**
    - **Late inspection**



<b>STS-335 Delta Launch Site Flow Review</b>		<b>Presenter MO3/Phyllis Grounds</b>	
		<b>Date July 22, 2010</b>	<b>Page 5</b>

## PERFORMANCE MARGIN

- **SIMULATION MARGIN (CIRAF335)** **+4236**
  
- **WEIGHT CHANGES SINCE SIMULATION**
  - **PAYLOAD** **- 2075**
  - **OPERATOR** **+310**
  - **ORBITER** **+114**
  - **TOTAL WEIGHT CHANGES** **- 1651** **+1651**
  
- **OTHER PERFORMANCE PROJECTIONS**
  - **RENDEZVOUS ALT OF 190 NM** **+1160**
  - **PROTECTION FOR DOL DISPERSIONS** **- 700**
  - **MID APRIL LAUNCH DATE (PMBT & ATMOS)** **- 460**
  - **SRB – M.P. UPDATES** **- 145**
  - **SRB – BR / 1.55 MIL HIGHER THAN 0.3705 AVG** **+310**
  - **PROJ TO 5 MIN WINDOW FROM INPLANE** **- 600**
  - **PERFORMANCE CHANGES ADJUSTMENT** **- 116**
  
- **CURRENT BASELINED APM (07/20/10)** **+5336**
  - **PROPOSED ENGINE SET (2045, 2060, 2047)** **+66**
  - **PROJECT FROM MID MONTH TO 4/28/11 LAUNCH DATE** **+100**
  
- **IPT PROJECTED APM** **+5502**



<b>STS-335 Delta Launch Site Flow Review</b>	Presenter <b>MO3/Phyllis Grounds</b>	
	Date <b>July 22, 2010</b>	Page <b>6</b>

## **FLIGHT MASS PROPERTIES**

**WEIGHTS AND CG'S ARE WITHIN ACCEPTABLE LIMITS**

<u><b>CASE</b></u>	<u><b>TOUCHDOWN</b></u>		<u><b>MACH 3.5</b></u>	
	<u><b>WEIGHT pounds (LIMIT)</b></u>		<u><b>X C.G. inches (LIMIT)</b></u>	
NOMINAL	223307	(233000)	1082.4	(1075.7)
RTLS	233326	(245000)	1082.0	(1077.2)
TAL	231963	(244000)	1082.1	(1077.2)
AOA	227927	(242000)	1080.4	(1075.7)
CONT RTRN	202573	(233000)	1080.1	(1075.7)

NOTE: 102 LBS AFT FUS. BALLAST (EMPTY BOXES)  
 RTLS INCLUDES 185 SEC ARCS & 25 SEC FRCS DUMPS  
 TAL INCLUDES 120 SEC ARCS & 65 SEC FRCS DUMPS

ESTIMATES BASED ON CIRAF335 AND MODIFIED FOR WEIGHT CHANGES THRU 07/20/10.



---

# **STS-335 DLSFR**

## **OV-104 FLIGHT 33**

### **CONFIGURATION UPDATES**

**PRCB**  
**July 22, 2010**

**Joe Rodriguez, USA Orbiter Element**  
**Steve Harrison, Boeing VM**

# STS-335 OV-104 Flight 33 – DLSFR Updates

---

## Program Authorization Is Requested For The Following:

- No new Orbiter modifications have been identified to date for implementation

## Information Only:

- Potential Modifications
- Modification Approved Since LSFR
- Chits
- OMRS Limited Life/Time/Cycle and Interval Requirements
- Potential OMRS Exceptions/Waivers

## Back-up:

- Modification Records and MECSLSI Updates Summary
- Engineering, Hardware and Certification Status
- TPS Risk Reduction Priorities List

# Potential Modifications

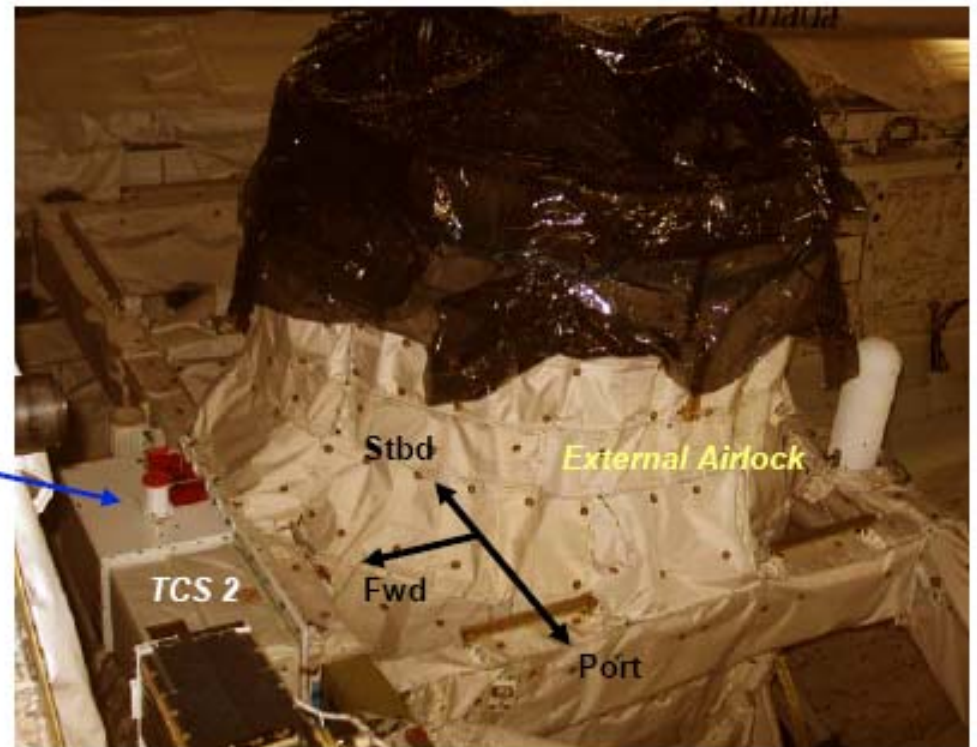
---

- **TriDAR (GFE) Installation in Support of DTO-701A (TAD 30164)**
  - The TriDAR sensor would be installed on the Orbiter to demonstrate technology for autonomous rendezvous and docking in low earth orbit
    - TriDAR would be mounted on the external airlock truss adjacent to Trajectory Control Sensor (TCS) 2 in the TCS 1 location (TCS 1 is no longer flown)
    - Hardware furnished by GFE and installed by Boeing tech orders
    - DMICB CRs were approved at 7/13/10 DMICB to authorize actions to protect for possible addition of TriDAR DTO
      - Revision of STS-335 flight products to add cabling / PAT box (CR M9316)
      - NSLD to modify one Cargo Integration cable V782-714721-001 to a -002 configuration (CR M9317)
  - MECSLSI update would be required for the following associated tech order changes (MV0828A)
    - Add M072-730021-021\* (TCS & TriDAR Instl)  
Remove M072-730021-019
    - Add M072-363838-003 (External Airlock TCS Blanket Instl)  
Remove M072-363838-001
  - GFE hardware delivery and certification will be addressed in GFE section

\* Current configuration; TriDAR LRU dash number roll would drive new tech order configuration

# TriDAR (GFE) Unit and Installation Concept

---



# Potential Modifications (cont.)

---

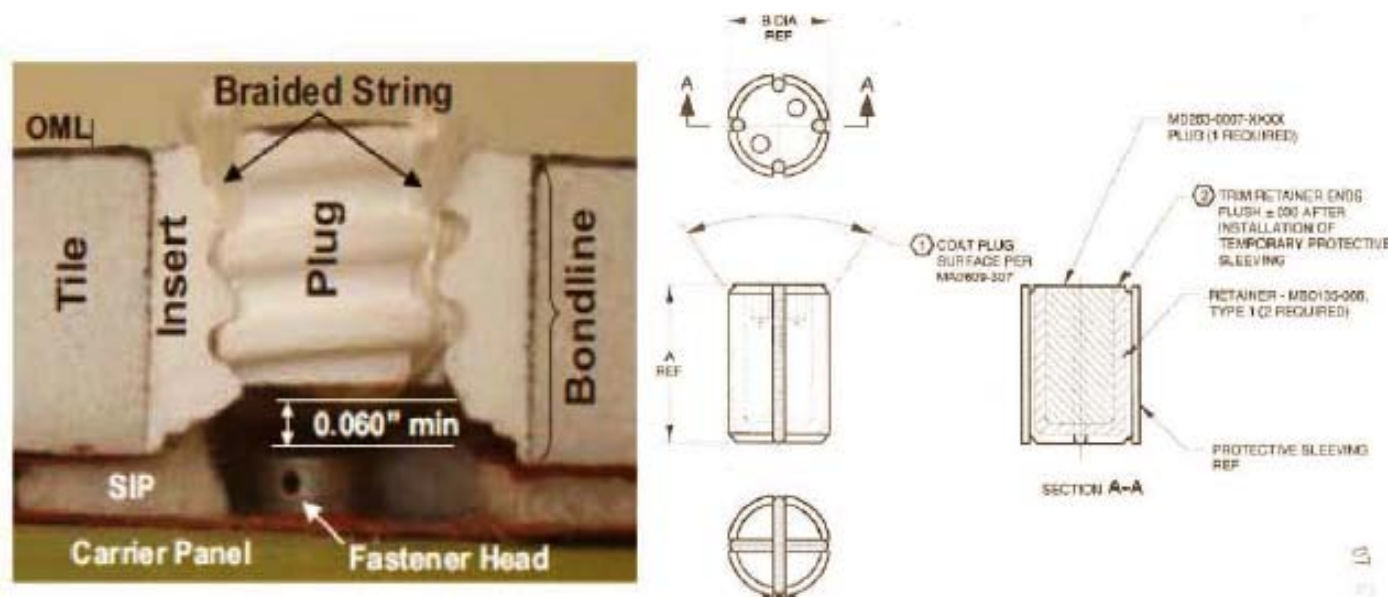
- **Starboard LWTSA Cushion**

- Definition of light-weight tool stowage assembly (LWTSA) contents configuration is TBD

# Modification Approved Since LSFR

- **TPS Ceramic Plug/Insert Redesign (TAD 30286)**

- Redesigns ceramic plug sleeving/retainer for all 0.75" diameter plugs & 0.875" shorter diameter plugs (0.75" length and less) to increase cord thickness to meet the installation torque requirements – preventing plug from potentially backing out due to vibration loads during ascent
- Approved at 6/4/10 DPRCB (S062838) for OV-103, OV-104 & OV-105
- Specifications and drawings released



# Chits

CHIT	TITLE
J6399	0-GAUGE PROTECTION FOR OV-104, FLIGHTS 31-35
J6527	FRCS THRUSTER CANISTER STUD INSPECTIONS - F5R AND F5L
J6528	PUTTY REPAIR TILE REPLACEMENT FOR RISK REDUCTION
J6543	ET FERRY FLIGHT DOOR ATTACH FITTING INSPECTION (FERRY FLIGHT ONLY)
J6577	AMES GAP FILLER REMOVAL AND REPLACEMENT
J6589A	CREW MODULE CONTAMINATION SAMPLING
J6599	PRE-FLIGHT CITRIC ACID FLUSH
J6614	DTV MUX BYPASS SWITCH VERIFICATION
J6626	WASTE WATER SAMPLE AND URINE SOLIDS FILTER REQUEST
J6629	CAPTURE OV-104 OUTPUT WAVEFORMS TO ADDRESS DIODE CONCERNS
<b>J6630</b>	<b>OV-104 THERMAL WINDOWS TORQUE EVALUATION AND RETORQUE OF W2 AND W5</b>
J6634	ADDITIONAL 25 MM IR THERMOGRAPHY DATA FOR WLE PANELS 18R AND 9L
<b>J6635</b>	<b>STS-335 RSB TE TILE INSPECTION</b>
<b>J6636</b>	<b>R2D THRUSTER PC TUBE FLUSH</b>
<b>J6638</b>	<b>ADDITIONAL 25 MM IR THERMOGRAPHY DATA FOR WLE PANEL 10R</b>
<b>J6639</b>	<b>BLIND FASTENER THREAD ENGAGEMENT VERIFICATION</b>
<b>J6640A</b>	<b>PRESSURE CONTROL SYSTEM CHECKOUT (FILE IX REQUIREMENT) (IN REVIEW)</b>
JXXXX	STS-335 CLOSE CLEARANCE VERIFICATION (POTENTIAL)

# OMRS Limited Life/Time/Cycle & Interval Requirements

---

- Based upon a request at the STS-335 LSFR, a review of the OV-104 OMRS Limited Life/Time/Cycle & Interval Requirements thru January 21, 2012 was performed
  - The majority of the items reviewed could be worked in flow if required, or agreements to process exceptions are in place (see back-up)
  - 3 items were identified as long poles due to significant impacts to the processing flow if implementation were required
    - Remove and replace the Lower and Upper Hydrogen/Water Separator – due 06/24/2011
      - NSLD is presently working spares to support the installation need date. Processing an OMRS exception will be considered if spares are unavailable
    - Remove and replace all 3 APUs – due 09/07/2011
      - Presently this is a 6.5 year OMRS requirement. Potential for exception has been discussed based on the hardware being certified to 6 years 9 months
    - Retest FRCS and Pod Thrusters if it has been 18 months since last flight usage – due 11/14/2011
      - Requires pod removals and retest at the HMF



# Pending OMRS Exceptions/Waivers

---

- **EK10791 – RADIATOR HINGE INSPECTION REQUIREMENTS**
- **TBD – WING LEADING EDGE SPAR STRUCTURAL INSPECTION**
- **WK10789 – LRCS OXID A-LEG SEC REG LOCKUP HIGH**
- **WK10790 – RIGHT POD HE ISO VLV INT LK**
- **TBD – O2 SYS 1 RELIEF VALVE FAILED RESEAT LEAKAGE**
- **TBD – DRAG CHUTE DEPLOY SYSTEM 2 LIGHT FAILURE**
- **TBD – PRSD O2 TANK POST FLIGHT VAC ION PUMP OPERATION**



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

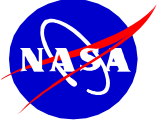


<b>STS-335 DLSFR</b> <b>Flight Crew Equipment/GFE</b>	<b>Presenter</b> <b>MV6/Bill Lane</b>	
	<b>Date</b> July 22, 2010	<b>Page</b> 1

# **STS-335 Delta LSFR**

## **FCE/GFE Status**

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



**STS-335 DLSFR**  
**Flight Crew Equipment/GFE**

Presenter <b>MV6/Bill Lane</b>	
Date July 22, 2010	Page 2

- **Nearly all GFE hardware delivery dates have been partnered**
  - **RMS Sideview Camera and Payload Bay Keel Camera installation dates expected to be partnered after STS-335/135 decision**
- **One potential modification for STS-335 – addition of TriDAR DTO**
  - **Separate CR requesting implementation is in-work (TBS PRCB date)**
- **Starboard TSA currently manifested for flight - contents TBD**
  - **Cushion mods will follow content decision**
- **Planned PTU swap for cameras C and Elbow in order to manage 5 flight cert limit – no affect on planned delivery date**
- **Tech orders and hardware list noted in backup charts, reference only**

---

**STS-335  
ISS – LON MPLM  
delta Launch Site Flow Review**

**Payload Cargo Engineering Status**

**Kellee Ash**

**281-280-6517**

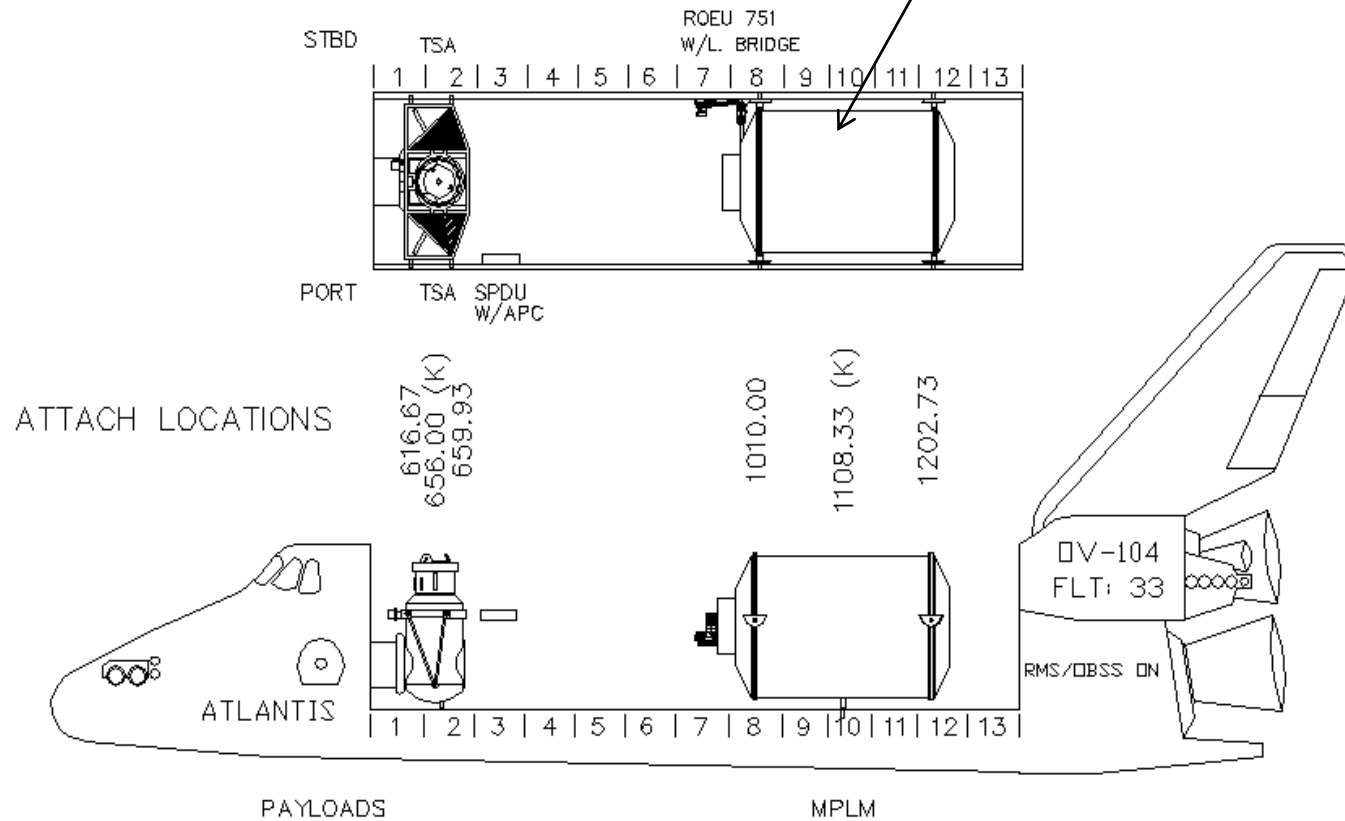
**7/22/10**

# STS-335 Payload Integration Services/Interfaces

- Note – SPDU required for OBSS operations

## MPLM

- 4 active longerons with aft primary
- 1 active keel latch with keel camera
- ROEU provides 28V heater power, 124V for MPLM avionics, 1553 command/data



## TriDAR Contingency

- Orbiter configured to accommodate TriDAR addition on ODS (TCS slot 1 STBD)
- 28 VDC via aft PL B bus (for heaters), SSP SW (Cabin PL bus 1) (for laser operation), Ethernet to PGSC (Cables in place, no planned usage)
- NOTE: Decision to add TriDAR pending STS-135 decision

## LMC Contingency

- Orbiter configured to accommodate LMC addition in Bay 13
- 4 passive longeron latches with aft primary
- 28V heater power (Cables in place, no planned power usage)
- NOTE: Decision to add LMC pending STS-135 decision

# STS-335 dLSFR

---

## Flight Products

<u>Drawing</u>	<u>Title</u>	<u>Rev</u>	<u>EO</u>	<u>ECD</u>
V072-200215	MECSLSI	A	A01	04/22/10
VA72-200215	Cargo Arrangement	A	A01	04/20/10
VD72-200215	Avionics Diagram	Basic	A01	04/15/10
VS72-200215	Integrated Schematic	Basic	A01	04/15/10
VS70-540434	Retention Schematic	Basic	-	03/01/10

## Forward Work

- **Add provisions to protect for addition of LMC (y-lug, cable routing)(DMICB CR M9315)**
  - **Impacts: V0/VA/VS/VD72-200215, M072-710735, M072-000442 ECD: 8/9/10**
- **Add cabling to protect for TriDAR (DMICB CR M9316)**
  - **Impacts: V0/VA/VS/VD72-200215, M072-710735 ECD: 8/9/10**
  - **DMICB CR M9317 approved for NSLD modification of Ethernet cable to support TriDAR ECD: 8/13/10**
  - **Received preliminary agreement from JSERP chairman that TriDAR is not safety critical (Letter similar to STS-133 expected)**
- **V072-200215 – update for down mission processing requirements (add -003) ECD: 1/2011**

# STS-335 dLSFR

---

## OMRSD

- FII V2 Payload (Post-Mate)

### Baselined Files

- P321 APCU Requirements
- P350 MPLM Requirements
- P1558 ISS LON

### RCNs

- None

- FII V4 (Pre-Mate)

### RCNs

### Release

### Baseline

- PS18201 F2V4 Mission Unique List 10/05/10  
10/19/10
- PS18202 FIII Mission Unique List 10/05/10 10/19/10
- PS18TBD Adjacent Bent Pin Test 10/05/10  
10/19/10

- FII V6 (Shuttle Experiments) – None (potential addition of TriDAR)

- Issues / Concerns

- None

# STS-335 dLSFR

---

## Cargo Close Clearance Process

- The following Close Clearance areas have been identified as standard close clearance for MPLM flights and will require as installed measurements:
  - MPLM Scuff Plate to MPM ECD: 11/15/10
- Chit measurements will be performed at the PAD after payload installation
- Note: If LMC payload added, there is potential for additional close clearance points



# STS-335 dLSFR

---

## Cargo Integration Hardware Status

- Open Work ECD
  - V782-714721 cable mod 08/13/10
    - Cable protects for TriDAR (ref DMICB CR M9317 )
  
- Delivery Status
  - All additional hardware delivered
  - ROEU and attach hardware will need to come from STS-133
  
- Issues/Concerns
  - None

# **Atlantis STS-335 (LON)**

## **Delta Launch Site Flow Review**

### **Space Shuttle Main Engine**

**SSME - KSC**  
**Paul Brzeski**  
**(321) 861-4064**

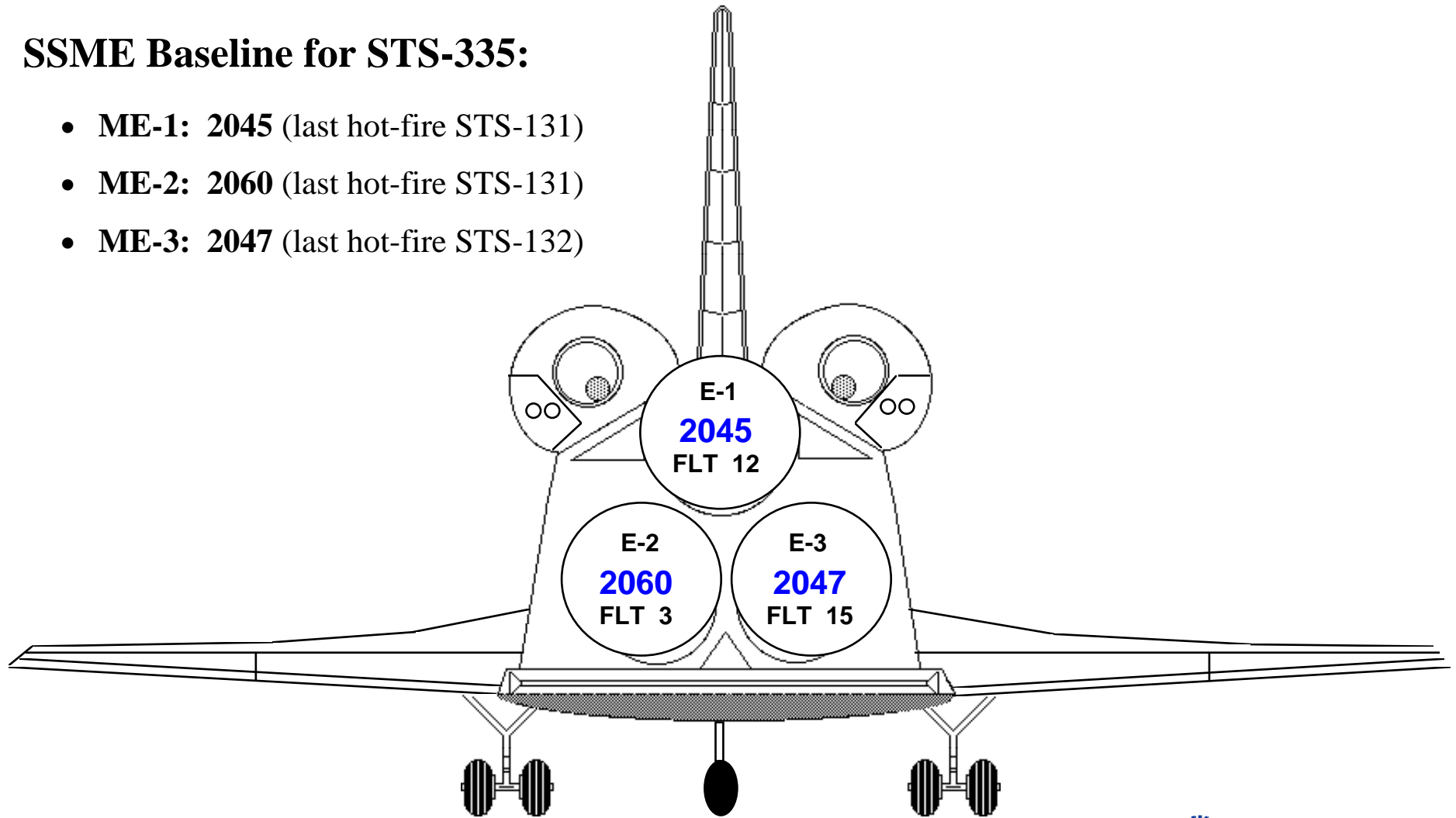


# STS-335 Delta Launch Site Flow Review

## *SSME Allocations / Locations*

### SSME Baseline for STS-335:

- **ME-1: 2045** (last hot-fire STS-131)
- **ME-2: 2060** (last hot-fire STS-131)
- **ME-3: 2047** (last hot-fire STS-132)





# STS-335 Delta Launch Site Flow Review

## *SSME Planned Modifications*

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

ECP	Title	Engine(s)	Kit Drawing	Weight Impact	SPARs / CRs	Status
1537	Joint F2 (LPFTP-to-LPF Duct) Liquid Air Insulation Redesign, with Helium supply.	2060	2R112833-010	+3.13 lbs	ME-0264 R01	Complete
1404R2	LPF Duct with Kevlar Insulation and Redesigned Fuel Flow Meter.	2045	2R091546-010	-10.0 lbs	ME-0265 B	In Work



# STS-335 Delta Launch Site Flow Review

## *Rocketdyne Action Requests (RAR)*

RAR	Title	Engine(s)	SPARs / CRs	Status
KLO-1649	MCC Liner Cavity Gas Sampling.	2060	ME-0264 B	Complete.
KLO-1651	Reallocate HPFTP.	2047	ME-0267 B	HPFTP 8024R1: Removed TBD. HPFTP 8117: Installed TBD.

---

# **STS-335**

## **Delta Launch Site Flow Review**

**July 22, 2010**

**NASA: Angie Brewer**

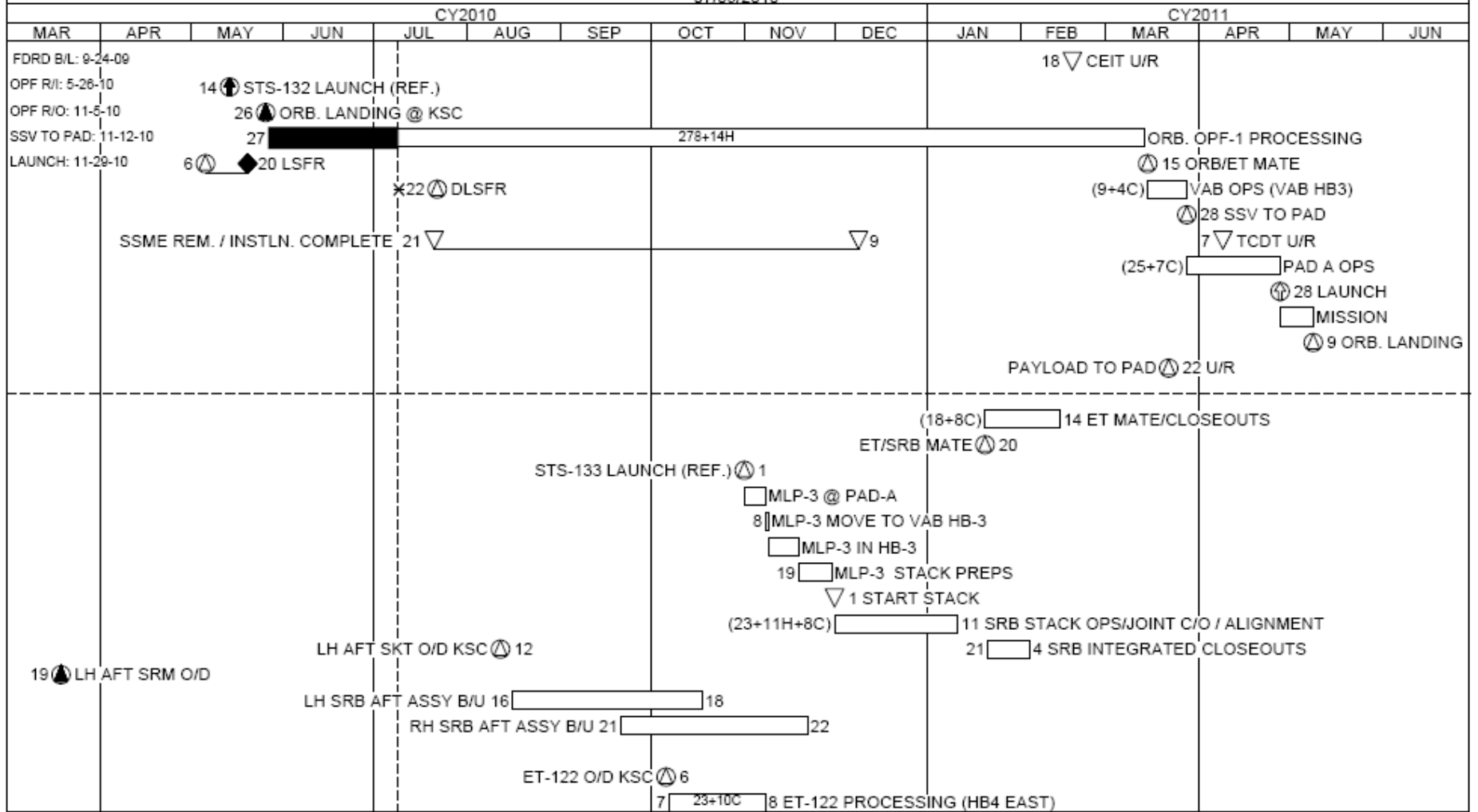
**USA: Ray Propst**

# STS-335 KSC Milestone Interface Chart

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

OV-104 / 33 / LON - MPLM  
CREW / DURATION: 4 UP - 10 DOWN / 11  
ET-122 / BI-146 / RSRM 114 / MLP-3 / PAD-A / VAB HB3

SSP APPROVED PRCB 7-1-10 (REF. CR #S042013JA)  
Status as of:  
07/09/2010



# Flight Element Processing Overview

---

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





# Significant Processing Deltas

---

## Major Components Removal / Replacements

- Window 6
- WLE Corrosion Inspection – RCC 1 – 11 LH
- Complete Non-Extendable OMDP Requirements
- Thruster **L3D**, L3A, L3L

## MODS

- LH RCC SPAR Fitting Rivet Installation (MCR 11620)

## Chits

- All approved Chits have been partnered and integrated into flow

# TPS Work Content (STS-335)

Projected TPS Removals			
<u>Priority</u>	<u>Description</u>	<u>LSFR</u>	<u>DLSFR</u>
Mand	Deferred Tile/Fib For 1 Flight (Minimum)	2	2
Mand	In-Flight Tile/Fib Damage	*25	*25
Mand	Operational Damage (Estimate)	*10	*10
Mand	Putty Repairs form Grind-outs	*14	*35
Mand	Additional Putty Removals (Chits)	15	15
Mand	OMRS Requirement V09AW0.030/.040	2	2
P-15	Piano Key (Upper Body Flap Carrier Panels)	10	10
P-11	ET Door BRI (STR Side)	10	25
P-17	L/H LESS BRI (Lower Carrier Panels 5,6,7)	0	9
P-17	NLGD BRI	0	2
	<b>Projected TPS Removals TOTAL (Estimate)</b>	<b>*88</b>	<b>*135</b>

# TPS Work Content (Additional Work)

---

## LSFR Planned Work:

- LESS Carrier Panel removals
  - Perimeter GF rework LH19, RH8, RH21, RH22
  - WLE Corrosion Inspection LH 1 thru 12Total Lower LESS C/P's=16
  
- Elevon Cove Inspection OMRS requirement LIB/ROB Full-Up
  - Remove End panels and Center panels (4-Total) Perform Borescope
  
- OMRS Requirement: Re-waterproof all upper surface blankets on Flt-33
  - Midbody Sidewalls, PLBD Sidewalls, Upper Wings
  - Vertical Tail completed during Flt-32

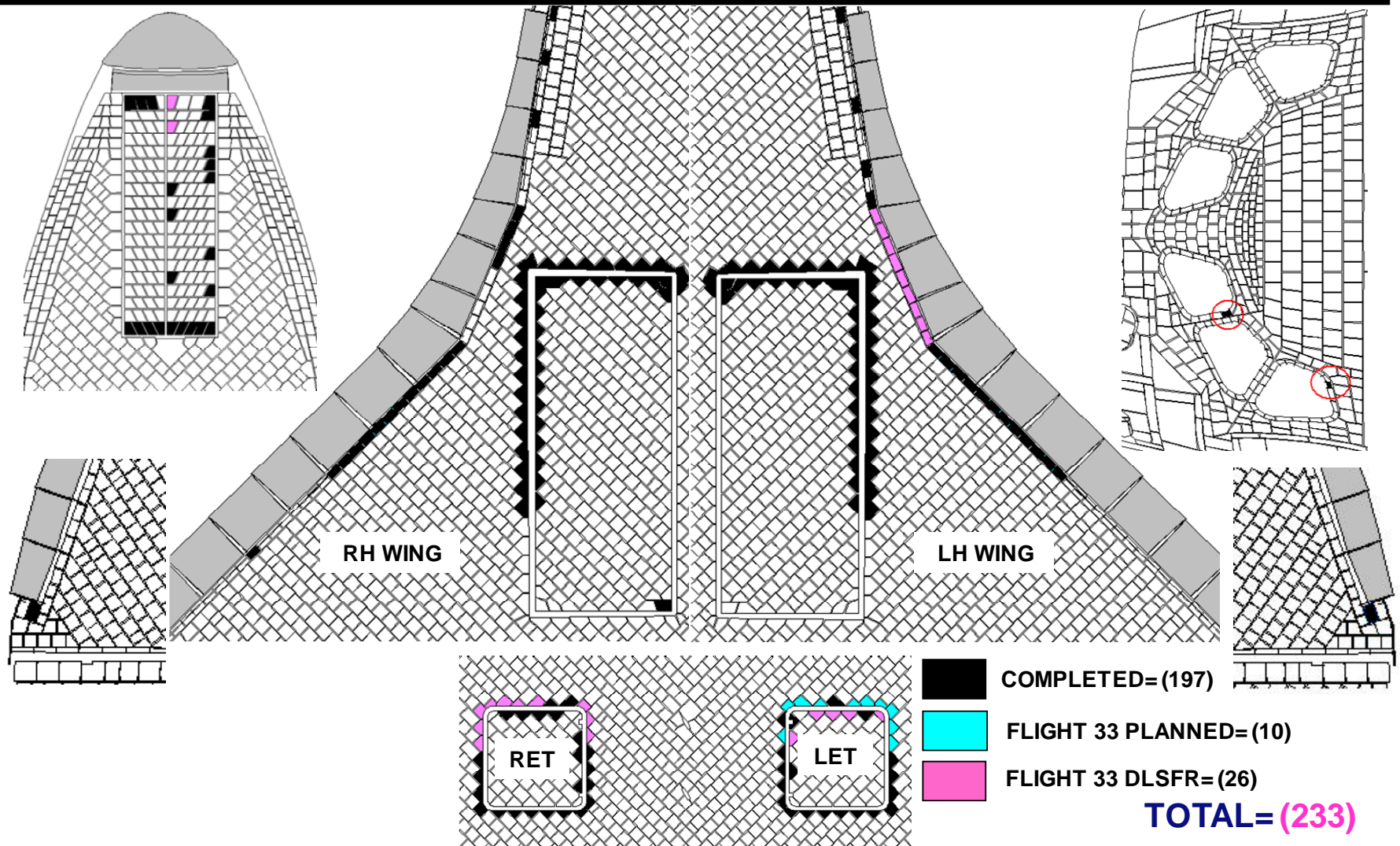
## DLSFR Additional Work

- Lower LESS Carrier Panel Count= 29 (66%)
- Increase ET Door BRI (25 Total)
- Rudder Speed Brake Inspection (PRT Data Evaluation In Work)
- RSI Plug Mod

# BRI Priority Matrix

Priority Number	Total	OV-104 <sub>(132)</sub>	OV-104 <sub>(335)</sub>
1. BRI-18 Tile - MLGD FWD O/B Corner	28	complete	complete
2. BRI-18 Tile - MLGD FWD Edge	22	complete	complete
3. BRI-18 Tile - MLGD O/B Side	18	complete	complete
4. BRI-18 Tile - STR side of ET Doors	20	complete	complete
5. BRI-18 Tile – LESS Carrier Panels 8-10 (103 & 104)	24	complete	complete
6. BRI-18 Tile – STR side of ET Doors I/B	8	complete	complete
7. Inboard Elevon "Hub" Tile Mod	4	2	2
8. I/B Elevon 9lb/90 SIP	34	complete	complete
9. O/B Elevon 9lb/90 SIP	6	complete	complete
10. MLGD – Outboard Middle 1/3	24	complete	complete
11. ET Door remaining STR side	40	10	34
12. MLGD - Outboard AFT 1/3	22	0	0
13. Nose Area 9lb/90 SIP	14 (16 <sup>OV103</sup> )	complete	complete
14. Base Heat Shield 9lb/90 SIP	42	complete	complete
15. Body Flap Stub "Piano Key" tiles	40	20	30
16. Gap fillers in Subset 2B	5 Zones	1	1
17. Remaining BRI-18 - MLGD (top priority) / ET / LESS carrier panels / NLGD	MLGD 100	MLGD 1	MLGD 1
	NLGD 123	NLGD 22	NLGD 24
	LESS 68 (92 <sup>OV-105</sup> )	LESS 10	LESS 19
	ET Door 28	ET Door 4	ET Door 5
18. Mod work LESS internal	44 locations	complete	complete
20. Remaining Gap Fillers & Window BRI-18	124	2	2

# BRI Planning STS-335 (Flt 33)

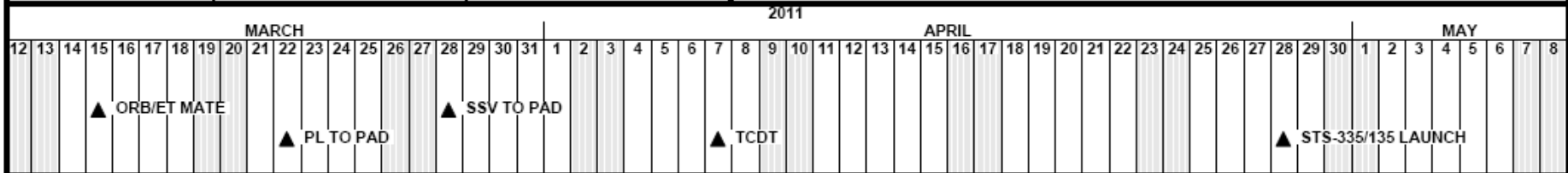


# Issues and Concerns

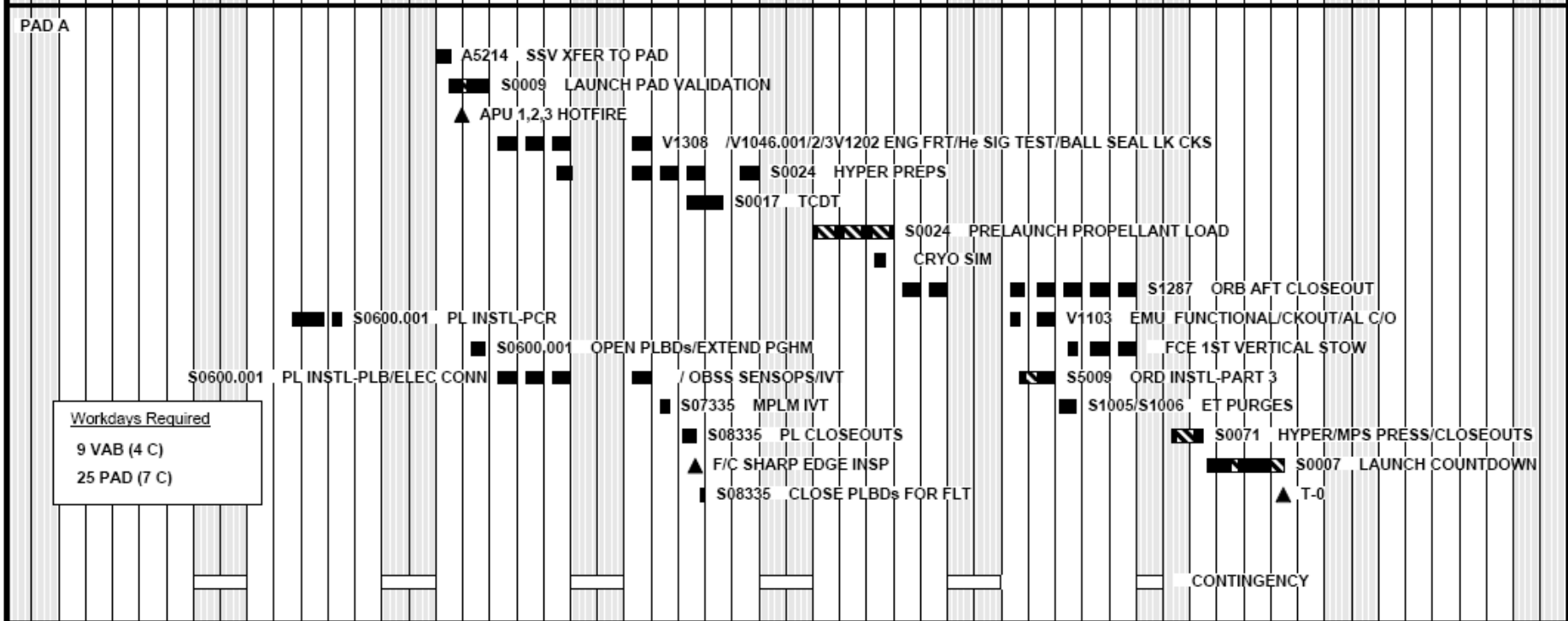
---

- **TPS Work Volume**

<b>STATUS</b>		OPR: USA - J. Taylor, INTEG FM (1-7420) NASA - A. Brewer, PH-A (1-9104)		<b>STS-335 / OV-104</b>  <b>Integrated Operations Assessment Summary</b>  Payloads: MPLM (VERT)		
USA	NASA	<b>CONCUR</b>				
C	C					Creation Date: 23 JUNE 10 Revision Date: 09 JULY 10 Revision:
C=Concur NC=Non-Concur						



**STUDY ONLY**  
Launch April 28, 2011



Workdays Required  
9 VAB (4 C)  
25 PAD (7 C)





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



## **STS-335 Delta Launch Site Flow Review**

Presenter **Kenneth Nowak**

Date **07-22-10**

### **Backup Material**

### **FRWG Presentation (With Minor Changes)**



**SPACE SHUTTLE PROGRAM**  
**Flight Management Office**  
NASA Johnson Space Center, Houston, Texas



	Presenter <b>MO3/Phyllis Grounds</b>	
	Date <b>July 22, 2010</b>	Page <b>1</b>

# FO&I Backup Charts



<h2>STS-335 Requirements Status</h2>	Presenter <b>MO3/Phyllis Grounds</b>	
	Date <b>July 22, 2010</b>	Page <b>2</b>

1. STS-335 MIP (NSTS 221558)

- Current version available on PILS: Basic + Change 1, dated 3/29/10
- Open CR's -- None
- Pending CR's:
  - TBD closures –
  - Tridar and LMC interface verification
  - Rendezvous altitude update for 4/28/11 launch

---

# **STS-335**

## **Flight Requirements Document (FRD)**

### **LSFR Status**

**Robert J. Reynolds**

**FRWG 7/19/10**

**PRCB 7/22/10**

# FLIGHT REQUIREMENTS DOCUMENT

---

- NSTS 17462-335, Revision 004 Published July 14, 2010
- Open CR's
  - None

## Back-up

- **Modification Record and MECSLSI Updates Summary**
- **Engineering, Hardware and Certification Status**
- **TPS Risk Reduction Priorities List**
- **OMRS Requirements Back-up**

# Modification Records and MECSLSI Update Summary

MCR/ TAD NO.	TITLE	KIT / MOD RECORD & DESCRIPTION	TECH ORDER IMPACT	REMARKS
<b>Potential Modifications</b>				
30164	<b>TriDAR (DTO-701A) Installation</b> TriDAR is a rendezvous and docking 3D vision system. DTO mission objective is to demonstrate real-time targetless relative navigation technology. TriDAR hardware (GFE) is installed and located on ODS next to TCS 1.	N/A	No Tech Order Impact	<b>MECSLSI Impact</b> Add M072-730021-021 Remove M072-730021-019 Add M072-363838-003 Remove M072-363838-001 Model MV0828A
30010	<b>Starboard LWTSAs Cushion</b> Potential cushion modification pending definition of contents. (Requirement to manifest starboard TSA may be deleted pending SSP direction.)	TBD - TSA cushion modification	TBD	TBD
<b>Previously Approved Modifications</b>				
11620	<b>WLE RCC Panel Spar Fitting Spacer Modification</b> Adds two rivets to the spacers on the left hand rib splice 1 spar fitting to complete the deferred rivet installation per drawing.	<a href="#">TCTIV1911620REF_0104_13</a> - Completes PR-EOTF TES-4-27-0839 action which corrected the rivets omission on the RCC installation drawing.	No Tech Order Impact	No MECSLSI Impact
30286	<b>TPS - Ceramic Plug/Insert Redesign</b> Redesigns ceramic plug sleeving/retainer for all 0.75" diameter plugs & 0.875" shorter diameter plugs (0.75" length and less) to increase cord thickness to meet the installation torque requirements.	<a href="#">TCTIV1030286REF_0104_0</a> - New plug assy, inboard elevon seal <a href="#">TCTIV1930286REF_0104_0</a> - New plug assy, wing stub <a href="#">TCTIV1930286REF_0104_1</a> - New plug assy, upper access WLE <a href="#">TCTIV2030286REF_0104_0</a> - New plug assy, vert stub <a href="#">TCTIV2930286REF_0104_0</a> - New plug assy, drag chute, vert stab <a href="#">TCTIV3530286REF_0104_0</a> - New plug assy, side body flap <a href="#">TCTIV3730286REF_0104_0</a> - New plug assy, PLBD hinge <a href="#">TCTIV3930286REF_0104_0</a> - New plug assy, fwd fus, windows <a href="#">TCTIV3930286REF_0104_1</a> - New plug assy, peripheral nose/RCC <a href="#">TCTIV3930286REF_0104_2</a> - New plug assy, outbd/side body flap <a href="#">TCTIV3930286REF_0104_3</a> - New plug assy, fus stub side <a href="#">TCTIV3930286REF_0104_4</a> - New plug assy, fwd fus ET attach plate	No Tech Order Impact	No MECSLSI Impact

# Engineering, Hardware and Certification Status

MCR/ TAD NO.	TITLE	Est. Engr Release (MM/DD/YY)	G.O. Engr Need (MM/DD/YY)	Est. Hdwe Delivery (MM/DD/YY)	G.O. Hdwe Need (MM/DD/YY)	MOD/CERT GO / NO-GO	CERT SUBMITTAL DATE	CERT APPROVAL DATE	CERTIFICATION CR / CAR (BOEING)	REMARKS
<b><u>Potential Modifications</u></b>										
30164	<b><u>TriDAR (DTO-701A) Installation</u></b> TriDAR is a rendezvous and docking 3D vision system. DTO mission objective is to demonstrate real-time targetless relative navigation technology. TriDAR hardware (GFE) is installed and located on ODS next to TCS 1.	Released*	N/A	TBD**	TBD	Go	TBD	TBD	CR 09-362000-001CK*** CAR 72A-09-36200K***	* MECSLSI update required ** Cargo Integration cable V782-714721-001 requires modification to -002 at NSLD. TriDAR hardware delivery is GFE responsibility *** Errata to add OV-104 effectivity. Ref. OCR/D S165322A
30010	<b><u>Starboard LWTSA Cushion</u></b> Potential cushion modification pending definition of contents. (Requirement to manifest starboard TSA may be deleted pending SSP direction.)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	
<b><u>Previously Approved Modifications</u></b>										
11620	<b><u>WLE RCC Panel Spar Fitting Spacer Modification</u></b> Adds two rivets to the spacers on the left hand rib splice 1 spar fitting to complete the deferred rivet installation per drawing.	Released	N/A	N/A*	N/A*	Go	N/A	N/A	N/A	* Hardware available on site
30286	<b><u>TPS - Ceramic Plug/Insert Redesign</u></b> Redesigns ceramic plug sleeving/retainer for all 0.75" diameter plugs & 0.875" shorter diameter plugs (0.75" length and less) to increase cord thickness to meet the installation torque requirements.	Released	N/A	N/A*	N/A*	Go	Submitted	7/30/10	CR 07-394710-002K** CAR 13-07-394710-002K**	* Hardware available on site ** PLBD hinge. Certification for other locations to be documented on OCR/D S165481A.



# Current Fleet TPS Status

STATUS AS OF 5-03-2010

Priority Number	Total	OV-103	OV-104	OV-105
1. BRI-18 Tile - MLGD FWD O/B Corner	28	complete	complete	complete
2. BRI-18 Tile - MLGD FWD Edge	22	complete	complete	complete
3. BRI-18 Tile - MLGD O/B Side	18	complete	complete	complete
4. BRI-18 Tile - STR side of ET Doors	20	complete	complete	complete
5. BRI-18 Tile – LESS Carrier Panels 8-10 (103 & 104)	24	complete	complete	n/a
6. BRI-18 Tile – STR side of ET Doors I/B	8	complete	complete	complete
7. Inboard Elevon “Hub” Tile Mod	4	complete	2	complete
8. I/B Elevon 9b/90 SIP	34	complete	complete	complete
9. O/B Elevon 9b/90 SIP	6	complete	complete	complete
10. MLGD – Outboard Middle 1/3	24	complete	complete	complete
11. ET Door remaining STR side	40	1	10	12
12. MLGD - Outboard AFT 1/3	22	0	0	9
13. Nose Area 9b/90 SIP	14 (16 <sup>OV103</sup> )	10	complete	complete
14. Base Heat Shield 9b/90 SIP	42	22	complete	complete
15. Body Flap Stub "Piano Key" tiles	40	18	20	18
16. Gap fillers in Subset 2B	5 Zones	2	1	0
17. Remaining BRI-18 - MLGD (top priority) / ET / LESS carrier panels / NLGD	MLGD 100	MLGD 0	MLGD 1	MLGD 0
	NLGD 123	NLGD 20	NLGD 22	NLGD 55
	LESS 68 (92 <sup>OV-105</sup> )	LESS 8	LESS 12	LESS 27
	ET Door 28	ET Door 5	ET Door 4	ET Door 1
18. Mod work LESS internal	44 locations	41	complete	complete
20. Remaining Gap Fillers & Window BRI-18	124	3	2	23

# OV-104 Time / Age / Cycle Requirements

Category	Hardware	Part Number	Requirement	Sys	Cycle	Due date or flight due	Notes:	Impact
							STS-335 OPF Ready to Roll 3/11/2011 STS-335 OPF Rollout 3/15/2011 STS-335 Launch 4/28/2011 RP01-40 (S/N 0021)/LP04-33 (S/N 0014) STS-132 Launch 5/14, Landing 5/26	
Long Pole	Lower and Upper Hydrogen/Water Separator	MC250-0009-0001	C00AB0.230.004	ECL	3 years from date serviced with water	6/24/2011	Earliest need date is October 2010. Spare units being readied estimated 9/10/10. 1 unit is ready for ATP, 2nd unit NSLD working to support installation need date. Processing an exception may be considered to extend 2 months if no spares are available.	Significant
Long Pole	APU Complete Assemblies	MC201-0001-0610	C00AA0.090.010-B	APU	R&R every 6.5 years	9/7/2011	APU #2 & #3 expire 9/7/2011, APU #1 expires 10/4/2011 RCN OS17852 approved to extend the R&R time to 6.5 years. APUs are actually certified for 6 yrs and 9 months from time of installation - the RCN submitted was for 6 yrs 6 months to protect for scheduling options.	Significant
Long Pole	FRCS and Pod Thrusters	MC467-0028	C00AA0.070.008	OMS	Retest if it has been 18 months since last flight usage	11/14/2011	Ops Impact: requires FRCS and Pod removal, transport to HMF and rest	Significant
Nominal	Infrared CO2 Sensor	MC621-0008-0159	C00AB0.145.002	ECL	30 Months	6/18/2011	Plan to R&R. Takes about 6 weeks to get from vendor.	Plan
Nominal	PPO2 Sensors	MC250-0002-3165, S/N 000007, 000010, 000018	C00AA0.030.007	ECL	Refurb 500 days after receipt At KSC	8/14/2011	Prefer not to fly these the last 30 days of their life. There is an option to obtain sensors from another Orbiter if there are none in stock.	Plan

# OV-104 Time / Age / Cycle Requirements (cont.)

Category	Hardware	Part Number	Requirement	Sys	Cycle	Due date or flight due	Notes:	Impact
							STS-335 OPF Ready to Roll 3/11/2011 STS-335 OPF Rollout 3/15/2011 STS-335 Launch 4/28/2011 RP01-40 (S/N 0021)/LP04-33 (S/N 0014) STS-132 Launch 5/14, Landing 5/26	
Nominal	PPO2 Sensors	MC250-0002-3165, S/N 000007, 000010, 000018	V61AJ0.141	ECL	Calibration at Pad within 35 days prior to EOM + 2 Days	5/13/2011	Estimated Launch Date 6/15/2011 - 35 + 2 days	Plan
Extensive	Avionics Bay Fire Extinguisher	MC282-0065-0001	C00AB0.230.100, retest per V62AQ0.020	ECL	Verify weight every 2 years	9/2/2011	Fire Bottles in Av Bay 1, 2 and Av Bay 3, Ops Impact: Requires Vehicle Power down, ECL to be present. Weight can be determined using infrared camera and is based on liquid quantity levels. Fire Bottles are heated using an electric heater gun.	Plan
Nominal	S-Band Power Amp Assembly / Traveling Wave Tubes	MC478-0106-2501 S/N 000303	C00AA0.170.001	COM	Due every 24 months from last operation	11/27/2011	Perform operational test per ref V74YB0.010. Equipment location Bay 3, Shelf 2. 74V044.S05 The sensitive item is the Traveling Wave Tube.	If Required
Nominal	APU 9 month inactive wetted time on Orbiter	MC201-0001-0610	C00AA0.090.012	APU	APU 9 month inactive wetted time on Orbiter	2/26/2011	Requires Pad Hot Fire if we have gone past that 2/26/2011. We had a similar situation during STS-125 processing. Performance of this work adds additional work in the OPF to prepare for Pad Hot Fire.	Significant
Long Pole	RCC WLE Inspections	V070-199900-029 Left Hand Side fittings V070-199900-028 Right Hand Side fittings	V30KG0.060 Left Wing RCC Inspection V30LG0.060 Right Wing RCC Inspection	STR	4-1/2 year	Flight 33	Exception EK10769 covered flight 32 deferral of WLE inspection. Discussion continues on EK10769 as it may cover the non-performance of the inspections under spar fittings 12 and 17 on the left hand side, and 10 and 17 on the right hand side. Status: Reference SR4789 OV-104 WLE Inspection Requirements presented at 6/17/2010 Weekly PRCB. <a href="https://sspweb.jsc.nasa.gov/webdata/mss/SSP_PRCB/06172010PRCB_03_SR4789(OV-104_WLE_INSPECTION_REQUIREMENTS)_MCCARLEY.pdf">https://sspweb.jsc.nasa.gov/webdata/mss/SSP_PRCB/06172010PRCB_03_SR4789(OV-104_WLE_INSPECTION_REQUIREMENTS)_MCCARLEY.pdf</a>	Scheduled

# OV-104 Time / Age / Cycle Requirements (cont.)

Category	Hardware	Part Number	Requirement	Sys	Cycle	Due date or flight due	Notes: STS-335 OPF Ready to Roll 3/11/2011 STS-335 OPF Rollout 3/15/2011 STS-335 Launch 4/28/2011 RP01-40 (S/N 0021)/LP04-33 (S/N 0014) STS-132 Launch 5/14, Landing 5/26	Impact
Long Pole	Radiator Hinge Inspections		V30CB0.100, V30CC0.120, V30CD0.100, V30CF0.100, V30CG0.120, V30CH0.100, V30CD0.120, V30CH0.120	STR	Interval 33	Flight 33	Requires Radiator removals, an OMRS exception is planned	Significant
Nominal	Detonators, Cartridges, T-handles	SEB2610094-201 (JJA) SKD26100101-301 (HNF) HLG U/L 4/11 SKD26100104-301 (HTP) SKD26100108-XXX (NKA)		Pyro	4, 7, and 10 year	12/2010 8/2010 1/2011 4/2011	Planned certification tests to extend expiration dates, no work planned	Planned recertifications
Nominal	APU 1, 2 and 3 Catch Bottle Hand Drain Valve	ME284-0543-0002	C00AA0.090.011	APU	12 years since last replacement	11/4/2010	Nominal if planned with other SCAPE operations. A SCAPE operation is required to R&R these valves. Planned work by APU-4-33-198 in conjunction with OMI V1196.103 APU Catch Bottle Drain/Purge Operations. Scheduled work October 2010. TBD on catch bottle drain valves delivery. The estimate on a delivery date is expected in a couple of weeks.	Planned work
Nominal	GPS MAGR'S	MC478-0153-0001	C00AA0.160.001 V74P00.080 & .090	COM	12 Months, R&R Batteries	2/16/2011	Planned every flow. Requires vehicle power prior to LRU removal.	Planned

# OV-104 Time / Age / Cycle Requirements (cont.)

Category	Hardware	Part Number	Requirement	Sys	Cycle	Due date or flight due	Notes:	Impact
							STS-335 OPF Ready to Roll 3/11/2011 STS-335 OPF Rollout 3/15/2011 STS-335 Launch 4/28/2011 RP01-40 (S/N 0021)/LP04-33 (S/N 0014) STS-132 Launch 5/14, Landing 5/26	
Resolved	Remove Waste Water Tank and Flush with Nitric Acid	V070-623022-003	C00AB0.230.003	FCP	8 flights	Flight 34	Was flight 33: This tank was removed on flight 27, 05/05/2004, installed on flight 27, 04/01/2005, per WWM-4-27-048 and the tank already had 2 flights. Exception EV10763 approved to extend requirement beyond flight 33 to flight 34.	No work planned
Nominal	Pole Crew Escape System Assembly	SED27101375-323	V66AIL.060	FCS	2 years or 10 flights then a deployment test is required	9/16/2010	The assembly we install for flight 33 may not be the same serial number that was installed for flight 32, which expires 9/16/2010. This hardware is rotated thru stock as needed. We have 4 units total; one per vehicle and 1 spare. (Last done FCS-4-30-913 9/16/08) FCS-4-33-XXX assigned to the open requirement for flight 33.	Planned
Nominal	Emergency Egress Slide System	MC623-0015-0024 SN -005	JSC24937.56	FCS	due 18 months from the acceptance test	9/17/2010	The slide system we install for flight 33 may not be the same serial number that was installed for flight 32.	Planned
Nominal	SSME Attach Gimbal Nuts (8 total, Engine 3)	MD114-3007-0014	C00BA0.010009	MPS	R&R after 4 torques. A torque cycle is any installation torque in excess of 200 ft-lbs.	Flight 33	scheduled work V5005 Op 40-17	Planned
Nominal	Payload Bay Floodlight # 5	V549-704032-007	C00AB0.115.001A	OEL	12 flights	Flight 33	DDC-4-33-100	Scheduled

# OV-104 Time / Age / Cycle Requirements (cont.)

Category	Hardware	Part Number	Requirement	Sys	Cycle	Due date or flight due	Notes: STS-335 OPF Ready to Roll 3/11/2011 STS-335 OPF Rollout 3/15/2011 STS-335 Launch 4/28/2011 RP01-40 (S/N 0021)/LP04-33 (S/N 0014) STS-132 Launch 5/14, Landing 5/26	Impact
Nominal	OMS/RCS Componenets - Helium regulators, High Pressure isolation valves, relief valves		C00AA0.080	OMS	Functional checks HE Regs 18 mo Iso Valves 18 mo Relief Valves 2 yrs	6/10/2010	Helium regulators (due 12/10/2010) and isolation valves (6/10/2011), relief valves (6/11/2011). Reset with V1180 and V1181 in June 2010.	Scheduled
Nominal	Payload Bay Vent Filters	MC286-0081	C00AB0.100012, 14, 15 and 16	PVD	3 flights, then R&R or clean	Flight 33	Payload Bay Vent Filters -0001 RH/LH Bay 4, RH/LH Bay 8, RH/LH Bay 10 PLB Vent Liner Filters -0005 RH/LH Bay 6, RH/LH Bay 8, RH/LH Bay 11 scheduled work V1262.121	Scheduled
Nominal	Nose Wheel Vent Filters	ME286-0060- 0003	C00AB0.100009	PVD	3 flights, then R&R or clean	Flight 33	scheduled work V1262.003	Scheduled
Nominal	9 volt Gas sampler batteries	528-41350-6	C00AA0.115.001	PYR	expire 2 years from date of manufacture	6/1/2010	Worked off line	Planned
Nominal	Drag Chute Canopy	812005-503 S/N 75007	C00AB0.015.021-A	PYR	20 years	5/1/2011	The requirement is not to exceed 20 year life, S/N 75007 we had installed on flight 32 expires 5/1/2011 (birth date 5/1/1991). We have other newer drag chute canopies s in stock and one of those will be assigned to flight 33.	Scheduled
Nominal	Drag Chute Door Frame Assy	V070-524153-005	C00AB0.015004	STR	R&R after 10 flights	Flight 33	STR-4-33-880	Scheduled
Nominal	Avionics Bay Fans	SV755524-6	C00AB0.147.003	ECL	Run Fan 1 continuous hour every 12 months	4/2/2011	Bay 1 Fan A&B (4/29/2011) Bay 2 Fan A&B (4/29/2011, 4/24/2011) Bay 3a Fan A&B (4/29/2011, 4/2/2011)	Scheduled

# OV-104 Time / Age / Cycle Requirements (cont.)

Category	Hardware	Part Number	Requirement	Sys	Cycle	Due date or flight due	Notes: STS-335 OPF Ready to Roll 3/11/2011 STS-335 OPF Rollout 3/15/2011 STS-335 Launch 4/28/2011 RP01-40 (S/N 0021)/LP04-33 (S/N 0014) STS-132 Launch 5/14, Landing 5/26	Impact
Nominal	Cabin Fans	SV755527-4	C00AB0.147.002	ECL	Run Fan 1 continuous hour every 12 months	4/24/2011	Fan A (4/24/2011), Fan B (4/29/2011)	Scheduled
Nominal	Humidity Separator Fan	SV755535-3	C00AB0.147.001	ECL	Run Fan 1 continuous hour every 12 months	2/4/2011	Fan A (2/4/2011), Fan B (4/23/2011)	Scheduled
Nominal	IMU Fan	SV767350-2	C00AB0.147.004	ECL	Run Fan 1 continuous hour every 12 months	11/14/2011	IMU Fan A (11/14/2011) IMU Fan B (4/23/2011) IMU Fan C (4/28/2011)	Scheduled
Nominal	ISS/ODS Booster Fan	SV803803-1	C00AB0.148.001	ECL	Run Fan 1 continuous hour every 12 months	3/16/2011		Scheduled
Nominal	MADS Recorder	ME435-0055-0005	C00AA0.140.004	INS	Operate after 6 months of non- operation	9/22/2010	Av Bay 1	Scheduled
Nominal	WCCS Check Valves	ME284-0437-8113	V05AA0.010/050	PVD	Test & Fly Within 9 Mo Of Refurbishment or 2 flights then R&R (1 flight remaining)	11/12/2010	No check valves are in the Midbody. Check valves are located in the FRCS and the hatch Window 4 & 5 - Right Forward Outer (RFO) (11/12/2010) V1076.009 Window 2 & 3 - Left Forward Outer (LFO) (11/17-12/2010) V1076.009 Window 11 - Side Hatch Outer (SHO) V1076.010 Work late in the flow	Planned

# OV-104 Time / Age / Cycle Requirements (cont.)

Category	Hardware	Part Number	Requirement	Sys	Cycle	Due date or flight due	Notes: STS-335 OPF Ready to Roll 3/11/2011 STS-335 OPF Rollout 3/15/2011 STS-335 Launch 4/28/2011 RP01-40 (S/N 0021)/LP04-33 (S/N 0014) STS-132 Launch 5/14, Landing 5/26	Impact
Nominal	WCCS Desiccant Canisters	V070-381120-003	V05AEA.023	PVD	Inspect desiccant 85 to 100 Days After Refurb. Excludes time in the OPF, on Orbit, when system is GN2 purged or capped.	System Engineer	Right and left side in FRCS cavity at the Xo 378 Bulkhead Window 1 & 8 LSO OVHD & LH OVHD SIDE Window 6 & 7 RSO OVHD & RH OVHD SIDE	Plan
Nominal	WCCS Desiccant Canisters	V070-383126-005	V05AEA.023	PVD	Inspect desiccant 135 to 150 Days After Refurb. Excludes time in the OPF, on Orbit, or when system is GN2 purged	9/10/2010	Desiccant Canisters locations - Crew Side Hatch canister is located inside the hatch under the close out cover, Window #11 (V1076.010) - Mid-body Bay 1 Right and left side canisters Window 4 & 5 RH FWD Outer & RH Inner Window 2 & 3 LH FWD Outer & LH Inner	Plan
Nominal	LH ET Doors Thermal Barrier	V070-398817-022 V070-398818-013 V070-398819-028 V070-398819-029	C00AB0.170.023C C00AB0.170.027B C00AB0.170.035C C00AB0.170.035D	TPS	R&R after 3 flights	Flight 33	Scheduled work V6051	Scheduled
Nominal	MLG Carbon Brake Assembly	MC621-0075-0001	C00AB0.010.007	MEQ	R&R after 8 Landings	Flight 33	Scheduled work V1165.005	Scheduled
Nominal	GH2 Flow Control Valve	MC280-0017-1301	C00BA0.020.005A	MPS	R&R after every flight	Flight 33	LV56, LV57, LV58. Scheduled work MPS-4-33-399	Scheduled



# OV-104 Time / Age / Cycle Requirements (cont.)

Category	Hardware	Part Number	Requirement	Sys	Cycle	Due date or flight due	Notes: STS-335 OPF Ready to Roll 3/11/2011 STS-335 OPF Rollout 3/15/2011 STS-335 Launch 4/28/2011 RP01-40 (S/N 0021)/LP04-33 (S/N 0014) STS-132 Launch 5/14, Landing 5/26	Impact
Nominal	ET Purge Curtain Nutplates (61)	ME114-0035-0400	C00AD0.025.001	MEQ	R&R after 8 flights	Flight 33	Scheduled work MEQ-4-33-386	Scheduled
n/a	RMS	SN 301		RMS			No open items identified at this time	n/a
n/a	ODS			MEQ			No open items identified at this time	n/a
n/a	Orbiter Boom Sensor System (OBSS)	SN 201		RMS			No open items identified at this time	n/a
Nominal	MSBLS RF Assembly	MC409-0017-0007	V74AD0.130	COM	Perform 15-min test every 90 days	System Engineer	Spares: Perform 15-min test every 70 days due to different magnetron tube part number installed (MC409-0017-0003 in spares)	Planned work
Nominal	MSBLS Desiccants	A TEC-14	V74AD0.110	COM	Check and refurbish (if needed) every 60 days	System Engineer		Planned work
Nominal	Ku-band Signal Processor	MC409-0025-4005	74V044.S05	COM	Power up every 24 months	System Engineer	IDMRD requirement, but when the equipment (in this case the KU SPA) is unpowered for an extended period of time in the vehicle, this requirement is still invoked.	If Required
Extensive	Inner Window Severance Assy (T-Cord) Window #8	MC325-0027-0006	C00AA0.010.067	PYR	4, 7, 15 Year	8/31/2010	Requires recertification or remove and replace the hardware. Plan on recertification July 2010.	Recertification
Nominal	Manipulator Retractor Pressure Cartridge	SKD26100104-301	C00AA0.110.038	PYR	4, 7, 15 Year	1/31/2010	Requires recertification or remove and replace the hardware	Recertification

# Pending OMRS Exceptions/Waivers

---

- **EK10791 – Radiator Hinge Inspection Requirements**
  - 33-flight interval inspection is due this flight. Structures PRT has reviewed the requirement and concurred with extension to at least flight 34.
- **TBD – Wing Leading Edge (WLE) Spar Structural Inspection**
  - Inspections behind WLE spar fittings and RCC panels 1-11 on the left hand side will be performed during this flow. Areas behind spar fittings 10 and 17 on the RH side and 12 and 17 on the LH side will not be inspected due to the progressive removal approach implemented during the STS-125 flow.
- **WK10789 – LRCS OXID A-LEG SEC REG LOCKUP HIGH**
  - LRCS OXID GHe system A-leg secondary regulator lock-up pressure is 281 psia (actual), should be no more than 279 psia (actual). Ref. IPR 335V-0011.
  - Based on the nominal performance of the redundant components, the 2 psia over tolerance in the A-leg secondary lockup pressure will have no impact to the performance of the RRCS OXID system.
- **TBD – PRSD O2 TANK POST FLIGHT VAC ION PUMP OPERATION**
  - PRSD O2 tank post-flight vac-ion pump operation performed 12 days after tank warm-up to minimum temperature (s/b within 7 days). Ref. PR FCP-4-33-0431.
  - Waiver to OMRS File III V45DG0.025 will be processed.

# Pending OMRS Exceptions/Waivers (cont.)

---

- **WK10790 – RIGHT POD HE ISO VLV INT LK**

- ROMS Ghe isolation valve combined leak rate is 4797 scch. Combined leakage should be no more than 1200 scch when each regulator leaks less than 720 scch and the combined regulator leakage is less than 720 scch.
- The most recent test results indicate all four of the regulator leak rates are well below 720 scch. Regulator data over the last ten ground tests and missions indicate no adverse trends on the four regulators. Scheduled for 7/22/10 OCCB.

- **TBD – O2 SYS 1 RELIEF VALVE FAILED RESEAT LEAKAGE**

- O2 system 1 relief valve reseal leak rate was approximately 14 sccm at 205 psig during the flight 29 flow (PR ECL-4-29-1635)
  - The maximum allowable is 10 sccm at 205 psig minimum
- Waiver WK10600 approved at 11/2/07 DPRCB to accept leakage above OMRSD limit for flights 29 through 32
  - Relief valve does not leak at normal operating pressure (100 +/- 10 psig), and in-flight leak can be isolated using the O2 regulator inlet valve
- O2 regulator relief valve test (OMRS V61AT0.063) performed every 3 years to verify relief valve function, and scheduled to be performed during the STS-335 (flight 33) flow

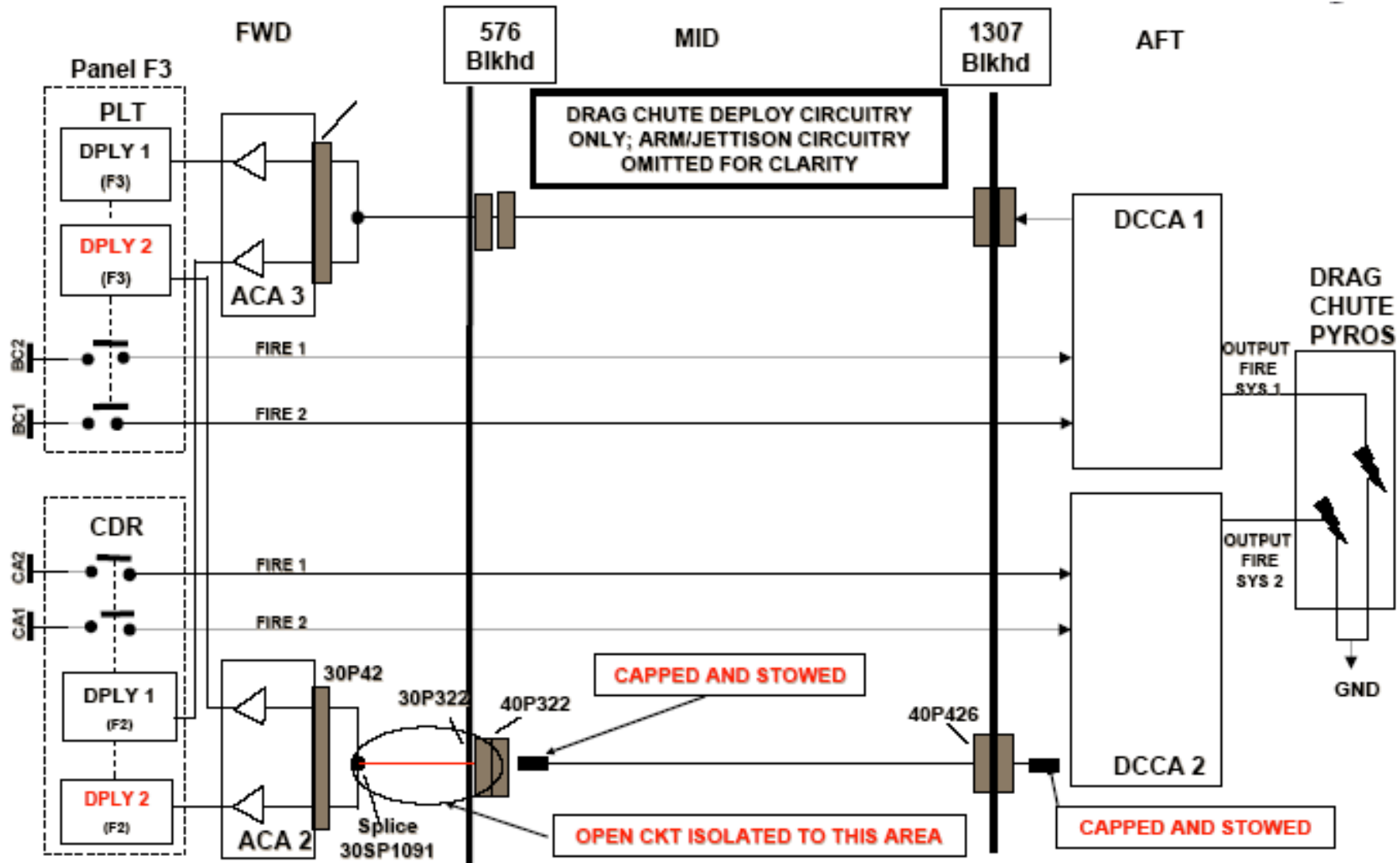
# Pending OMRS Exceptions/Waivers (cont.)

---

- **TBD – DRAG CHUTE DEPLOY SYSTEM 2 LIGHT FAILURE**

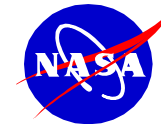
- Drag chute deploy system 2 light on D&C panels F2 and F3 failed to illuminate during the STS-115 (flight 27) flow drag chute controller assembly #2 verification (IPR 115V-0214 / PR V070-4-27-0450 / -A0023)
  - Troubleshooting isolated problem to an open circuit between crew module connector 30P322 and splice point 30SP1091, but further troubleshooting to determine exact location not warranted based on significant invasiveness
  - Waiver WK10456R1 approved at 7/8/05 DPRCB to accept loss of indicator lights for flights 27 and 28
    - Deploy 2 wire segment electrically safed; capped and stowed at DCCA 2 and at forward bulkhead
    - Full functionality of the deploy and jettison PIC firing had been verified and full functional system redundancy is maintained
  - Exceptions EK10592 and EK10593 approved at 11/2/07 DPRCB to accept deferral for flights 29 through 32
    - Same rationale as WK10456R1
  - Exceptions (V55 & V73) required for flight 33

# Drag Chute Non-Functional Deploy 2 Indication





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



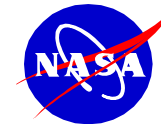
**STS-335 DLSFR**  
**Flight Crew Equipment/GFE**

Presenter <b>MV6/Bill Lane</b>	
Date July 22, 2010	Page 1

**BACKUP**



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



**STS-335 DLSFR**  
**Flight Crew Equipment/GFE**

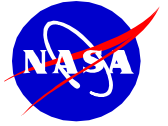
Presenter <b>MV6/Bill Lane</b>	
Date July 22, 2010	Page <b>2</b>

Tech Order numbers are identified for reference only. Report generated July 13, 2010.

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	In MEC	Cert O/C	KSC Need O/D	JSC Planned O/D	Remarks	JSC Contact
A (port forward)	M072-750025-076	11/22/10	1/17/07	4/26/10	C	12/21/10	12/21/10	Camera/PTU from STS-133/OV-103.	Randall Moore
B (port aft)	M072-750025-077	11/22/10	1/17/07	4/26/10	C	12/21/10	12/21/10	Camera/PTU from STS-133/OV-103.	Randall Moore
C (starboard aft)	M072-750025-078	11/22/10	1/17/07	4/26/10	C	12/21/10	12/21/10	Camera from STS-133/OV-103. Requires PTU swap.	Randall Moore
D (starboard forward)	M072-750025-079	11/22/10	1/17/07	4/26/10	C	12/21/10	12/21/10	Camera/PTU from STS-133/OV-103.	Randall Moore
Payload Ops camera	M072-340109-002		11/15/01	4/26/10	C	TBD	TBD	Camera from STS-131/OV-103. Due to a 6 month cert, will delay dates until manifest decision.	Randall Moore
SRMS elbow camera	M072-544504-014	11/22/10	8/4/08	4/26/10	C	12/21/10	12/21/10	Camera from STS-133/OV-103. Requires PTU swap.	Randall Moore
SRMS wrist camera	M072-544504-008	11/21/10	8/4/08	4/26/10	C	12/21/10	12/21/10	Camera from STS-133/OV-103.	Randall Moore
Centerline Airlock Camera (stowed)	M072-660828-002, plus CCCC stow		3/17/99		C				Randall Moore
Lefthand Umbilical Camera (aft)	M072-705001-016	2/9/11	10/28/04	4/26/10	C	3/9/11	3/9/11	Ready to roll out of OPF planned for 03/15/2011.	Randall Moore
Righthand Umbilical Camera	M072-705001-028 M072-705001-027	2/9/11	10/28/04 10/28/04	4/26/10	C	3/9/11	3/9/11	Ready to roll out of OPF planned for 03/15/2011.	Randall Moore
Digital Television (DTV)	M072-710570-007		11/15/07		C				Larry Schmidt
MCIU/RMS Situational Awareness Display (RSAD)	M072-710543-001		3/7/00	4/26/10	C				Larry Schmidt
Tools for Rendezvous and Docking (TRAD)	M072-730021-019*		7/20/07	4/26/10	C			Note: The TCS will not be required to be changed out.	Larry Schmidt
Tools Stowage Assembly (TSA)	M072-660853-002 M072-660850-005 M072-660850-006	1/3/11	2/11/05 2/11/05	4/26/10	C	2/1/11	2/1/11	Discussions are underway to generate a DCR to remove the STBD TSA from the mission and add at a later flow.	Chapman Mannschreck
Video Processing Unit (VPU)	M072-710338-007		3/2/08		C				Larry Schmidt



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



**STS-335 DLSFR**  
**Flight Crew Equipment/GFE**

Presenter <b>MV6/Bill Lane</b>	
Date July 22, 2010	Page 3

Tech Order numbers are identified for reference only. Report generated July 13, 2010.

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	In MEC	Cert O/C	KSC Need O/D	JSC Planned O/D	Remarks	JSC Contact
Wireless Video System (WVS)	M072-344828-001 mount M072-744007-001 UHF M072-744004-012 S-BAND M072-744004-013 S-BAND M072-744004-014 S-BAND M072-744004-015 S-BAND M072-744004-016 S-BAND M072-744004-017 S-BAND M072-744004-018 S-BAND		8/24/04 6/2/04 3/21/08 3/21/08 3/21/08 3/21/08 3/21/08 3/21/08 3/21/08	4/26/10	C				Randall Moore
Space to Space Orbiter Radio (SSOR)	M072-344828-002 M072-740828-002 Hamess		9/24/04	4/26/10	C				Larry Schmidt
RMS Sideview Camera (RSC)	M072-710281-002 M072-000416-006 camera		11/24/04	4/26/10	C	TBD	TBD	Camera from STS-133/OV-103. Requires return to JSC for repressurization. May require OPF installation to support LON (if no MPLM). Due to a 6 month cert, will delay dates until manifest decision.	Randall Moore
Wing Leading Edge (WLE) Instrumentation - Left Wing	M072-756111-007		8/21/07	4/26/10	C				Micheal Wright
Wing Leading Edge (WLE) Instrumentation - Right Wing	M072-756111-008		8/21/07	4/26/10	C				Micheal Wright
OBSS Sensor Package 2 *** (OPF)	M072-710282-006		4/18/08	4/26/10	C			At KSC FCEL	Larry Schmidt
OBSS SENSOR PACKAGE 1 ** (OPF)	M072-710282-008	10/22/10	4/18/08	4/26/10	C	12/7/10	12/7/10	Unit will come from STS-133/OV-103.	Russell Yates



## Payload Cargo Engineering Backup Charts

# STS-335 dLSFR

---

## Mission-Unique Deviation to NSTS 60523

- NSTS 60523, Orbiter/Payload Integration Standardization Document, defines a standard payload avionics configuration for all vehicles and requires PRCB approval for changes or mission-unique exceptions
- PRCB CR S070126 : mission-unique waiver to NSTS 60523 (Approved through *PRCB 03/31/10*)
  - To allow non-standard cables installed in OV-104 during the STS-132 flow to remain installed
    - Cables do not remove or change any of the standard avionics services provided to standard Shuttle equipment flown in support of ISS missions

## Payload ICDs/PIRNs

- All Payload-Unique ICDs are baselined
- Issues/Concerns
  - None

# STS-335 dLSFR

---

Annex 1: ISS-LON-NSTS 21558-A01

Baselined 3/5/10

ECD

## L-4 mo Update

- Customer submittal 12/02/10
- CR approval 12/23/10

## L-1 mo Update

- Customer Submittal 03/21/11
- CR Approval 03/28/11
- Final weight log 04/14/11

## Time Critical Ground Handling Requirements

- Customer Submittal 12/23/10
- Release for Review 01/28/11
- Baseline 02/28/11

---

# **STS-335 (LON-MPLM) Delta Launch Site Flow Review Flight Software Overview**

**Tom Stansel  
USA FSW**

**PRCB 7/22/2010**

# STS-335 (LON-MPLM) DLSFR (FSW)

---

- **STS-335/OV-104 LON Flight Software (FSW) Versions**
  - Eighth scheduled flight of Operational Increment (OI) - 34 Flight Software (SASCB SCR 98107A documents PASS and BFS OI-34 content)
  - Sixth scheduled flight of MEDS IDP VI 07.01/Eighth scheduled flight of MDUF VI 06.00 (SASCB SCR 98113A documents content)
  - Ninth scheduled flight of MAGRS-3S Link 613-996-008 Software (Link-008) (SASCB SCR 98115 documents content)
- **STS-335/OV-104 LON Flight Software Payload Support:**
  - ISS-LON
  - Orbiter Interface Unit (OIU)
  - Orbiter Docking System (ODS)
  - Sequential Still Video (SSV)
  - Trajectory Control System (TCS)
  - ISS Caution and Warning (ISSCW)
  - Multipurpose 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-335 (LON-MPLM) DLSFR (FSW) ...

---

- **STS-335 Source Changes/Edits for Primary Flight Software (Base)**
  - SCR 93298 Expand Effectivity of SCR 93211A (Update of SSMEC Vehicle Data Table (VDT) for Enhanced Accelerometer Operations) to include STS-335
  - SCR 93301 Expand Effectivity of SCRs to Include STS-335
    - SCR 93262A Film ET Camera
    - SCR 93267A Removal of the Set and Reset to False Cmds For the RCS Tank Iso Valves
    - SCR 93284 Update PASS HUD Body Flap Warning Limit K-Load
  - DR 126366 SM GPC Failure to Send GCIL Commands
- **STS-335 Patch Implementation for Primary Flight Software**
  - None.
- **STS-335 Patch/Edit Implementation for Backup Flight Software (Base) (included on delivered Mass Memory)**
  - SCR 93301 Expand Effectivity of SCR 93282 (Update PASS/BFS HUD Body Flap Warning Limit K-Loads) to include STS-335
- **STS-335 Patch Implementation for Backup Flight Software**
  - None





*Extravehicular  
Activity  
Office*



# **EVA Status STS-335 Delta Launch Site Flow Review**

**Bridget Ziegelaar  
EVA Office  
Johnson Space Center  
July 22, 2010**



- **Forward Bulkhead PFR**
  - Portable Foot Restraint, SED33105308-307 to be installed on forward bulkhead
  - Released Tech Order: M072-661568-029
  - Required to protect for contingency EVA TPS repair
- **Lightweight Port TSA – contains standard EVA contingency tools**
  - Port LWTSA installation – Tech Order: M072-660850-005
  - Port LWTSA Tools installation – Tech Order: M072-660853-002
- **Lightweight Starboard TSA – will most likely contain OFK items**
  - Starboard LWTSA installation – Tech Order: M072-660850-006
  - Starboard LWTSA cushion – Tech Order: TBD
  - ESEL update is pending to document the appropriate tech orders
- **Winches**
  - Winch P/N SED33101570-327 on Forward Bulkhead
  - Winch P/N SED33101570-325 on Aft Bulkhead
- **All EVA PLB hardware delivery dates have been successfully coordinated with KSC**

# STS-335 Delta Launch Site Flow Review

---



J.F. KENNEDY SPACE CENTER

**LON**  
**STS-335**

**KSC ISS & Spacecraft Processing**  
**Joseph T. Delai, NASA, KSC Mission Manager**

07/15/2010

# Planned Processing Milestones



J.F. KENNEDY SPACE CENTER

## PRE-SHUTTLE INTEGRATION ACTIVITIES

### Space Station Processing Facility

- ECLSS tests Complete
- Rack Installation 10/1-11/17
- Front side stowage 11/18-12/20
- CBM operations 1/6-1/26
- AEC Installation 1/27-2/14
- MPLM closeouts 2/15-3/24
- Hatch activities 3/25-4/6
- Payload to pad (U/R) 4/11 (L-17)

07/15/2010

# Planned Processing Milestones



J.F. KENNEDY SPACE CENTER

## SHUTTLE INTEGRATION ACTIVITIES

### PAD (U/R)

- Payload install into Orbiter TBD
- IVT TBD
- Close Payload Bay Doors for Flight TBD
- Launch 4/28/11 (U/R)

07/15/2010

# KSC/ISS Processing Summary

---



J.F. KENNEDY SPACE CENTER

## **Watch Items:**

- LON launch date

**The KSC STS-335/LON Mission Processing Team is ready to proceed with processing the STS-335 Mission payload complement.**

07/15/2010



## STS-335 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-22-10**

### Overview

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



## **STS-335 Delta Launch Site Flow Review**

Presenter **Kenneth Nowak**

Date **07-22-10**

### **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-335 Delta Launch Site Flow Review**

Presenter **Kenneth Nowak**

Date **07-22-10**

### **SSP System Drawings**

**The Drawings Baseline Was Released By PRCB S115335B on 05-06-10**

- **V072-000001-294** (Rev. WK01) Space Shuttle System (Rel. 05-10-10)
  - **V072-200215-001** (Rev. A01) Mission Equipment Cargo Support (Rel. 04-22-10)
  - **SGD32104458-401** (Rev. B) Crew Compartment Configuration (Rel. 07-09-10)
    - 402** Descent
  - **V070-000001-004** Orbiter General Assembly
    - **V070-410100-018** SSME Installation
  - **10100-0061-183** Integrated SRB General Assembly (BI-146)
  - **80901000000-510** External Tank Assembly (ET-122)
- **STS-335 LSRR + 18 days Mission Configuration Product Plan (MCP) was last published on 04-12-10 and will be republished at ORR -14 days on TBD.**





## **STS-335 Delta Launch Site Flow Review**

Presenter **Kenneth Nowak**

Date **07-22-10**

### **SSP System Drawings – (Continued)**

#### **Ferry Configuration**

- **V072-000001-295** (Rev. WK01) Space Shuttle System Drawing (Rel. 05-10-10)
  - **V072-200215-002** (Rev. A01) Mission Equipment Cargo Support (Rel. 04-22-10)
  - **SGD32104458-001** (Rev. B) Crew Compartment Configuration (Rel. 07-09-10)
  - **V072-300055-025** (Rev. BU) Ferry Flight Configuration (Rel. 05-11-09)

**SCA 911**



## **STS-335 Delta Launch Site Flow Review**

Presenter **Kenneth Nowak**

Date **07-22-10**

### **Modification Impact Report**

- **Mission Equipment Modifications and Orbiter Modifications analyzed for impacts to OMRSD, LCC, ICD, EMI, Software, and GSE.**
- **A total of 2 MCRs have been approved and/or pending mods**
- **Current MCR impact status:**
  - **No impacts for all six disciplines** **2**
  - **One or more disciplines with impacts, documentation approved and/or pending approval** **0**



# STS-335 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-22-10**

## Modification Impact Report – (Continued)

- Possible impacts still under review

**0**

1MRCS REPT. 4650-1  
PAGE NO. 1

SSP SUMMARY MOD ITEMS - PRCBD MOD BASE LINE STS-0335

ORB

ECP-MCR/KIT SEQUENCE

RUN TIME

13:51 DATE 07/13/2010

PRCB	STAT	ITEM/KIT NUMBER	SEQ	
MCR/ECP	PRIO			
AUTHDATE	SITE	TCTI NUMBER	EISN NO.	DESCRIPTION / GENERAL REMARKS
	FLT			
S-J6543	AUTH	J6543	0104 002	ET FERRY FLIGHT DOOR ATTACH FITTING INSPECTION
2009-09-17	MAND			
	KSC		SPAR	NDE OF FERRY FLT DOOR ATTACH FITTINGS WILL ONLY BE REQ'D
	033			FOLLOWING A F/FLT BACK TO KSC. F/FLT ONLY.
S-J6577	AUTH	J6577	0104 001	AMES GAP FILLER REMOVAL AND REPLACEMENT
2010-01-29	MAND			
	KSC		SPAR	GAP FILLER REPLACEMENTS WILL BE PERF'D OVER REMAIN ING
	033			MANIFESTED FLTS BASED ON PROG LSFR PRIORITIES.
S052924DU	PLND	J6589A	0104 000	CREW MODULE CONTAMINATION SAMPLING
2010-05-06	MAND			
	KSC		NSW	
	033			
S-J6599	PLND	J6599	0104 000	PRE-FLIGHT CITRIC ACID FLUSH
2010-03-05	MAND			
	KSC		SPAR	REQUESTED CITRIC ACID FLUSH WILL BE INTEGRATED INTO PLANNED
	033			POST FLT WASTE TANK SERVICING PROCESS
S-J6614	PLND	J6614	0104 000	DTV MUX BYPASS SWITCH VERIFICATION
2010-04-13	MAND			
	KSC		SPAR	DIGITAL TV MULTIPLEXER BYPASS SWITCH VERIFICATION IS
	033			INTEGRATED WITH PLANNED OPF COM TESTING.

1MRCS REPT. 4650-1  
 PAGE NO. 2

SSP SUMMARY MOD ITEMS - PRCBD MOD BASE LINE STS-0335

ORB

ECP-MCR/KIT SEQUENCE

RUN TIME

13:51 DATE 07/13/2010

PRCB	STAT	ITEM/KIT NUMBER	SEQ		
MCR/ECP		PRIOR SITE	TCTI NUMBER	EISN NO.	DESCRIPTION / GENERAL REMARKS
AUTHDATE		FLT			
S-J6626		PLND J6626		0104 001	WASTE WATER SAMPLE AND URINE SOLIDS FILTER REQUEST
2010-05-06		MAND KSC 033		SPAR	WASTE WATER SAMPLING&FILTER REPLCMNTS WILL BE PERF IN PARALLEL W/POST-FLT W/W SERVCG/DE-SERVICING.
CONCERN S-J6629		PLND J6629		0104 000	CAPTURE OV104 OUTPUT WVEFRMS TO ADDRESS IN3600 DIODE
2010-05-24		MAND KSC 033		SPAR	REQUESTED MDM OUTPUT WAVEFORM EVALUATIONS HAVE BEEN INTEGRATED INTO PLANNED STS-335 OPF PROCESS'G
S-J6630		PLND J6630		0104 000	OV-104 THERMAL WINDOWS TORQUE EVAL AND RETORQUE OF W2 & W5
2010-06-08		MAND KSC 033		SPAR	WINDOW W2 AND W5 TORQUE EVALUATIONS HAVE BEEN INTEGRATED W/ STS-335 PLANNED OPF WINDOW INSPNS/CLEANG
S-J6634		PLND J6634		0104 000	ADDITIONAL 25 MM IR THERMOGRAPHY DATA FOR WLE PNLS 18R & 9L
2010-06-07		MAND KSC 033		SPAR	
S-J6635		PLND J6635		0104 000	STS-335 RSB TE TILE INSPECTION
2010-06-30		MAND KSC 033		SPAR	OV-104/33 (POSTFLIGHT 32). RUDDER SPEED BRAKE WILL BE IN THE OPEN CONFIGURATION.

1MRCS REPT. 4650-1  
 PAGE NO. 3  
 13:51 DATE 07/13/2010

SSP SUMMARY MOD ITEMS - PRCBD MOD BASE LINE STS-0335

ORB

PRCB MCR/ECP AUTHDATE	STAT PRIO SITE FLT	ITEM/KIT NUMBER TCTI NUMBER	SEQ EISN NO.	DESCRIPTION / GENERAL REMARKS
S-J6636 2010-06-30	PLND MAND KSC 033	J6636	0104 000	R2D THRUSTER PC TUBE FLUSH  R2D THRUSTER PC TUBE FLUSH WILL BE INTEGRATED WITH PLANNED  VERNIER THRUSTER FLUSHING.
S-J6638 2010-06-30	PLND MAND KSC 033	J6638	0104 000	ADDITIONAL 25 MM IR THERMOGRAPHY DATA FOR WLE PANEL 10R  REQUESTED 10R THERMOGRAPHY WILL BE ACCOMPLISHED IN THE  CURRENT STS-335 OPF PROCESSING FLOW.
011620 S115335 2010-03-31	PLND KSC 033	TCTIV1911620REF	0104 013	ADDITION OF SPACERS TO RCC SPAR FITTING ANGLE INSTL (LH)  PARTIAL DEFRL FROM FLT-27 (SEQ 10), (RH SEQ 11)
030286 S115335R2 2010-06-11	AUTH MAND KSC 033	TCTIV1030286REF	0104 000	CERAMIC PLUG/INSERT REDESIGN - INBOARD ELEVON SEAL  ADDED BY EDS I/F & V070-198200 D11, REPLACES 03028 6,0104,0  IN PART

ECP-MCR/KIT SEQUENCE

RUN TIME

13:51 DATE 07/13/2010

PRCB	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS
MCR/ECP	PRIO	TCTI NUMBER	EISN NO.	
AUTHDATE	SITE			
	FLT			
030286	AUTH	TCTIV1930286REF	0104 000	CERAMIC PLUG/INSERT REDESIGN - WING STUB
S115335R2	MAND			
2010-06-11	KSC	NOT REQUIRED		ADDED BY EDS I/F & V070-191034 C04 & -193017 F02, REPLACES 030286,0104,0 IN PART
	033			
S115335R2	AUTH	TCTIV1930286REF	0104 001	CERAMIC PLUG/INSERT REDESIGN - UPPER ACCESS, WLE
2010-06-11	MAND			
	KSC	NOT REQUIRED		ADDED BY EDS I/F & V070-199715 C07, REPLACES 03028 6,0104,0 IN PART
	033			
S115335R2	AUTH	TCTIV2030286REF	0104 000	CERAMIC PLUG/INSERT REDESIGN - VERT STUB
2010-06-11	MAND			
	KSC	NOT REQUIRED		ADDED BY EDS I/F & V070-291353 B10 & V070-293000 D 02, REPLACES 030286,0104,0 IN PART
	033			
S115335R2	AUTH	TCTIV2930286REF	0104 000	CERAMIC PLUG/INSERT REDESIGN - DRAG CHUTE, VERT STAB
2010-06-11	MAND			
	KSC	NOT REQUIRED		ADDED BY EDS I/F & V070-291215 A03, REPLACES 03028 6,0104,0 IN PART
	033			
S115335R2	AUTH	TCTIV3530286REF	0104 000	CERAMIC PLUG/INSERT REDESIGN - SIDE BODY FLAP
2010-06-11	MAND			
	KSC	NOT REQUIRED		ADDED BY EDS I/F & V070-395032 C08 & V070-395034 D 04, REPLACES 030286,0104,0 IN PART
	033			

1MRCS REPT. 4650-1  
PAGE NO. 5

SSP SUMMARY MOD ITEMS - PRCBD MOD BASE LINE STS-0335

ORB

ECP-MCR/KIT SEQUENCE

RUN TIME

13:51 DATE 07/13/2010

PRCB	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS
MCR/ECP	PRIO	TCTI NUMBER	EISN NO.	
AUTHDATE	SITE			
	FLT			
AUTH MAND		TCTIV3730286REF 0104 000		CERAMIC PLUG/INSERT REDESIGN - PLBD HINGE
2010-06-11	KSC 033	NOT REQUIRED		ADDED BY EDS I/F & V070-370001 F05, REPLACES 03028 6,0104,0 IN PART
S115335R2	AUTH MAND	TCTIV3930286REF 0104 003		CERAMIC PLUG/INSERT REDESIGN - FUS STUB, SIDE
2010-06-11	KSC 033	NOT REQUIRED		ADDED BY EDS I/F & V070-395017 E01, REPLACES 03028 6,0104,0 IN PART
S115335R2	AUTH MAND	TCTIV3930286REF 0104 004		CERAMIC PLUG/INSERT REDESIGN - FWD FUS ET ATTACH PLATE
2010-06-11	KSC 033	NOT REQUIRED		ADDED BY EDS I/F & V070-391141 B03, REPLACES 03028 6,0104,0 IN PART
S115335R2	AUTH MAND	TCTIV3930286REF 0104 000		CERAMIC PLUG/INSERT REDESIGN - FWD FUS, WINDOWS
2010-06-11	KSC 033	NOT REQUIRED		ADDED BY EDS I/F & V070-390065 J01, REPLACES 03028 6,0104,0 IN PART
S115335R2	AUTH MAND	TCTIV3930286REF 0104 001		CERAMIC PLUG/INSERT REDESIGN - PERIPHERAL NOSE/RCC
2010-06-11	KSC 033	NOT REQUIRED		ADDED BY EDS I/F & V070-399415 E02, REPLACES 03028 6,0104,0 IN PART



1MRCS REPT. 4650-1  
PAGE NO. 6

SSP SUMMARY MOD ITEMS - PRCBD MOD BASE LINE STS-0335

ORB

ECP-MCR/KIT SEQUENCE

RUN TIME

13:51 DATE 07/13/2010

PRCB	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS
MCR/ECP	PRIO	TCTI NUMBER	EISN NO.	
AUTHDATE	SITE			
	FLT			
S115335R2	AUTH	TCTIV3930286REF	0104 002	CERAMIC PLUG/INSERT REDESIGN - OUTBD/SIDE BODY FLAP
2010-06-11	MAND			
	KSC	NOT REQUIRED		ADDED BY EDS I/F & V070-395016 D01, REPLACES 03028 6,0104,0
	033			IN PART

TOTAL MODS = 25

1MRCS REPT. 4650-1  
PAGE NO. 7

SSP SUMMARY MOD ITEMS - PRCBD MOD BASE LINE STS-0335

SRB

ECP-MCR/KIT SEQUENCE

RUN TIME

13:51 DATE 07/13/2010

PRCB	STAT	ITEM/KIT NUMBER	SEQ	
MCR/ECP	PRIO	TCTI NUMBER	EISN NO.	DESCRIPTION / GENERAL REMARKS
AUTHDATE	SITE			
	FLT			
S084539T	PLND	CR S084539T	B146 000	TRANSFER REVISED SRB 10PRC-0340 FOR EXTERNAL FOAM APP
2010-06-07	KAS			

TOTAL MODS = 1

FLIGHT-SPECIFIC

Approved STS-135 OMRS Waivers and Exceptions

WVR	ELEMENT	PRCBD NUMBER WAIVER# (STAT)	ABSTRACT	EISN	STS BEG END
EXC	PROJECT	(INITIAL STS)	RAS REQUIREMENTS	PAYLOAD	
E	ORB	S053298ZC EK10572R1 (A)	OMRSD EXCEPTION REQUEST - MISSION LIFE ASSESSMENT OF WING LEADING EDGEINSULATORS (EK10572R1)	104	029 033
		S053298ZD EK10574R1 (A)	OMRSD EXCEPTION REQUEST - WING LEADING EDGE INSULATORS (EK10574R1 )	104	029 036
		S053300DF EV10763 (A)	OMRSD EXCEPTION REQUEST - WASTE WATER TANK FLUSH (EV10763)	103 104	039 039 033 033
	SRB	S053300DH EKG10781R2(A)	OMRSD EXCEPTION REQUEST - GN2 PURGESYSTEM BLOWDOWN FAILURE (EKG10 781R2)	BI	143 146
W	ET	S053293FZ WK03850R1 (A) (STS-093)	L02/LH2 TANK PRESSURE MONITOR FOR MOVE	ET	099 999
	OMS	S053298NV WK10522 (A)	OMRSD WAIVER REQUEST - RIGHT OMS SECONDARY REGULATOR CREEP RATE(W K10522)	0021	035 043
		S053299YG WK10723 (A)	OMRSD WAIVER REQUEST - RIGHT OMS FUEL CV501 ELEMENT 4 LEAK CHECK FAIL(WK10723)	0021	038 040
	RCS	S053296YG WK10318R1 (A)	OMRSD WAIVER REQUEST - RIGHT RCS OXIDIZER GHE SYSTEM INTERNAL LEA KAGE(WK10318R1)	0021	034 042

	S053298JF	OMRSD WAIVER REQUEST -	0021	034 042
	WK10503	(A) RRCS OX TANKOUTLET		
		TRANSDUCER ACCURACY (WK		
		10503)		
SRB	S053293WA	LH FWD AND RH MID SRB	BI	099 999
	WK03886	(A) JOINT TEMP SENSORS		
	(STS-103)			

ACTIVE WAIVERS FOR  
OV-104

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	<b>STAYS OPEN</b>
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	<b>STAYS OPEN</b>
325	S061956	07/15/03	Blanket on the Control Moment Gyro (CMG) Orbital Replacement Unit (ORU) on the Lightweight MPESS Carrier (LMC) will <b>NOT</b> be re-installed on-orbit per configuration defined in ICD-A-21494. It will be secured around the FSE and attached to the aft bulkhead.	OV-104, Flight 27	
334	S115115JR1	07/19/06	The following requirement is waived to allow OV-104 to fly with the following out-of-configuration condition:  Tech Order M072-544501-067 (RMS, MPM over-center stop and MPM pedestal insulation cover fasteners) will be implemented in total, less the requirement to perform bench rigging per updated specification requirements for for OV-104, Flight 27 and subsequent OV-104 flights until such time that all MPMs can be removed and bench rigging can be performed.	OV-104, Flight 27 thru OV-104, Flight 999	<b>STAYS OPEN</b>
339	S063652	07/09/07	The following requirement is waived to allow OV-104 to ferry from DFRC to KSC with the following out-of-configuration condition:  Retain RH ET Camera installation for ferry flight MECSLSI V072-200197, reference flag note (3), removes (MV0456A) M072-705001-024 RH ET Sep Camera (Digital Camera with 35 mm lens) for ferry flight. The RH ET Camera needs to remain in flight configuration to support resolution of IFA STS-117-V07 Digital Umbilical Camera Image Corruption. Troubleshooting will be performed on the installed hardware after returning OV-104 to KSC.	OV-104, Flight 28	

ACTIVE WAIVERS FOR  
OV-104

Item #	Authority	Date	Waiver Description	Effectivity	Wad
340	S063652	07/09/07	<p>The following requirement is waived to allow OV-104, Flight 28 to ferry with the following out-of-configuration conditions:</p> <p>Remove LH OMS Pod LP04 (FIB) blankets prior to ferry flight thermal blanket V070-396376-241 on LOMS Pod lifted at forward leading corner and edges reported on orbit, IFA STS-117-V-02. Two blankets (V070-396376-241 and adjacent V070-396376-051) are removed. RTV ramp applied in cavity up to adjacent blankets per TLP04-28-2520 MRB approval.</p>	OV-104, Flight 28	
343	S115122GR4	12/07/2007	<p>The following requirement is waived to allow OV-104 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 one each bolt (NAS1003-8A) and one each 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 control) was noted missing from behind the starboard closeout panel. Without the nutplate, the bolt and washer cannot be installed. The area cannot be currently accessed to reinstall the missing hardware.</p>	OV-104, Flight 29	ECL-4-A0118 (was ECL-4-29-1637)

ACTIVE WAIVERS FOR  
OV-104

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>	

ACTIVE WAIVERS FOR  
OV-104

Item #	Authority	Date	Waiver Description	Effectivity	Wad
351	S115125BR9	06/03/2009	<p>Allow OV-104 to ferry from DFRC to KSC with out-of-configuration conditions for removal of Flow Control Valve (FCV) assemblies for ferry flight and install Main Propulsion System (MPS) cap and plug set GSE plugs:</p> <p>Three MPS GH2 FCV solenoid and poppet sleeve assemblies (P/N 80420-1301) for each engine.</p> <p>Engine 1 GH2 FCV LV56            Engine 2 GH2 FCV LV57            Engine 3 GH2 FCV LV58</p> <p>NOTE: The following MPS cap and plug set GSE plugs will be installed in place of the Flow Control Valve System (FCSV):            3 G070-602824-001.</p> <p>RATIONALE: There is adequate access and time to remove the requested parts. Removal of these parts is well within USA's experience base. These valves have been removed numerous times at KSC. Removal at DFRC will be no different than removal at KSC. There is no increase in risk performing this work at DFRC, and the early removal will better support the upcoming manifest. There is no GH2 FCV position specified for ferry flight, and no blanket pressure is required. The manifold is firmly mounted/restrained and requires no additional support due to removed FCV components.</p>	OV-104, Flight 30 (Ferry Flight)	