



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



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

**Presenter** Kenneth Nowak

**Date** 05-20-10

# **Program Freeze Point**

## **PRCB Presentation**

### **S115335A**



# STS-335 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-20-10**

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

**The STS-335 Integrated Launch Site Requirements were established by PRCBD S115335 dated 03-25-10. This CR and the Associated Data Package were reviewed at the 05-03-10 FRWG.**

**Flight Operation & Integration\***

**Orbiter Engineering\***

**Orbiter GFE\***

**Payload/Cargo Engineering\***

**Launch Vehicle Processing\***

**MO3/USA-PI**

**USA-OE**

**MV5**

**USA-PI**

**PH-A**

**Status in BackUp**

**KSC Integration\***

**Flight Software**

**EVA**

**KSC ISS and Payload Processing\***

**MK-SIO**

**USA-FSW**

**XA**

**UB-R3**

**SSME**

**Baseline at DLSFR**

**MP21**

**\*Backup material included**



	Presenter <b>MO3/Phyllis Grounds</b>	
	Date <b>May 2010</b>	Page <b>1</b>

# **STS-335**

## **Launch Site Flow Review (LSFR)**

### **Flight Requirements Status**

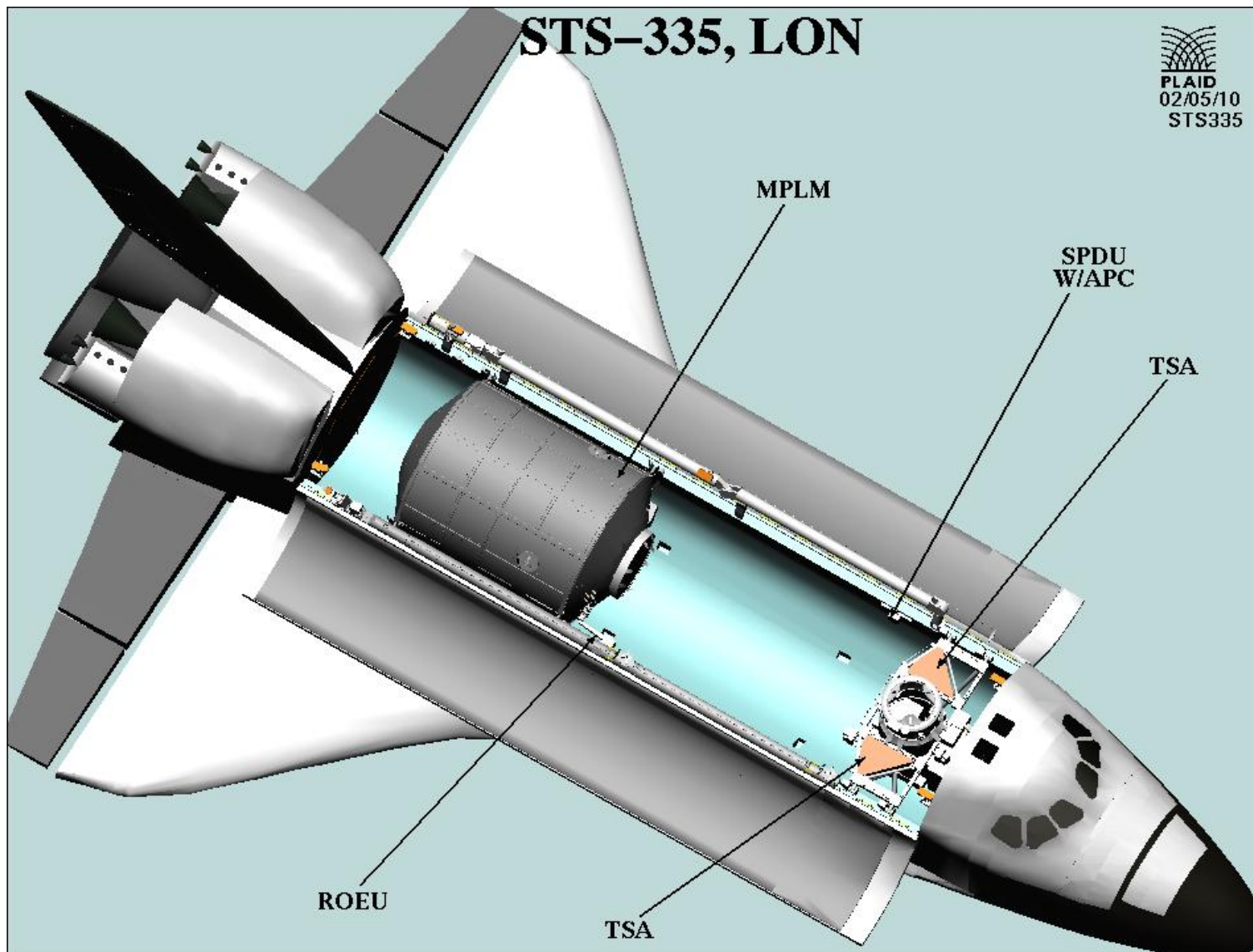
**FRWG May 3, 2010**

**PRCB May 20, 2010**

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



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

## LAUNCH

11/29/10  
39A/ MLP 3  
CREW SIZE: 4 UP/10 DN

## CONFIGURATION

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

## PAYLOAD

MPLM

## ORBIT

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

## 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)

## LANDING

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



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

Presenter **MO3/Phyllis Grounds**

Date **May 2010**

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**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 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, and RSR (TBD quantity) racks to ISS**
- **Transfer O<sub>2</sub>, N<sub>2</sub> (if consumables allow)**
- **Miscellaneous Items**
  - **TPS Inspection**
    - **FD2 TPS inspection**
    - **Rbar Pitch Maneuver with ISS imagery**
    - **Focused Inspection (if required)**
    - **Late inspection**



<b>PERFORMANCE MARGIN</b>		Presenter <b>MO3/Phyllis Grounds</b>
		Date <b>May 2010</b> Page <b>5</b>

## PERFORMANCE MARGIN

• <b>SIMULATION MARGIN (CIRAF335)</b>		<b>+4236</b>
• <b>WEIGHT CHANGES SINCE SIMULATION</b>		
• <b>PAYLOAD</b>	<b>- 2075</b>	
• <b>OPERATOR</b>	<b>+22</b>	
• <b>ORBITER</b>	<b>+114</b>	
<b>TOTAL WEIGHT CHANGES</b>	<b>- 1939</b>	<b>+1939</b>
• <b>OTHER PERFORMANCE PROJECTIONS</b>		
• <b>RENDEZVOUS ALT OF 190 NM</b>		<b>+1160</b>
• <b>PROTECTION FOR DOL DISPERSIONS</b>		<b>- 700</b>
• <b>SRB – M.P. UPDATES</b>		<b>- 134</b>
• <b>SRB – BR / 1.55 MIL HIGHER THAN 0.3705 AVG</b>		<b>+310</b>
• <b>PROJ TO 5 MIN WINDOW FROM INPLANE</b>		<b>- 600</b>
• <b>PERFORMANCE CHANGES ADJUSTMENT</b>		<b>- 136</b>
• <b>CURRENT BASELINED APM (05/04/10)</b>		<b>+6075</b>

VOLUME III: ASCENT PERFORMANCE MANAGER'S RESERVE GUIDELINE AT LSFR IS 400 LBS



	Presenter <b>MO3/Phyllis Grounds</b>
	Date <b>May 2010</b>   Page <b>6</b>

## 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	223019 (233000)	1082.5 (1075.7)
RTLS	233038 (245000)	1082.0 (1077.2)
TAL	231675 (244000)	1082.1 (1077.2)
AOA	227639 (242000)	1080.4 (1075.7)
CONT RTRN	202285 (233000)	1080.2 (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 05/04/10.



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**STS-335 LSFR**

**OV-104 FLIGHT 33**

**CONFIGURATION UPDATES**

**PRCB**

May 20, 2010

Alvin Jenkins, USA Orbiter Element  
Greg Manuel, Boeing VPE

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

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## Program Authorization Is Requested For The Following:

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

## Information Only:

- Potential modifications
- Chits
- Potential OMRS Exceptions

## Back-up:

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

# Potential Modifications

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- **TPS Ceramic Plug/Insert Redesign** (TAD 30286 OCR/D S165481)
  - 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
    - Standard Specification ERD 5-21-10
    - Engineering (Installation) ERD 5-28-10
- **Starboard LWTSA Cushion**
  - Definition of light-weight tool stowage assembly (LWTSA) contents configuration is TBD

# 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
<b>J6589A</b>	<b>Crew Module Contamination Sampling</b>
J6599	PRE-FLIGHT CITRIC ACID FLUSH
J6614	DTV MUX BYPASS SWITCH VERIFICATION
<b>J6626</b>	<b>WASTE WATER SAMPLE AND URINE SOLIDS FILTER REQUEST</b>
<b>J6629</b>	<b>CAPTURE OV-104 OUTPUT WAVEFORMS TO ADDRESS DIODE CONCERNS (IN REVIEW)</b>
JXXXX	WLE RCC 25 mm IR THERMOGRAPHY on panels 9L and 18R (POTENTIAL)
JXXXX	CERAMIC INSERT EVALUATION (POTENTIAL)
JXXXX	STS-335 CLOSE CLEARANCE VERIFICATION (POTENTIAL)

# Potential OMRS Exceptions

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- Nominal Time Age Cycle Items will have to be performed prior to the 33<sup>rd</sup> flight of OV-104 (ref. USA Change Eval of CR S042013HW)
- In addition, the following Structures and ECL requirements will be due and are very intrusive in that they drive radiator and waste tank removals:
  - Radiator Hinge Inspection Requirements
    - V30CB0.100 SPC DTL INSP – LH MID-FWD RAD VAFB33I33F
    - V30CC0.120 SPC DTL INSP – LH MID-AFT RAD VAFB33I33F
    - V30CD0.100 SPC DTL INSP – LH AFT RADIATO VAFB33I33F
    - V30CF0.100 SPC DTL INSP – RH MID-FWD RAD VAFB33I33F
    - V30CG0.120 SPC DTL INSP – RH MID-AFT RAD VAFB33I33F
    - V30CH0.100 SPC DTL INSP – RH AFT RADIATO VAFB33I33F
    - V30CD0.120 SPC DTL INSP – LH AFT EXP JNT VAFB33I40F
    - V30CH0.120 SPC DTL INSP – RH AFT EXP JNT VAFB33I40F
  - The requirement to flush the waste water tank with nitric acid (Waste Water Tank V070-623022-003 C00AB0.230.003) is due prior flight 33

**STR and ECL PRT's have completed the requirement review and rationale exists to extend past the 33<sup>rd</sup> flight**



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



<b>STS-335 LSFR</b> <b>Flight Crew Equipment/GFE</b>		Presenter <b>MV6/Bill Lane</b>	
		Date May 20, 2010	Page 1

# **STS-335 LSFR**

## **FCE/GFE Status**

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



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

Presenter <b>MV6/Bill Lane</b>	
Date May 20, 2010	Page 2

- **GFE hardware delivery dates under review – manifest change moving STS-134 to November results in cameras and Sensor Package 1 coming from OV-103 post STS-133 (was OV-105 post STS-134)**
  - **Final delivery dates to be partnered by the dLSFR**
- **Sensor Package 1 LDRI availability no longer an issue once STS-134 moved after STS-133**
  - **STS-134 plan remains to leave OBSS on ISS**
  - **STS-335 LDRI to come from OV-103 post STS-133**
  - **LDRI qual unit verification as flight spare continuing (decision package to be brought to OPO)**
- **Tech orders and hardware list noted in backup charts, reference only**
- **No modifications planned for STS-335**
- **Starboard TSA currently manifested for flight but final decision expected at dLSFR**
- **Planned PTU swap for cameras D and Elbow in order to manage 5 flight cert limit – no affect on planned delivery date**

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

**Payload Cargo Engineering Status**

**Maria Randall**

**281-212-6269**

**FRWG: 05/03/10**

**PRCB: 05/20/10**



# STS-335 LSFR

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## Engineering Flight Product Status

<u>Drawing No</u>	<u>Title</u>	<u>Rev</u>	<u>EO</u>	<u>Released</u>
V072-200215	MECSLSI	New	-	04/26/10
VA72-200215	Cargo Arrangement	A	A01	04/26/10
VD72-200215	Avionics Diagram	A	A01	04/26/10
VS72-200215	Integrated Schematic	A	A01	04/26/10
VS70-540434	Retention Schematic	New	-	03/01/10

### Engineering Open Work

- None

### 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

# STS-335 LSFR

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## OMRSD

- **FII V2 Payload (Post-Mate)**

  - Baselined Files

    - P321 APCU Requirements
    - P350 MPLM Requirements

  - RCNs

  - Baseline

    - PP18192 P1558 – ISS-LON Baseline 04/06/10A

- **FII V4 (Pre-Mate)**

  - RCNs

  - Release

  - Baseline

    - PS18201 F2V4 Mission Unique List 06/09/10 06/16/10
    - PS18202 FIII Mission Unique List 06/09/10 06/16/10
    - PS18TBD Adjacent Bent Pin Test 06/09/10 06/16/10

- **FII V6 (Shuttle Experiments) – None**

- **Issues / Concerns**

  - None

# STS-335 LSFR

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## Cargo Close Clearance Process

- The following Close Clearance areas have been identified as standard close clearance for MPLM flights and will require as installed measurements:
  - MPLM Scuff Plate to MPM ECD: DLSFR (06/17/10)
- Chit measurements will be performed at the PAD after payload installation

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# KSC Launch and Landing Project

## STS-335

### Launch Site Flow Review

NASA Flow Director

A. Brewer

USA Flow Manager

R. Propst

May 20, 2010

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STS-335 LSFR

J. F. Kennedy Space Center

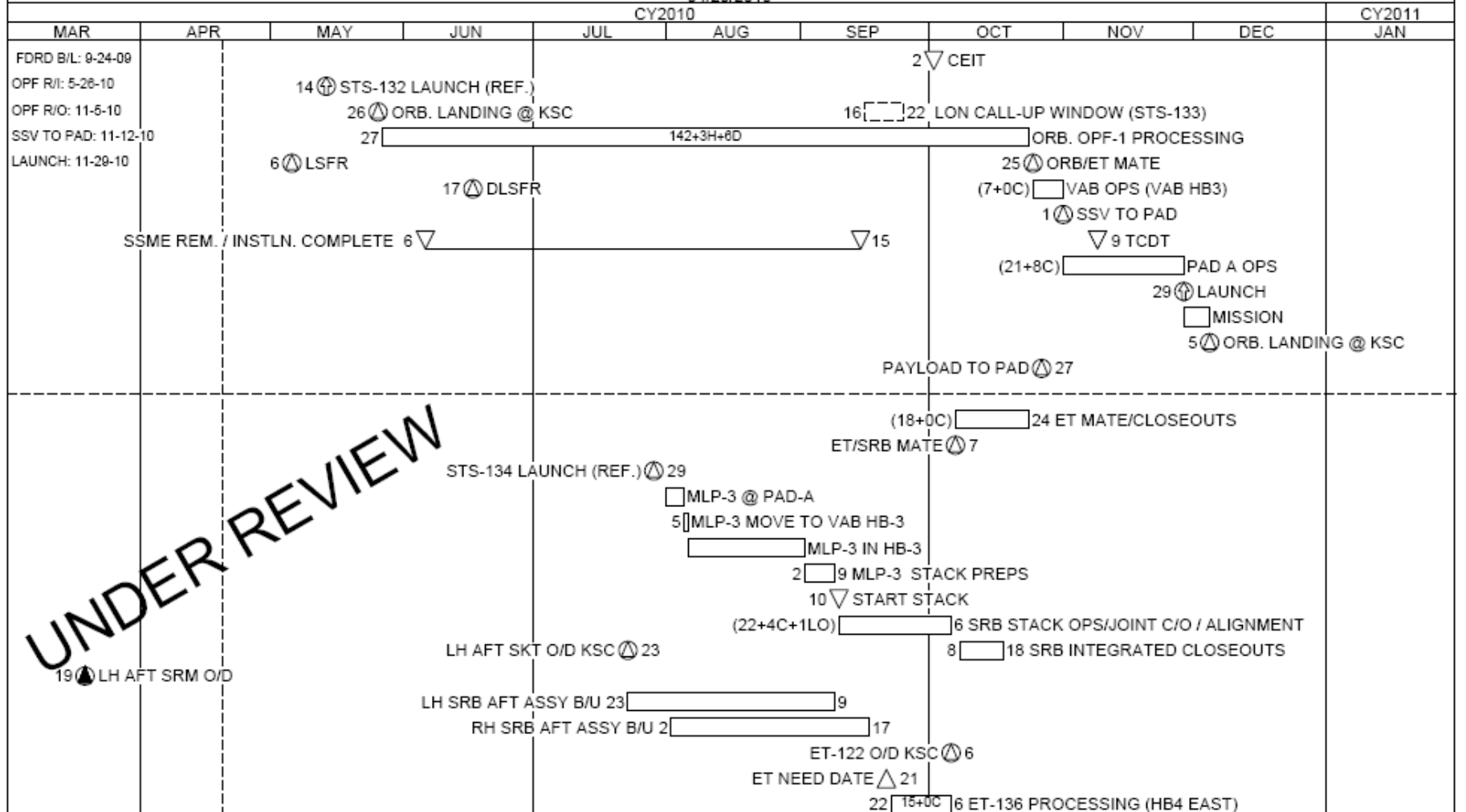


# STS-335 KSC Milestone Interface Chart

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

OV-104 / 33 / LON - MPLM  
CREW / DURATION: 4 UP - 10 DOWN / 6  
ET-122 / BI-146 / RSRM 114 / MLP-3 / PAD-A / VAB HB3

SSP APPROVED PRCB 9-24-09 (REF. CR #S042013HW)  
Status as of:  
04/20/2010



UNDER REVIEW

**THREATS:**  
 1. ET-122 DELIVERY / PROCESSING  
 2. SRB AFT SKIRT DELIVERIES

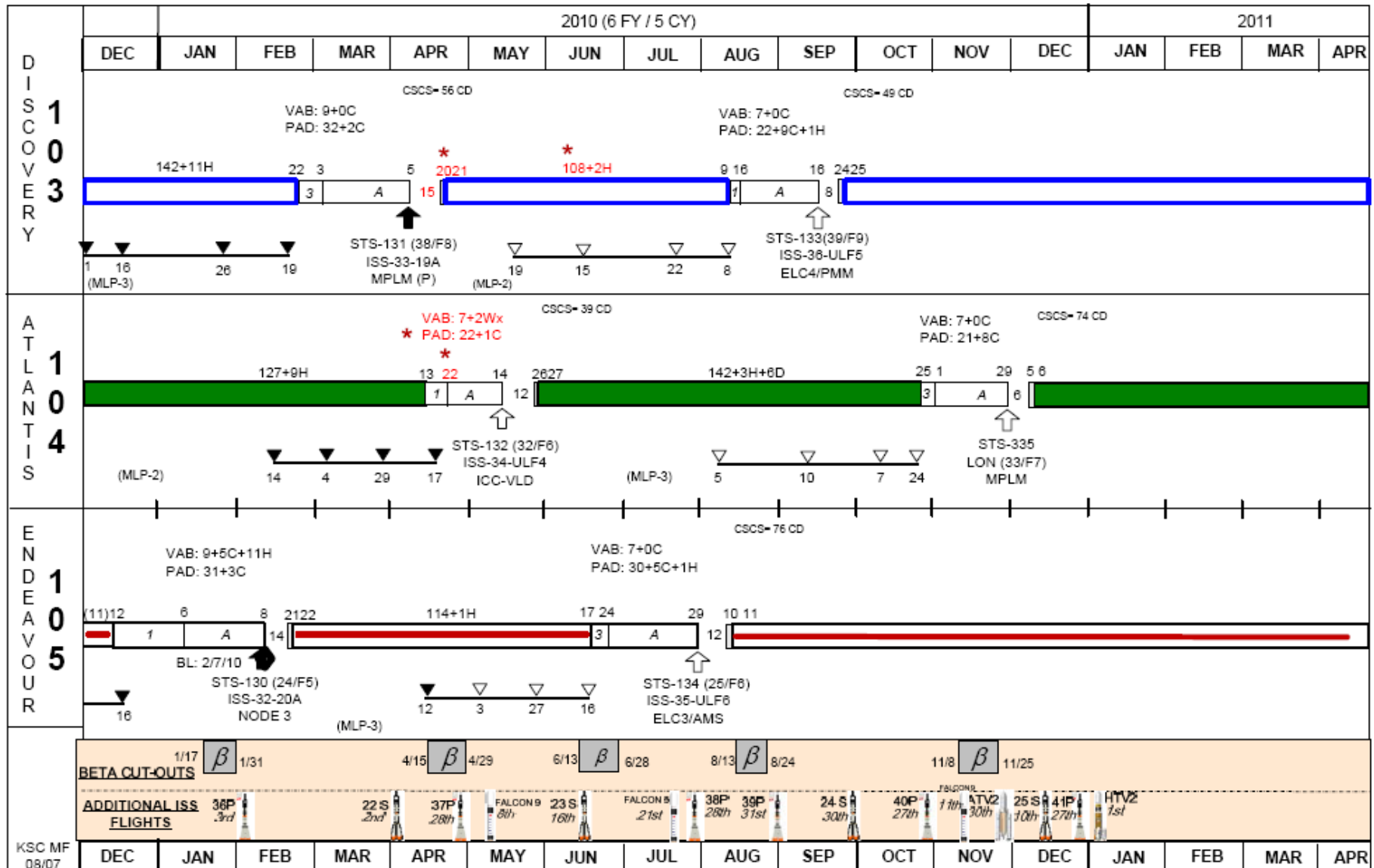
**NOTES:**  
 1. LON FOR STS-133  
 2. STS-335 REFLECTS NOMINAL PROCESSING FOR PAD FLOW

# KSC ASSESSMENT / ORB MULTI-FLOW

## SSP APPROVED MANIFEST

MANIFEST REF. 09B-9

1300 EST, 22 APR 2010



**LEGEND** H = HOLIDAY D = DRYDEN RESERVE C = PAD CONTINGENCY Wx = WEATHER OUTAGE   OPF-1   OPF-2   OPF-3   Vehicle out of service S = SOYUZ P = PROGRESS  
 CR = CREW REST DAY   DFCR OPS 1/3 VAB OPS A/B PAD OPS MILESTONE LAUNCH MLP TO VAB / START STACK / ET - SRB MATE / ET - MATE CLOSEOUTS COMPLETE

Contact: S. Wierszalowski, USA Near-Term Manifest Planning (321)861-8701

# Flight Element Processing Overview

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- **Non-Standard Processing Activities** **Presented**
- **Modification Summary** **Presented**
- **Chit Summary** **Presented**
- **OPF Flow Milestones** **Presented**
- **TPS Work Content** **Presented**
- **Issues and Concerns** **Presented**
- **Integrated Operations Summary** **Presented**



# Non-Standard Processing Activities

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- **RCC/LESS Removals and Replacement to Support WLE SPAR Corrosion Inspections**
- **Complete non-extendable OMDP Requirements, 15 of 22 completed last flow**
- **Time and cycle reviewed thru June 2011, no major issues have been identified**





# CHITS

CHIT	Title	Status
J6399	0-Gauge Protection for OV-104, Flights 31-35	Approved
J6527	FRCS Thruster Canister Stud Inspections - F5R and F5L	Approved
J6528	Putty Repair Tile Replacement for Risk Reduction	Approved
J6543	ET Ferry Flight Door Attach Fitting Inspection	Approved
J6577	Ames Gap Filler Removal And Replacement	Approved
J6589	Crew Module Contamination Sampling	Pending
J6599	Pre-Flight Citric Acid Flush	Approved
J6614	DTV MUX Bypass Switch Verification	Approved
J6626	Waste Water Sample and Urine Solids Filter Request (OV-103/OV-104/OV-105)	Pending



# Modification Work Summary

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- **Tile Attrition**
- **RCC Spar Fitting Spacer**





# STS-335 TPS Work Content

## TPS Removal Estimate

<u>Priority</u>	<u>Description</u>	<u>LSFR</u>
Mand	Deferred Tile/ Fib For 1 Flight (Minimum)	2
Mand	In-flight Tile/Blanket Damage (Estimate)	25
Mand	Estimated Putty Removals (Grindouts-Fleet Avg)	14
Mand	Operational Damage (Estimate)	10
Mand	Putty Repairs (Chit Driven)	15
Mand	OMRS Requirement V09AW0.030	1
Mand	OMRS Requirement V09AWO.040	1
15	Piano Key (Upper Body Flap Carrier Panels)	10

### BRI Replacement:

11	LET Door remaining STR Side	10
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**Projected TPS Removals TOTAL (Estimate) \*88**

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



# TPS Work Content (Additional Work)

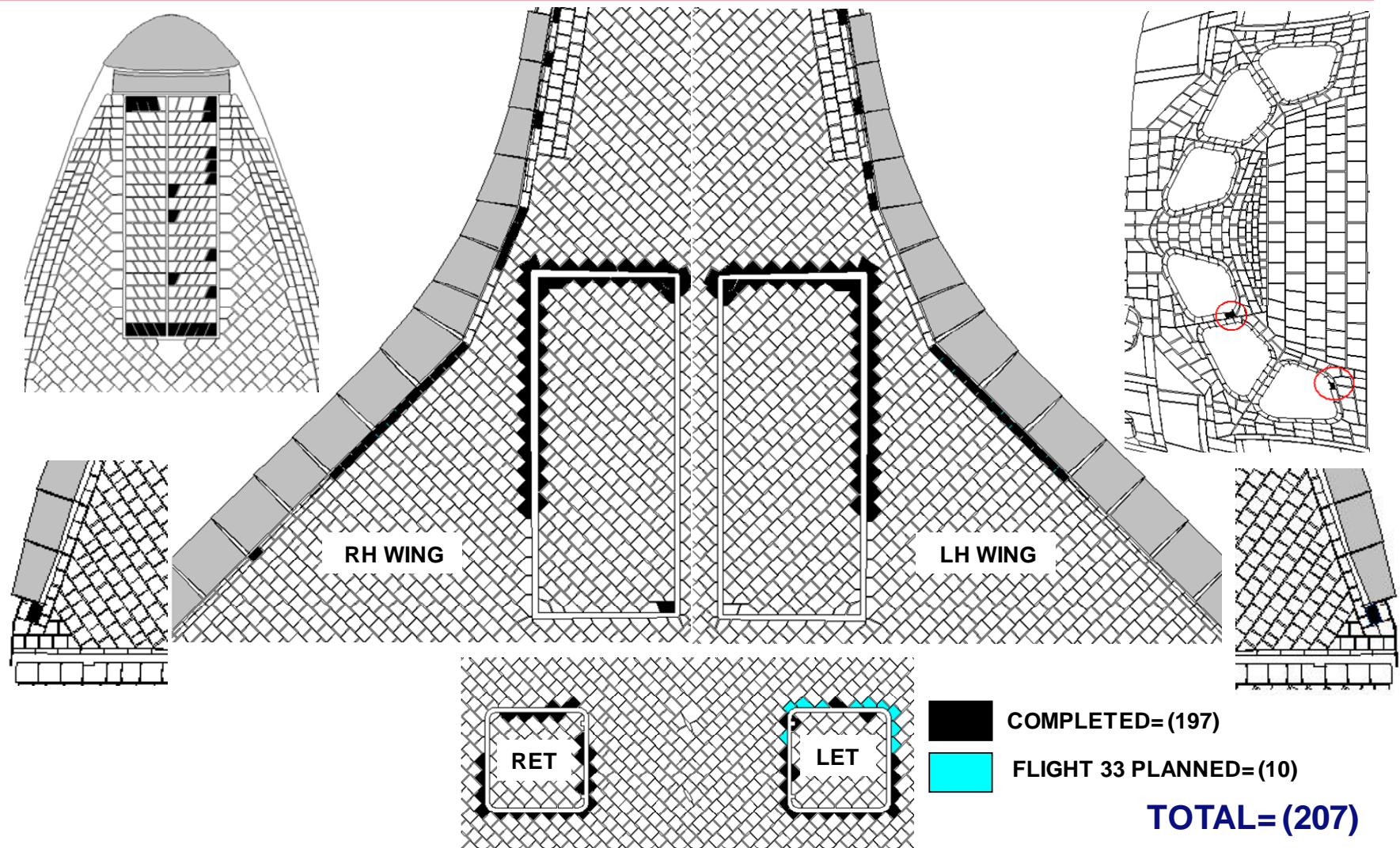
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## LSFR Planned Work:

- **Elevon Cove Inspection OMRS requirement LIB/ROB Full-Up**
  - **Remove End panels and Center panels (4-Total) Perform Borescope**
- **LESS Carrier Panel Removals**
  - **Perimeter GF Rework - LH19, RH8, RH21, RH22**
  - **WLE Corrosion Inspection – LH1 Thru 12**
  - **28 Total LESS C/P's**
- **OMRS Requirement: Re-waterproof all upper surface blankets on Flt-33**
  - **Midbody Sidewalls, PLBD Sidewalls, Upper Wings**
  - **Vertical Tail completed during Flt-32**



# BRI Planning STS-335 (Flt 33)



STS-335 LSFR  
J. F. Kennedy Space Center



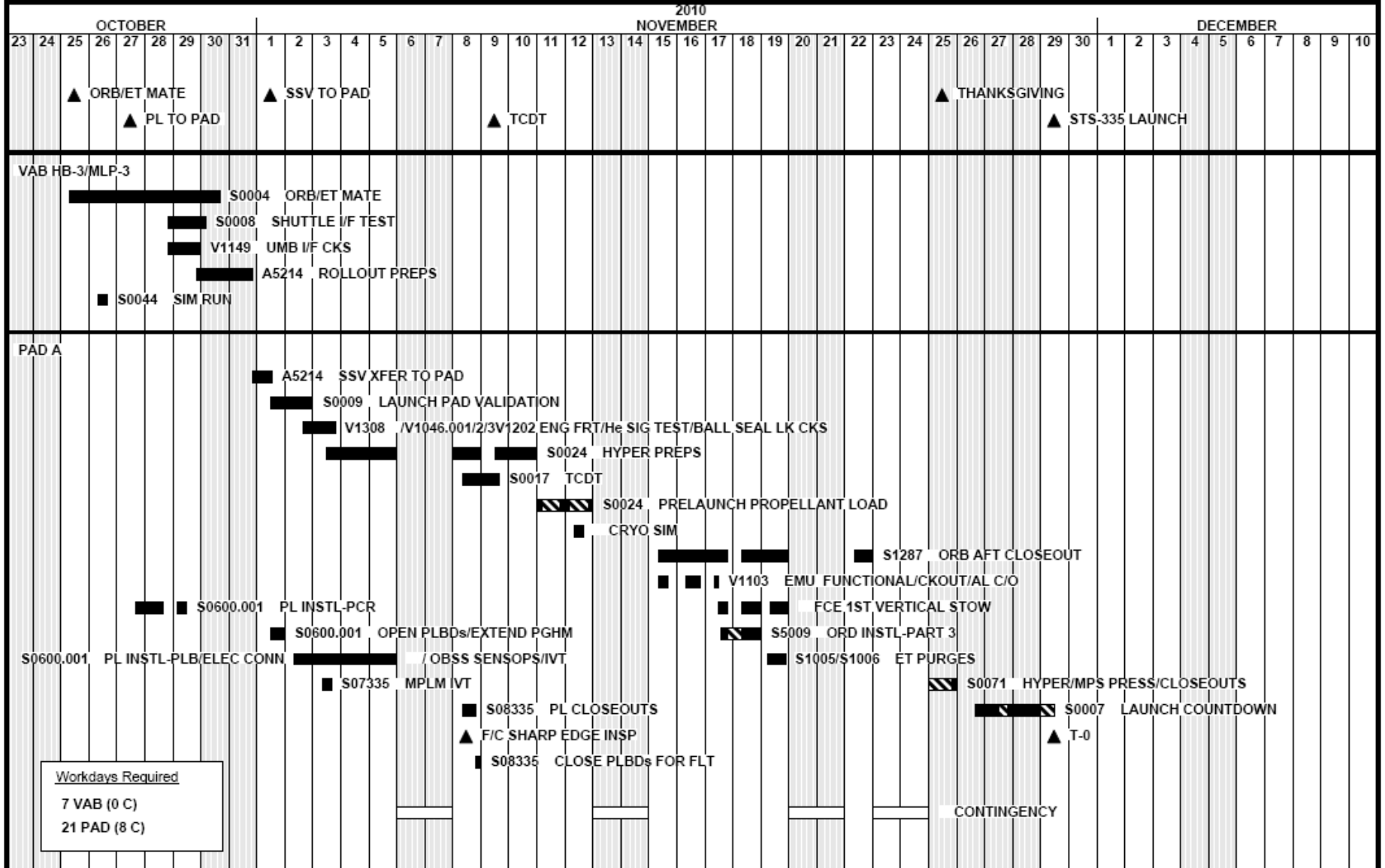
# Issues and Concerns

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- None



<b>STATUS</b>		OPR: USA - J. Taylor, INTEG FM (1-7420) NASA - A. Brewer, PH-A (1-9104)		<b>STS-335 / OV-104 LON</b> <b>Integrated Operations Assessment Summary</b> Payloads: MPLM (VERT)	
USA	NASA	<b>CONCUR</b>			
C	C				
C=Concur NC=Non-Concur					
		Creation Date: 22 OCT 09 Revision Date: Revision:			







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



## STS-335 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-20-10**

### Backup Material

### FRWG Presentation (With Minor Changes)



	Presenter <b>MO3/Phyllis Grounds</b>	
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# FO&I Backup Charts



<h2>STS-335 Requirements Status</h2>	Presenter <b>MO3/Phyllis Grounds</b>	
	Date <b>May 2010</b>	Page <b>8</b>

1. STS-335 MIP (NSTS 221558)

- Current version available on PILS: Basic + Change 1, dated 3/29/10
- Open CR's -- None
  - CR -0003 Update Rendezvous Altitude                      Closed 5/4/10
- Pending CR's:
  - TBD closures -

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# **STS-335 Flight Requirements Document (FRD) LSFR Status**

**Robert J. Reynolds**

**FRWG 5/3/10**

**PRCB 5/20/10**

# STS-335 FRD Status

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STS-335 FRD Revision 002, dated April 2, 2010: <https://sspweb.jsc.nasa.gov/efrd/>

## Closed CRs

FRD17462-335-0006 – Clarify +1 Day

## Open CRs

FRD17462-335-0007 – Update LiOH Requirements (Evaluations due 5/12/10)

## Back-up

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

# Modification Records and MECSLSI Update Summary

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MCR/ TAD NO.	TITLE	KIT / MOD RECORD & DESCRIPTION	TECH ORDER IMPACT	REMARKS
<b><u>Modifications Previously Baseline</u></b>				
11620	<b><u>WLE RCC Panel Spar Fitting Spacer Mod (LH)</u></b> Adds two rivets to the spacer on the installed rib splice #1 spar fitting on the left hand side to complete the deferred rivet installation per drawing.	<u>TCTIV1911620REF.0104.013</u> - 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
<b><u>Potential Modifications To Be Baseline</u></b>				
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	<u>030286REF.0104.0</u> - TPS – CERAMIC PLUG/INSERT REDESIGN	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>Modifications Previously Baselined</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
<b><u>Potential Modifications To Be Baselined</u></b>										
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	5/28/10	5/28/10	N/A*	N/A*	Go	6/30/10P	7/14/10P	CR 07-391001-001AD CAR 37-07-391001AD CR 07-394710-002K CAR 13-07-394710-002K	* Hardware available on site



# 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



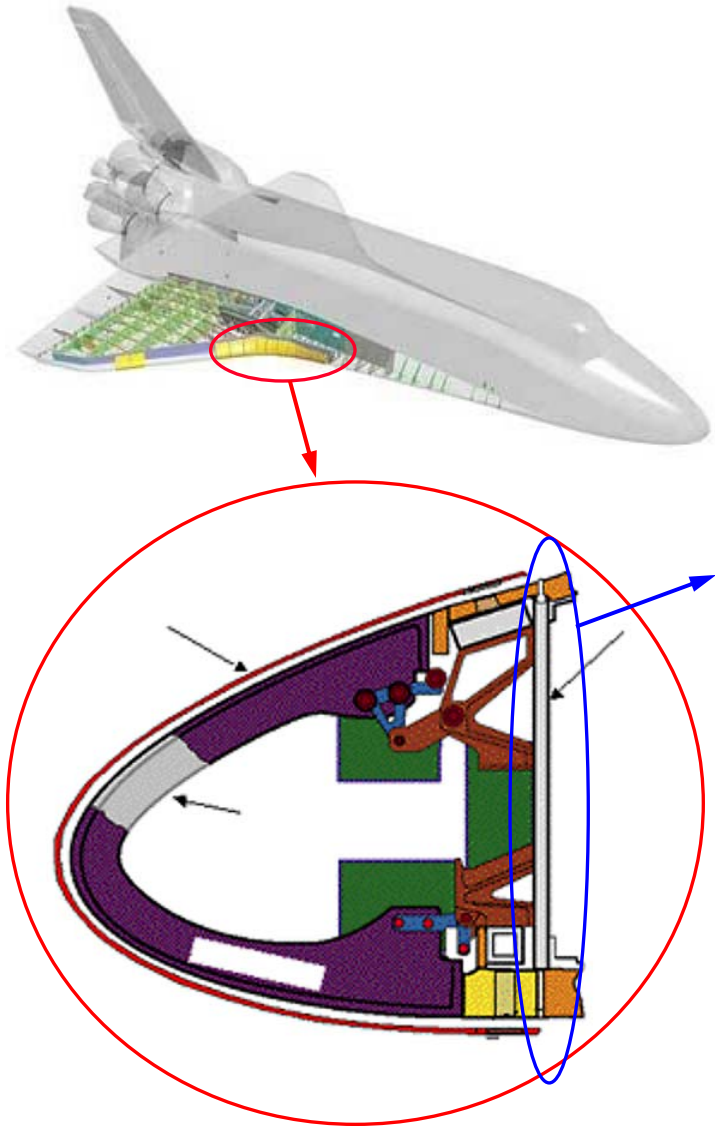
# STS-335 OV-104 Flight 33 – Information

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## Wing Leading Edge (WLE) Spar Inspection

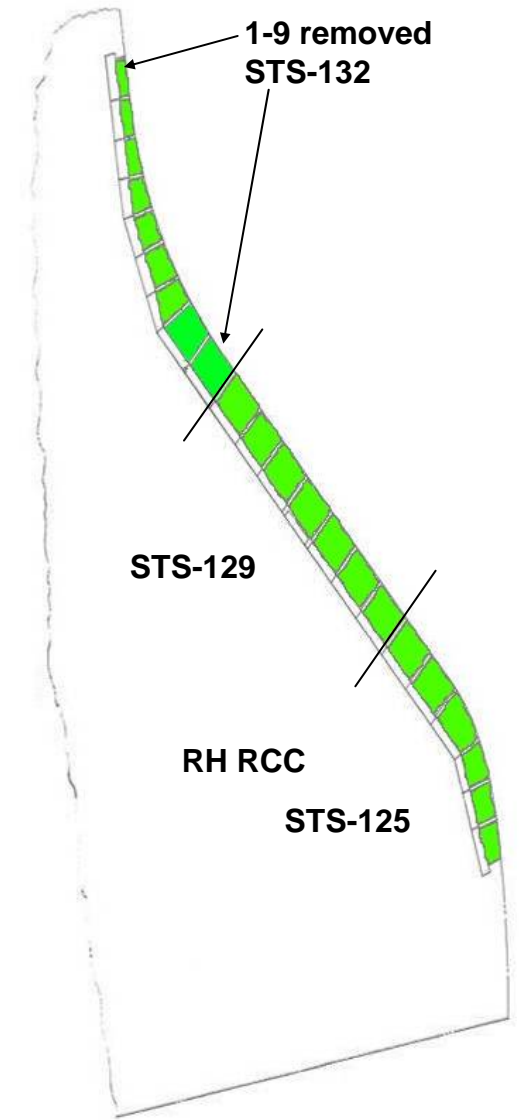
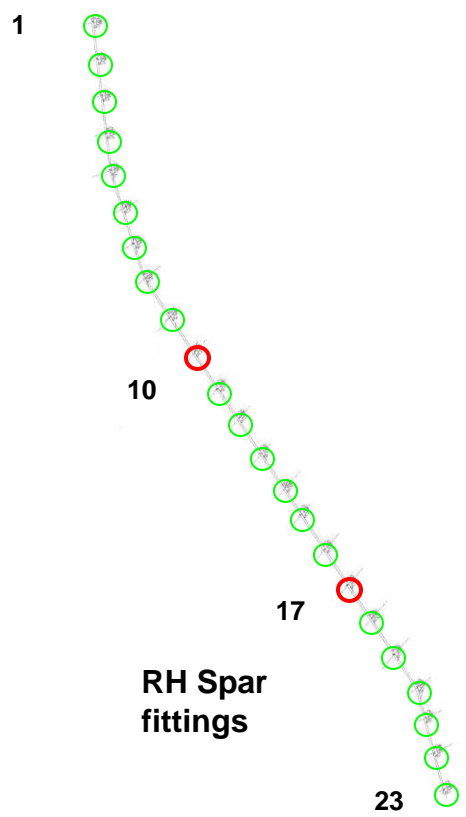
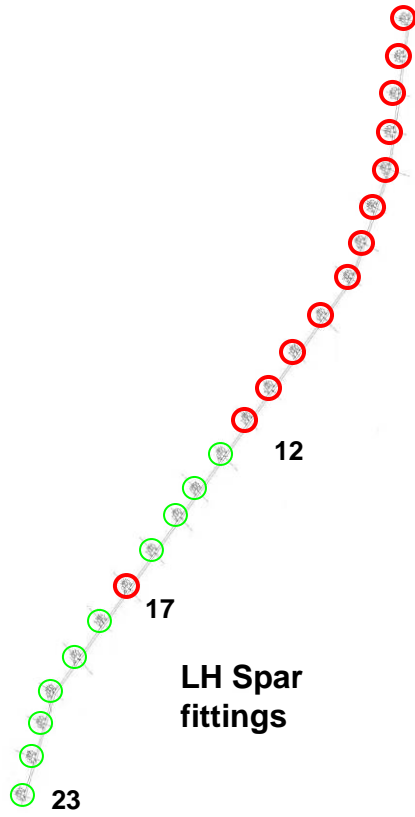
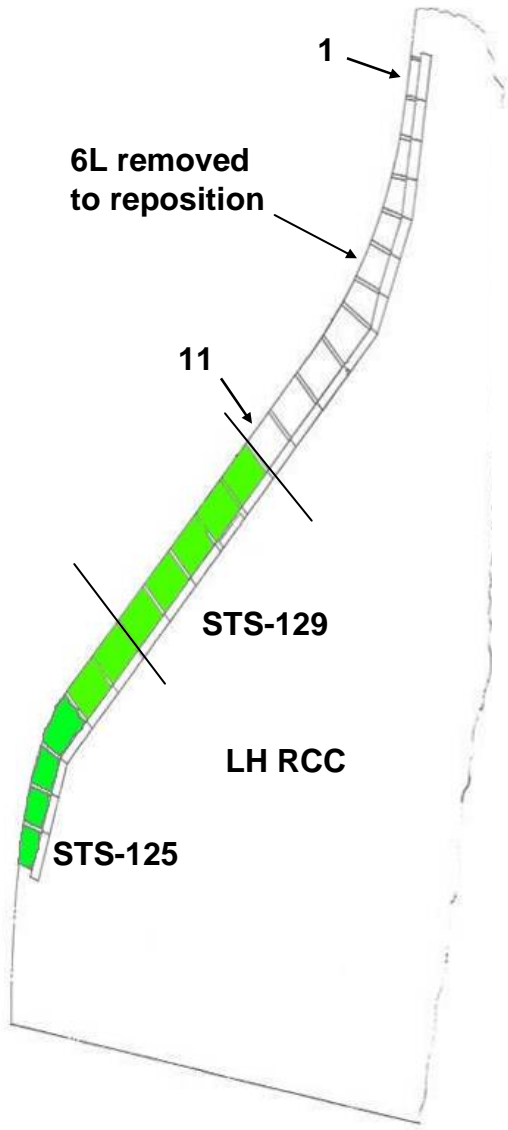
- Structural inspections of the wing leading edge spars were due prior to the next flight of OV-104, STS-132, to meet the 4½ year OMRS requirement (due date January 22, 2010)
- 12 RCC panels and required Spar fittings were removed during the STS-129 flow to perform sampling inspections – Panels 12L-16L and 10R-16R
  - No active corrosion and or no structural anomalies identified or documented
- During the current flight 32 (STS-132) flow, 9 RCC panels (1R-9R) and required Spar fittings were removed for the sampling inspections
  - No active corrosion and or no structural anomalies identified or documented
- From the areas of the inspections performed over the past three flows (~75% of the entire wing spar), the structural condition of the wing spar is very good
  - Only two small isolated locations of suspect corrosion were noted – one area was cleaned without any active corrosion noted, and one area determined active but minor and removed without need for structural repair
- 3/2/10 DPRCB approved OMRS Exception EK10769 to allow one flight deferral for continuation of detailed structural inspections of the WLE spar
  - Remaining detail inspections behind LH RCC panels 1 thru 11 and spar fittings 1 thru 11 will be performed during the flight 33 flow
  - Approval of an Exception will be requested for locations in which spar fittings were not removed (panels 17L/R, 12L & 10R)

# Introduction (photo)



- Example of Wing Spar Location (OV104 1-9 spar fitting) During flight 32 processing

# Panels and fittings removed



RCC Panels and spar fittings removed  
View looking down



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Space Shuttle Orbiter Project Office  
NASA Johnson Space Center, Houston, Texas



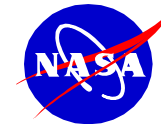
**STS-335 LSFR**  
**Flight Crew Equipment/GFE**

Presenter <b>MV6/Bill Lane</b>	
Date May 20, 2010	Page 3

**BACKUP**



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 NASA Johnson Space Center, Houston, Texas



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

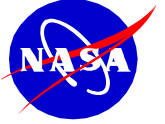
Presenter <b>MV6/Bill Lane</b>	
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Tech Order numbers are identified for reference only. Report generated 3-May-10

Hardware	Tech Order	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	1/17/07	4/26/10	C	TBD	TBD	Camera/PTU from STS-133/OV-103.	Randall Moore
B (port aft)	M072-750025-077	1/17/07	4/26/10	C	TBD	TBD	Camera/PTU from STS-133/OV-1053.	Randall Moore
C (starboard aft)	M072-750025-078	1/17/07	4/26/10	C	TBD	TBD	Camera/PTU from STS-133/OV-1053.	Randall Moore
D (starboard forward)	M072-750025-079	1/17/07	4/26/10	C	TBD	TBD	Camera from STS-133/OV-103. Requires PTU swap.	Randall Moore
Payload Ops camera	M072-340109-002	11/15/01	4/26/10	C	TBD	TBD	Camera from STS-131/OV-103.	Randall Moore
SRMS elbow camera	M072-544504-014	8/4/08	4/26/10	C	TBD	TBD	Camera from STS-133/OV-103. Requires PTU swap.	Randall Moore
SRMS wrist camera	M072-544504-008	8/4/08	4/26/10	C	TBD	TBD	Camera from STS-133/OV-103.	Randall Moore
Centerline Airlock Camera (stowed)	M072-660828-002, plus CCCD stow	3/17/99		C	TBD	TBD		Randall Moore
Lefthand Umbilical Camera (aft)	M072-705001-016	10/28/04	4/26/10	C	TBD	TBD		Randall Moore
Righthand Umbilical Camera	M072-705001-028 M072-705001-027	10/28/04 10/28/04	4/26/10	C	TBD	TBD		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
Video Processing Unit (VPU)	M072-710338-007	3/2/08		C				Larry Schmidt



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



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

Presenter <b>MV6/Bill Lane</b>	
Date May 20, 2010	Page 5

Tech Order numbers are identified for reference only. Report generated 3-May-10

Hardware	Tech Order	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 Harness	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.	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	4/18/08	4/26/10	C	TBD	TBD	Note: Qual unit is being looked at. Unit will come from STS-133.	Russell Yates

## Payload Cargo Engineering Backup Charts



# STS-335 LSFR

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## Cargo Integration Hardware Status

- Open Work ECD
  - FRED Assessment 04/23/10A
- Delivery Status
  - All required CIH has been delivered
  - No new hardware required for this flight
- Issues/Concerns
  - None

# STS-335 LSFR

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## Annex 1: ISS-LON-NSTS 21558-A01

<u>Activity</u>	<u>ECD</u>
• Baselined	02/19/10
• <u>Post-CIR Update</u>	
– CR approval	03/05/10
• <u>L-4 M Update</u>	
– Customer submittal	07/08/10
– CR approval	07/29/10
• <u>L-1 M Update</u>	
– Customer Submittal	10/22/10
– CR Approval	10/29/10
– Final weight log	11/15/10

# STS-335 LSFR

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## Time-Critical Ground Handling Requirements

- | <b>• Activity</b>                  | <b><u>ECD</u></b> |
|------------------------------------|-------------------|
| <b>• Customer Submittal (L-4M)</b> | <b>07/29/10</b>   |
| <b>• Release for review (L-3M)</b> | <b>08/30/10</b>   |
| <b>• Baseline (L-60 Days)</b>      | <b>09/29/10</b>   |
| <b>• Issues / Concerns</b>         |                   |
| <b>• None</b>                      |                   |

# STS-335 LSFR

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## Payload ICDs/PIRNs

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

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# BACKUP

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STS-335 LSFR  
J. F. Kennedy Space Center



# CONFIGURATION / Facilities

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- **OV-104: Flight 33**
- **OMS Pods: LP04 / RP01**
- **ET: 122**
- **SRB: BI-145/RSRM 114**
- **SSME: TBD (#1), TBD (#2), TBD (#3)**
- **Payload: LON MPLM**
- **Flight Software: OI-34**
- **Firing Room: 4**
- **OPF Bay: 1**
- **MLP: 3**
- **VAB High Bay: 3**
- **Pad: A**



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

**Tom Stansel**

**USA FSW**

**PRCB 05/20/2010**

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

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- **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) LSFR (FSW) ...

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- **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

# STS-335 (LON-MPLM) LSFR (FSW) ...

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- **Products**

- **STS-335/OV104 LON Base delivery schedule (available to field)**

**FPSB**

- **Shuttle Data Tape**

**June 14, 2010**

- **Mass Memory Unit**

**July 9, 2010**

- **This is a LON system to support STS-134**

- **Also contains requirement for MPLM**

- **Full FSW products will be built and delivered**

- **Open Items**

- **None**

- **Concerns/Issues**

- **No issues or concerns with STS-335 at this time**



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

**Bridget Ziegelaar  
EVA Office  
Johnson Space Center  
May 20, 2010**

- **Forward Bulkhead PFR**
  - Portable Foot Restraint, SED33105308-307 to be installed on forward bulkhead
  - Released T.O. 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 – no contents identified**
  - Requirement to manifest starboard TSA may be deleted pending SSP direction
- **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 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-06-10**

### Backup Material

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



## STS-335 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-06-10**

### Overview

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

\* Backup material included

# STS-335 Launch Site Flow Review

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J.F. KENNEDY SPACE CENTER

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

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

04/27/2010

# Planned Processing Milestones



J.F. KENNEDY SPACE CENTER

## PRE-SHUTTLE INTEGRATION ACTIVITIES

### Space Station Processing Facility

- ECLSS tests Complete
- Rack Installation 8/2-9/1
- Front side stowage 9/1-9/16
- CBM operations 9/7-9/27
- AEC stowage 9/22-10/11
- MPLM closeouts 10/8-10/29
- Hatch activities 10/28-11/9
- Payload to pad (U/R) 11/11 (L-17)

04/27/2010



# 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 11/29/10

04/27/2010

# KSC/ISS Processing Summary

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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.**

04/27/2010



## STS-335 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-06-10**

### SSP System Drawings

The Drawings Baseline Will Be Released By PRCB S115315 on TBD

- V072-000001-294 (Rev. TBD) Space Shuttle System (Rel. TBD)
  - V072-200215-001 (Rev. A) Mission Equipment Cargo Support (Rel. 04-22-10)
  - SGD32104458-401 (Rev. TBD) Crew Compartment Configuration (Rel. TBD)
    - 402 Descent
  - V070-000001-004 Orbiter General Assembly
    - V070-410100-018 SSME Installation
  - 10100-0061-173 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 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-06-10**

### SSP System Drawings – (Continued)

#### Ferry Configuration

- V072-000001-295 (Rev. TBD) Space Shuttle System Drawing (Rel. TBD)
  - V072-200215-002 (Rev. NC) Mission Equipment Cargo Support (Rel. 02-02-10)
  - SGD321004458-001 (Rev. TBD) Crew Compartment Configuration (Rel. TBD)
  - V072-300055-025 (Rev. BU) Ferry Flight Configuration (Rel. 05-11-09)

**SCA 911**



# STS-335 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-06-10**

## Modification Impact Report

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



## STS-335 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-06-10**

### 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

11:12 DATE 04/27/2010

PRCB	STAT	ITEM/KIT NUMBER	SEQ	
MCR/ECP	PRIO	TCTI NUMBER	EISN NO.	DESCRIPTION / GENERAL REMARKS
AUTHDATE	SITE			
	FLT			
S-J6543	AUTH	J6543	0104 002	ET FERRY FLIGHT DOOR ATTACH FITTING INSPECTION
2009-09-17	MAND		SPAR	NDE OF FERRY FLT DOOR ATTACH FITTINGS WILL ONLY BE REQ'D
	KSC			FOLLOWING A F/FLT BACK TO KSC. F/FLT ONLY.
	033			
S-J6577	AUTH	J6577	0104 001	AMES GAP FILLER REMOVAL AND REPLACEMENT
2010-01-29	MAND		SPAR	GAP FILLER REPLACEMENTS WILL BE PERF'D OVER REMAIN ING
	KSC			MANIFESTED FLTS BASED ON PROG LSFR PRIORITIES.
	033			
S-J6599	AUTH	J6599	0104 000	PRE-FLIGHT CITRIC ACID FLUSH
2010-03-05	MAND		SPAR	REQUESTED CITRIC ACID FLUSH WILL BE INTEGRATED INTO PLANNED
	KSC			POST FLT WASTE TANK SERVICING PROCESS
	033			
S-J6614	AUTH	J6614	0104 000	DTV MUX BYPASS SWITCH VERIFICATION
2010-04-13	MAND		SPAR	DIGITAL TV MULTIPLEXER BYPASS SWITCH VERIFICATION IS
	KSC			INTEGRATED WITH PLANNED OPF COM TESTING.
	033			
011620	AUTH	TCTIV1911620REF	0104 013	ADDITION OF SPACERS TO RCC SPAR FITTING ANGLE INSTL (LH)
S115335				PARTIAL DEFRL FROM FLT-27 (SEQ 10), (RH SEQ 11)
2010-03-31	KSC			
	033			

TOTAL MODS = 5

Approved STS-135 OMRS Waivers and Exceptions

WVR EXC	ELEMENT PROJECT	PRCBD NUMBER WAIVER# (STAT) (INITIAL STS)	ABSTRACT RAS REQUIREMENTS	EISN PAYLOAD	STS BEG END
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
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 WK10503 (A)	OMRSD WAIVER REQUEST - RRCS OX TANKOUTLET TRANSDUCER ACCURACY (WK 10503)	0021	034 042
	SRB	S053293WA	LH FWD AND RH MID SRB	BI	099 999



WK03886 (A) JOINT TEMP SENSORS  
(STS-103)

	Waivers	Except	Deviat	Cannib	Total
Total Extracted	6	2	0	0	8

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	

Prepared by: Jeff McRoberts  
USA CM/CVAS  
861-2505

04/27/2010

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)	