



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



STS-119 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-24-08**

Program Freeze Point

PRCB Presentation

S115119C



STS-119 Delta Launch Site Flow Review

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Baseline the STS-119 Mission Specific Requirements and Flow Plans.

The STS-119 Integrated Launch Site Requirements were established by PRCBD S115119AR1 dated 05-15-08. This CR and the Associated Data Package were reviewed at the 07-21-08 FRWG.

Flight Management*

Orbiter Engineering*

SSME

Shuttle Processing*

Requesting Approval

Requesting Approval

Status in Back Up

MO3/USA-PI

USA-OE

MP21

PH-A

KSC Integration

Flight Software

Orbiter GFE

EVA

Payload/Cargo Engineering

MK-SIO

USA-FSW

MV5

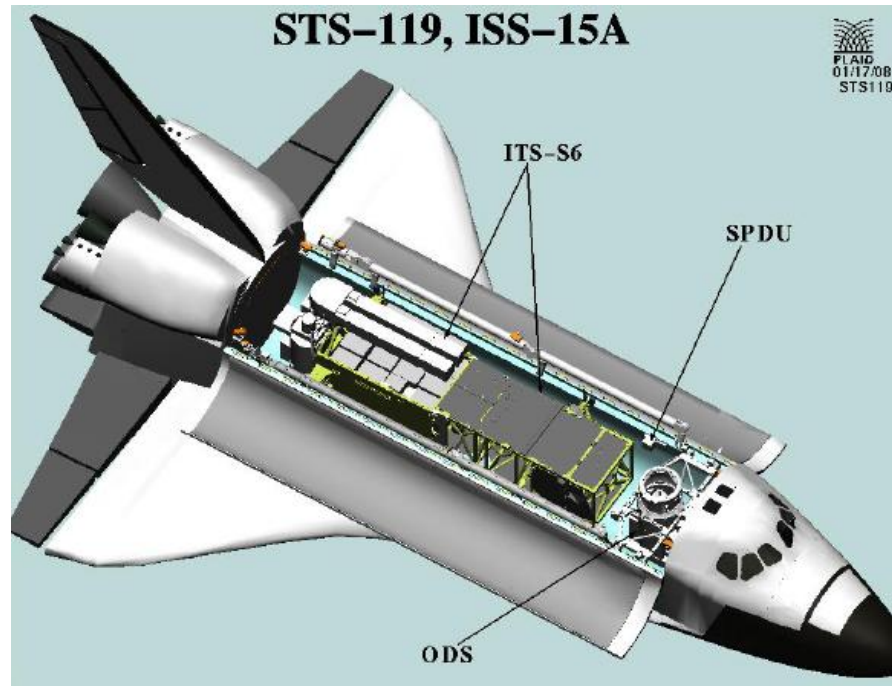
XA

USA-PI

No Status Change from LSFR

KSC ISS and Payload Processing

UB-R3



STS-119 (ISS-15A)
Delta Launch Site Flow Review (DLSFR)
Mission Requirements Status
July 24, 2008



**STS-119 DELTA LSFR
 MISSION REQUIREMENTS STATUS**

Presenter Todd Hellner
Date JULY 24, 2008

LAUNCH

02/12/09
 39A/ MLP2
 CREW SIZE: 7 UP / 7 DN (Rotation)

ORBIT

51.6 DEG
 122 NM
 DIRECT INSERTION
 DURATION: 14 + 1 + 2 DAYS

CONFIGURATION

OV-103 (36)
 LP01;RP03
 ET-130
 BI-137
 RSRM-105
 * *PROPOSED* SSME's (1) 2048 (2) 2051 (3) 2058
 OI-33
 SRMS,ODS,OBSS,SSPTS

CONSUMABLES

CRYO TANK SETS	5 (OFFLOAD 300 lbs)
GN2 TANKS	6 (OFFLOAD 66 lbs)
FWD RCS	1912# (OFFLOAD)
AFT RCS	4970# (FULL)
OMS	22760# (FULL)

PAYLOAD

ISS 15A (S6)	ISS 15A
	MAUI
	SEITE
	SIMPLEX

LANDING

Nominal/RTLS	KSC
TAL	ZARAGOZA
ALT. TAL	MORON & ISTRES
SCA	911

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

- **CURRENT BASELINED APM (07/22/08) IS + 878 LBS, IPT PROJECTED APM + 517 LBS**
- **ORBITER DOWNWEIGHT/CG'S & FERRY MASS PROPERTIES ALL WITHIN LIMITS**

STS-119 Delta LSFR

OV-103 FLIGHT 36

Belinda Soublet

USA Orbiter Element

July 24, 2008

STS-119, OV-103 Flight 36 – Orbiter DLSFR Updates

No New Orbiter Modifications To Be Baselined at DLSFR for OV-103 Flight 36

TPS Priorities Update

Authorization Requested for MECSLSI and CCCD Updates for STS-119 Orbiter Mods

- Incorporate updates to CCCD and V072-200198 (OV-103 Flight 36)

Backup

- **Potential Modifications**
- **Potential Modification Details**
- **Updates to Previously Baselined Mods**
 - Engineering, Hardware and Certification Status
 - Mod Record and MECSLSI Updates

TPS Priorities

- **Mandatory**
 - Flight damage, OMRS Rqmts/Chits, LRU access, & deferred work
 - **Deferred work may be redeferred with acceptable inspection**
 - Boundary Layer Transition Modification (*Scheduled OV-103 flt 36 only*)
 - Continue G/F R & R on a best effort basis - zones 2B subset
 - **Highest Priority Putty Repairs – Worst case masses/DTA – 6 Tile – was “9A” priority**
 - **Prioritized Opportunity**
1. *1 thru 3 complete on all vehicles*
 4. **BRI-18 Tile - STR side of ET Doors Aft & Outboard (20 Tile)**
 5. **BRI-18 Tile – LESS Carrier Panels 8-10 (24) (OV-103 & OV-104 Only)**
 6. **BRI-18 Tile – STR side of ET Doors Inboard side – AFT 4 Tiles (8 Tile)**
 7. **Inboard Elevon “Hub” Tile Modification – (4 Tiles)**
 8. **I/B Elevon 9lb/90 SIP Upgrade to FRCI-12 – 34 Tiles (17/side) AFT to FWD**
 9. **O/B Elevon 9lb/90 SIP Upgrade to FRCI-12 – 6 Tiles (3/side)**

TPS Priorities Continued

10. Structural Corrosion Sampling plan

11. MLGD – Outboard Middle 1/3 - (6 Door/6 STR)

12. MLGD - Outboard AFT 1/3 (1/3 left) 6/door/6 str)- 24 Tile

13. Putty Repairs – 2nd subset of large mass repairs – 12 Tile

14. Nose Area 9lb/90 SIP Upgrade to FRCI-12 – 14* Tiles (7/side) (*103 16 tiles, *thruster*)

15. Base Heat Shield 9lb/90 SIP Upgrade to FRCI-12 – 42 Tiles (32/stinger, 10/Box Attach point)

16. Gap fillers in Subset 2B (Line across MLGD edge)

17. BRI-18 Tile – Remaining MLGD (Top Priority) / LESS carrier panels/NLGD

1. MLGD (Inboard, forward edge working to AFT door edge)
2. LESS - panels 8, 9, 10, 7, 6, 5, 4, 3, 2, 1, 11, 12, 13 (in that order)
3. NLGD (attrition – do leading edge first)

18. Mod work (WLE sneak flow, WLE Horsecollar Gap Fillers,)

19. MADS Instrumentation Failures (104 & 105 L/H OMS Pod)(*place holder*)

20. Remaining Gap Fillers & Window BRI-18

1. Windows 2, 3, 4, & 5 Upper Carrier Panels (top priority)

Current Vehicle Status - completed installations

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	0 (20plan)
5. BRI-18 Tile – LESS Carrier Panels 8-10	24	complete	6 (I/W18)	2
6. BRI-18 Tile – STR side of ET Doors I/B	8	1	1	0 (8plan)
7. Inboard Elevon “Hub” Tile Mod	4	0	2	complete
8. I/B Elevon 9lb/90 SIP	34	2	5	0
9. O/B Elevon 9lb/90 SIP	6	4	3	0
10. Structural Corrosion Sampling Plan	25 Zones	13	8	12
11. MLGD – Outboard Middle 1/3	24	0	0	3
12. MLGD - Outboard AFT 1/3	24	0	0	1
13. 2 nd Subset Putty Repair Removals	12/TBD/TBD	0	0	0
14. Nose Area 9lb/90 SIP	14 (16 ^{OV103})	1	0	0
15. Base Heat Shield 9lb/90 SIP	42	7	1 (I/W14)	11 (I/W 3)
16. Gap fillers in Subset 2B	5 Zones	2	1	0
17. BRI-18 Tile – Remaining MLGD (Top Priority) / LESS carrier panels/NLGD	MLGD 100 NLGD 123 LESS 66	MLGD 0 NLGD 11 LESS 7	MLGD 1 NLGD 19 LESS 2	MLGD 0 NLGD 26 LESS 12
18. Mod work LESS internal	44 locations	37	25 (I/W14)	complete
20. Remaining Gap Fillers & Window BRI-18	124	2	2	28

Discovery STS-119

Delta Launch Site Flow Review

Space Shuttle Main Engine

SSME - KSC
Paul Brzeski
(321) 861-4064

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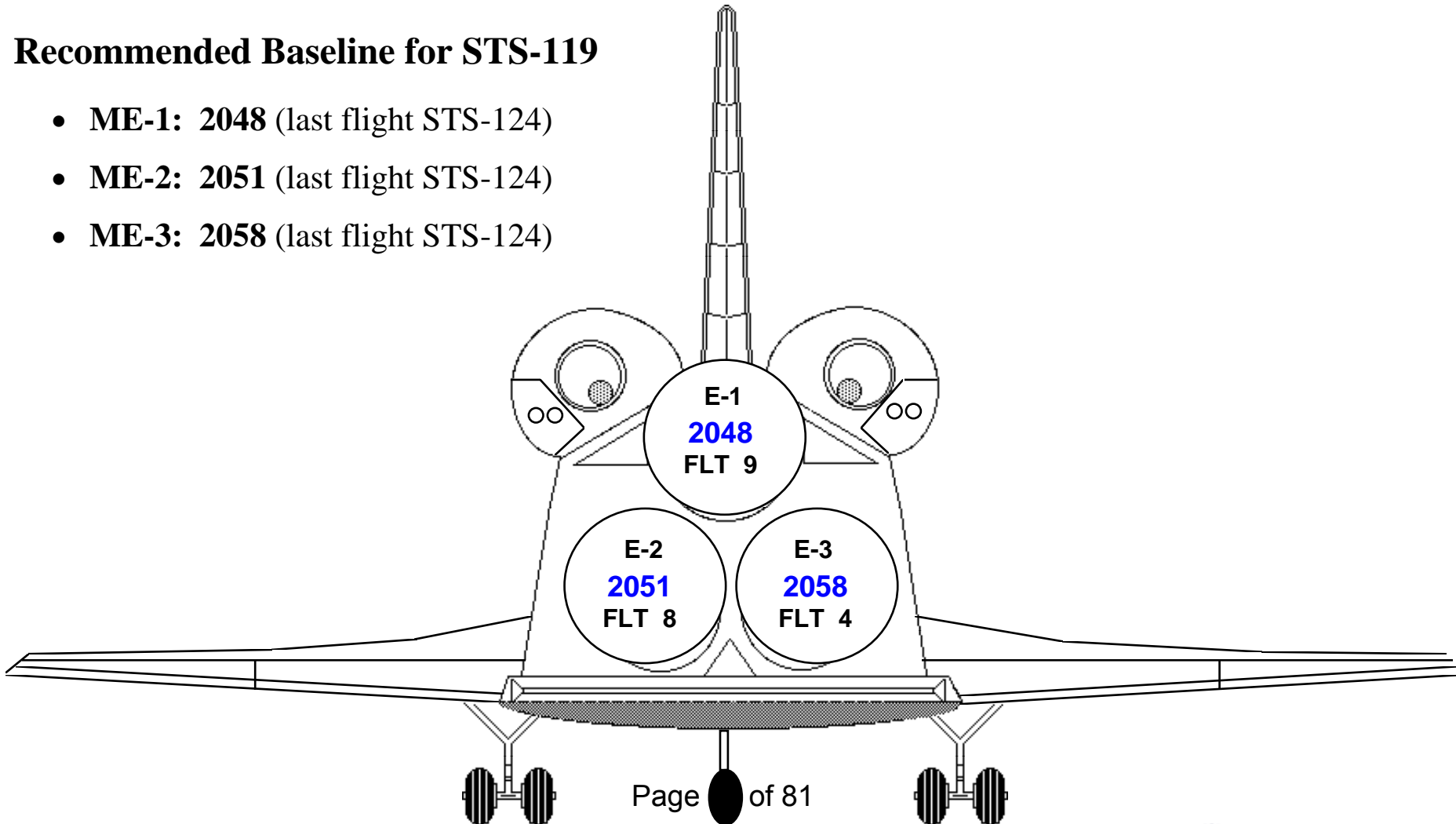


STS-119 Delta Launch Site Flow Review

SSME Allocations / Locations

Recommended Baseline for STS-119

- **ME-1: 2048** (last flight STS-124)
- **ME-2: 2051** (last flight STS-124)
- **ME-3: 2058** (last flight STS-124)





STS-119 Delta Launch Site Flow Review

SSME Planned Modifications

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

ECP	Title	Engine(s)	Kit Drawing	Weight Impact	SPARs / CRs	Status
1527	Liquid Air Insulation Removal & Replacement Time Cycle Extended (from 1 flight only to inspection)	2048 2051 2058	N/A	0 lbs	N/A	Spec and OMRSD updates complete.



STS-119 Delta Launch Site Flow Review

Rocketdyne Action Requests (RAR)

RAR	Title	Engine(s)	SPARs / CRs	Status
KLO-1621	Allocate LPOTP 2425 to Engine 2048.	2048	N/A	Pending postflight STS-124 pump removal.
KLO-1622	Allocate LPOTP 2528 to Engine 2058.	2058	N/A	Pending postflight STS-124 pump removal.

STS-119

Delta Launch Site Flow Review

July 24, 2008

Agenda

- Multi-Flow Assessment S.Stilson / NASA
- Milestone Interface Chart S. Stilson / NASA
- Flight Element Processing W.Bingham / USA



Multi Flow

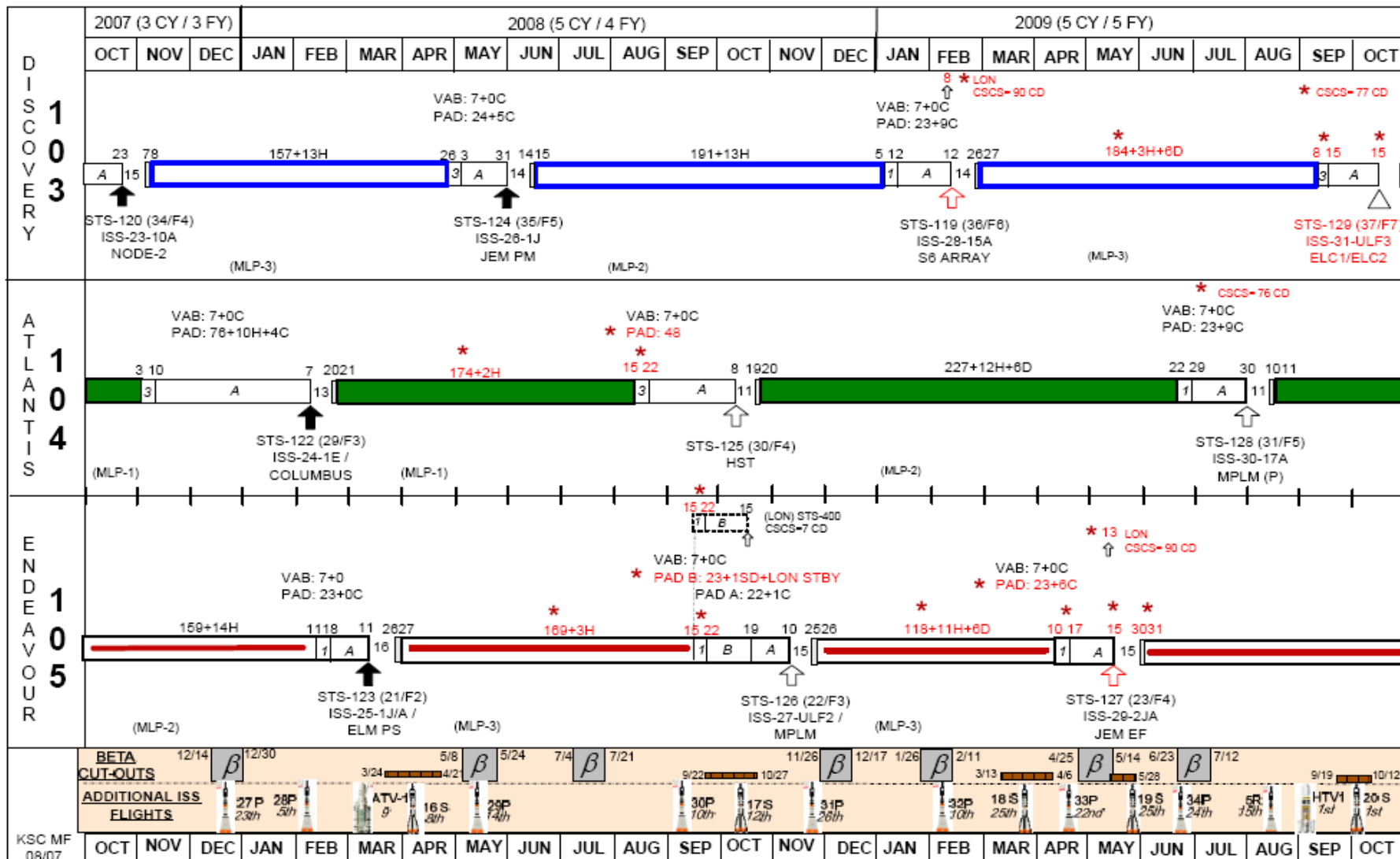
S. Stilson

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KSC ASSESSMENT / ORB MULTI-FLOW

SSP APPROVED MANIFEST (REF. 08A-39)

1300 EDT, 17 JUL 2008



LEGEND
 H = HOLIDAY D = DRYDEN RESERVE C = PAD CONTINGENCY [Green Box] = OPF-1 [Red Box] = OPF-2 [Blue Box] = OPF-3 [Hatched Box] = Vehicle out of service S = SOYUZ P = PROGRESS
 [Hatched Box] = DFCRC OPS 1/3 = VAB OPS A/B = PAD OPS [Triangle] = MILESTONE [Up Arrow] = LAUNCH

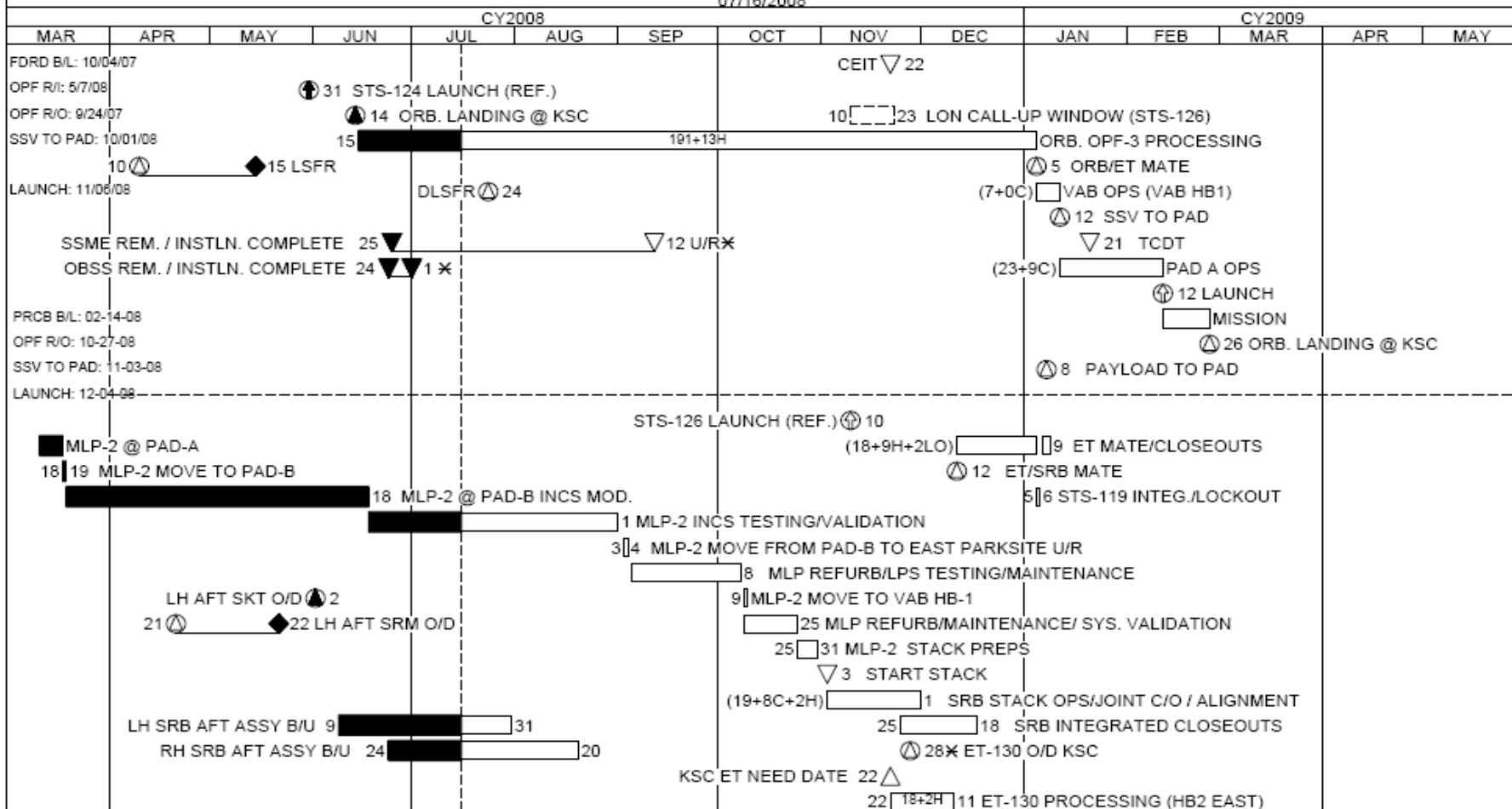
Contact: S. Wierszalowski, USA Near-Term Manifest Planning (321)861-8701

STS-119 KSC Milestone Interface Chart

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

OV-103 / 36 / ISS-28-15A / S6 ARRAY
CREW / DURATION: 7 / 14
ET-130 / BI-137 / RSRM 105 / MLP-2 / PAD-A / VAB HB1

SSP APPROVED MANIFEST 7/3/08 (REF. CR #S042013HK)
Status as of:
07/16/2008



THREATS:
 1. ET DELIVERY
 2. 3 DAYS OF PARALLEL ET CLOSEOUTS WITH ORBITER MATE OPS.

NOTES:
 1. TWENTY-EIGHTH ISS/SSP FLIGHT
 2. LAUNCH DATE WOULD BE 2/08/09 TO SUPPORT LON FOR STS-126 IF CALLED UP.

Flight Element Processing

W. Bingham



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
- Backup
 - Stoplight Chart Not Presented



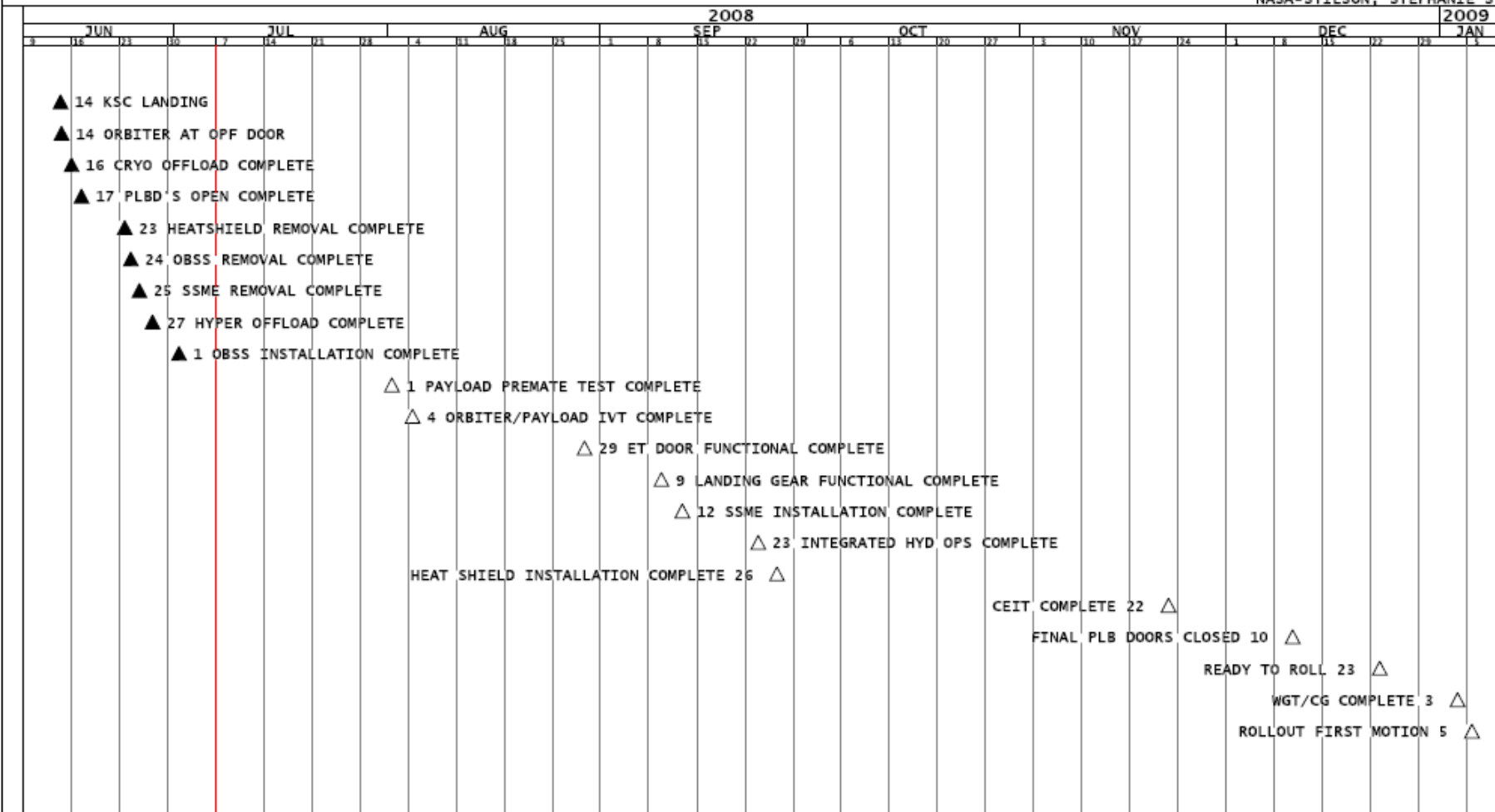
STATUS

USA	NASA
C	C
C=Concur	NC=NOT-concur

STS-119/OV-103 OPF FLOW MILESTONES
 DOWN PAYLOAD: ISS-26-1J/ UP PAYLOAD: ISS-28-15A

Creation Date: 3-MAR-2008
 Revision Date: 1-JUL-2008
 Revision :F

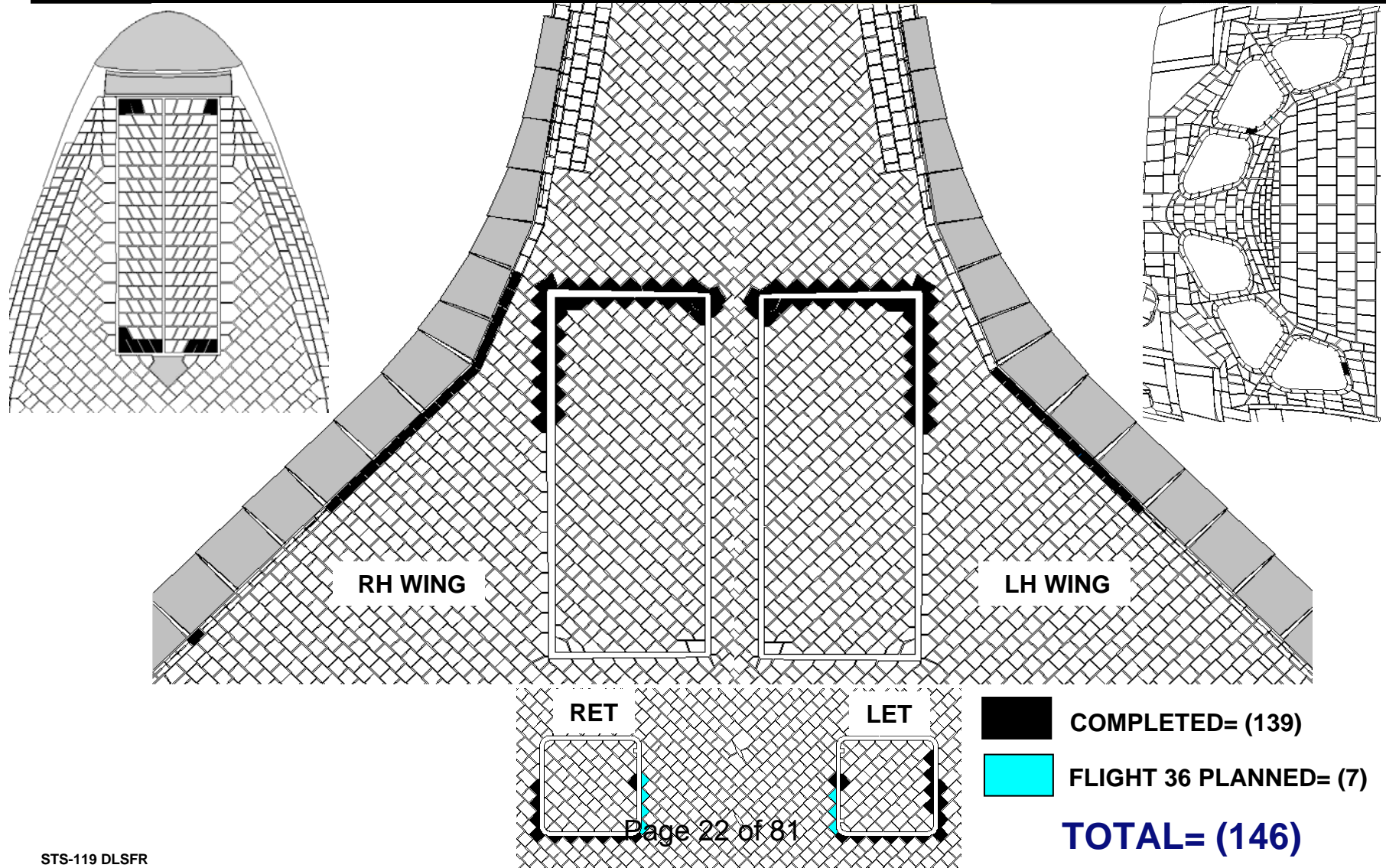
OPR:USA-BINGHAM, WAYNE W
 NASA-STILSON, STEPHANIE S



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

STATUS DATE: 7-JUL-2008:1 PLOT DATE: 8-JUL-2008, 8.18 am NETWORK: OPF119.571 CONTACT: B. COREY ,1-8334 OPF BAY-3 EXE:CUSOPFSU.27

BRI PLAN FOR STS-119



STS-119 (DLSFR) Cavity Estimate

<u>Priority</u>	<u>Description</u>	<u>LSFR</u>	<u>DLSFR</u>
Mand	Deferred Tile/Fib for 1-Flight	22	16
Mand	In-Flight Tile/Fib Damage	65*	20
Mand	Putty Repairs/Grindouts	25*	10
Mand	Insert Inspections	2*	2
Mand	Operational (Adj Ops,C/P Ops,Veh Suppt)	30*	30
Mand	BLT Mod	23	22**
Mand	Star Tracker (IPR)	0	5
1-5	TPS Priorities	Complete	Complete
6	ET Door Structure-Inboard Side	7	7
7	Hub Tile Mod	0	6
8	I/B 9LB/.090 SIP Tile Inspection	2	32
9	O/B 9LB/.090 SIP Tile Inspection	6**	2
TPS Removal TOTAL (* Estimate)		182	152

****Recording error.**

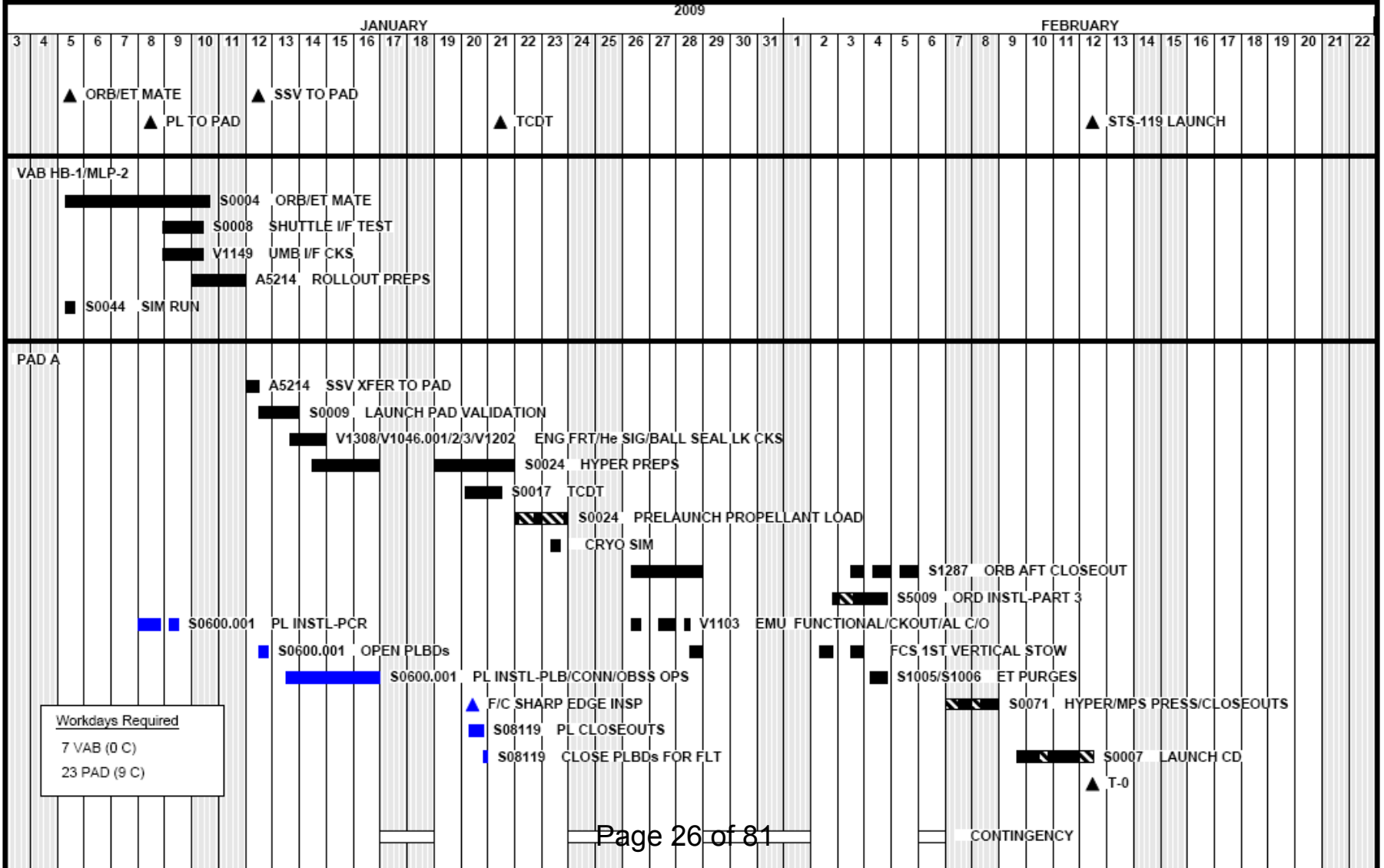
Significant Processing Deltas

- Major Components Removal/Replacements
 - Russian Actuator Change Out
 - Body Flap PDU R/R
 - 2 ASA'S/2ATVC's - complete
 - Removed RCC'S For Wing Leading Edge Corrosion Inspection
 - E T Door PDU R/R (Potential)
- MODS
 - 30010 Intertia Reel Mod For Lightweight Crew Seats
 - 30091 Boundary Layer Transition (BLT) Light DTO

Issues and Concerns

- Window Fastener Modification (Windows 1/5/6)

STATUS		OPR: USA - J. Taylor, INTEG FM (1-7420) NASA - D. Lyons, PH-A2 (1-9221)		<h1>STS-119 / OV-103</h1> <h2>Integrated Operations Assessment Summary</h2> Payloads: ISS-28-15A S6 ARRAY (VERT)	
USA	NASA	CONCUR			
C	C				
C=Concur NC=Non-Concur					
		Creation Date: 27 MAY 08 Revision Date: Revision:			





STS-119 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-24-08**

Backup Material

FRWG Presentation (With Minor Changes)



STS-119 Delta Launch Site Flow Review	Presenter MK-SIO / A. Swift	
	Date 7-24-08	Page 1

Mandatory RCNs:

NONE

Non-Mandatory Value Added RCNs:

OS17583R1	F2V3 - MPS Helium Pressure Regulator LL	8/8/08
KV17641R1	V76 – AMEC Transient Voltage Verification	7/23/08



**STS-119 DELTA LSFR
MISSION REQUIREMENTS STATUS**

Presenter

Todd Hellner

Date

JULY 24, 2008

BACK UP CHARTS



**STS-119 DELTA LSFR
 MISSION REQUIREMENTS STATUS**

Presenter Todd Hellner
Date JULY 24, 2008

PERFORMANCE MARGIN

• SIMULATION MARGIN (CIRBF119)		+2756
• WEIGHT CHANGES SINCE SIMULATION		
• PAYLOAD	+16	
• OPERATOR	-153	
• ORBITER	+72	
• NPC	+150	
• CREW COMPARTMENT	-96	
• OMS	-551	
• ET	<u>+2</u>	
TOTAL WEIGHT CHANGES	-560	+560
• OTHER PERFORMANCE PROJECTIONS		
• PROTECTION FOR DOL DISPERSIONS		-700
• 02/12/09 LAUNCH DATE (PMBT & ATMOS)		-840
• OMS ASSIST ADJ (BASED ON 3834 USAGE)		+34
• SRB – M.P. UPDATES		-184
• SRB – BR / 0.30 MIL LOWER THAN 0.3705 AVG		-108
• PROJ TO 5 MIN WINDOW FROM INPLANE		-600
• PERFORMANCE CHANGES ADJUSTMENT		<u>-40</u>
• CURRENT BASELINED APM (07/15/08)		+878



**STS-119 DELTA LSFR
 MISSION REQUIREMENTS STATUS**

Presenter Todd Hellner
Date JULY 24, 2008

IPT PERFORMANCE PROJECTIONS

- **CURRENT BASELINED APM (07/15/08) +878**

- **IPT PROJECTIONS**
 - **CHANGE CRYO OFFLOAD FROM 450 TO 300 -140**
 - **ISP/THRUST FOR SSME'S 2048, 2051, 2058 -19**
 - **MIDDECK FROM 8183 LBS TO 8400 LBS -202**

- **IPT PROJECTED APM (07/15/08) +517**

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



**STS-119 DELTA LSFR
 MISSION REQUIREMENTS STATUS**

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Date JULY 24, 2008

FLIGHT MASS PROPERTIES

<u>CASE</u>	<u>TOUCHDOWN WEIGHT pounds (LIMIT)</u>	<u>MACH 3.5 X C.G. inches (LIMIT)</u>
NOMINAL	200513 (233000)	1083.2 (1075.7)
RTLS	237877 (245000)	1080.8 (1077.2)
TAL	236500 (244000)	1080.9 (1077.2)
AOA	233117 (242000)	1078.8 (1075.7)
CONT RTRN ** (CONT RTRN CASE IS NO DOCK PLS)	234294 (233000)	1080.2 (1075.7)

** Contingency Return case exceeds 233K NEOM weight limit. (See Vol. X Bk.1 Sec. 3.3.1.1.9)

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

ESTIMATES BASED ON TDDP CIRBF119 AND MODIFIED FOR WEIGHT CHANGES THRU 07/15/08.



STS-119 Delta Launch Site Flow Review

Presenter **Todd Hellner**

Date **07-24-2007** Page **1**

- **STS-119 Orbiter/Ferry Mass Properties Have Been Reviewed by Space Shuttle Program Integration and Are Within Specified Limits**

<u>Case</u>	<u>Ferry Weight (LB)</u>	<u>Center of Gravity (inch)</u>		
		<u>X</u>	<u>Y</u>	<u>Z</u>
<u>Nominal</u> - Orbiter c.g. (SCA c.g.)	200277	1121.4 (1417.1)	-0.3 (N/A)	371.3 (513.4)
(No CM Ballast, No Fluids Off-Loaded, No Payload Bay Opening)				
<u>AOA</u> - Orbiter c.g. (SCA c.g.)	230423	1113.7 (1409.6)	- 0.7 (N/A)	375.1 (517.6)
(104 LB. CM Ballast No Fluids Off-Loaded, No Payload Bay Opening)				
<u>TAL</u> - Orbiter c.g. (SCA c.g.)	209084	1073.7 (1369.7)	-0.8 (N/A)	376.3 (520.9)
(3 SSME's Removed, No Fluids Off-Loaded, No Payload Bay Opening, Max Weight 217000 LB)				

X c.g. Limits (Orbiter Coordinates)

Nominal = 1060.0 TO 1130.0
 AOA = 1060.0 TO 1116.0
 TAL = 1060.0 TO 1123.8

Z c.g. Limits (Orbiter Coordinates)

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



**STS-119 DELTA LSFR
MISSION REQUIREMENTS STATUS**

Presenter Todd Hellner
Date JULY 24, 2008

NO PENDING FDRD OR MIP CR's

FRD Latest Revision: 006, dated July 8, 2008

- **CR's in Review**
 - **FRD 17462-119-021 – Update Non Prop Consumable Offloads**
 - **FRD 17462-119-022 – Video of Radiator Hoses**
 - **FRD 17462-119-024 – Update Middeck Control Weight**

STS-119 Delta Launch Site Flow Review Flight Software Overview

Judi Powell

Flight Software

FRWG 07/21/2008

PRCB 07/24/2008

STS-119 DLSFR (FSW)

- **STS-119/OV-103 Base System is the Second Scheduled Flight of Operational Increment (OI) 33 Flight Software (FSW)**
- **STS-119/OV-103 Flight Software Payload Support:**
 - ISS-15A
 - Orbiter Interface Unit (OIU)
 - Sequential Still Video (SSV)
 - Orbiter Docking System (ODS)
 - Trajectory Control System (TCS)
 - Assembly Power Converter Units (APCUs) & Station to Shuttle Power Transfer System (SSPTS) (generic support for both configurations)
- **Major New Flight Software Support Items:**
 - None

STS-119 DLSFR (FSW)

- **STS-119 Source Changes/Edits for Primary Flight Software (Base)**
 - SCR 93211A - Update of SSMEC Vehicle Data Table (VDT) for Enhanced Accelerometer Operations
 - SCR 93215A - Protect Ascent Bearing Spec From MM 104 Retrograde Guidance Solution
 - SCR 93252A - Raise Fwd RCS Tank Temperature Limits
 - DR 124995 - Runway Label Not Displayed Above the Runway
 - DR 124997 - Wrong DEU for Spec 54 Automatic Ascent to Entry Bearing Switch
 - DR 126166 - I-Load Constraint Checker for STS 126 Failed with an Abend
 - DR 126187 - Entry Bearing Display not Displayed on CRTs with Unsupported MF after MM602 Transition
- **STS-119 Patch Implementation for Primary Flight Software**
 - None

STS-119 DLSFR (FSW)

- **STS-119 Patch/Edit Implementation for Backup Flight Software (included on the delivered mass memory)**
 - **SCR 93223 - Change N2/O2 BFS FDA K-Loads to I-Loads**
 - **DR 121410 - BFS Setting of Unused Bits in Feature Control Words**

- **STS-119 Patch Implementation for Backup Flight Software**
 - **DR 121418 – BFS – Erratic HSI During Ascent**
 - **SCR 93261 – Correction to OI-33 BFS High Rate GPS Updates Introduced in SCR 93201**
 - **SCR 93264A - BFS HUD Blanking – DR 121421 (Pending)**

STS-119 DLSFR (FSW)

- **Products**

- **STS-119/OV-103 Base software production schedule (available to field)**
 - **Shuttle Data Tape** **May 1, 2008 Actual**
 - **Mass Memory Unit Contents** **June 2, 2008 Actual**
- **STS-119/OV-103 ADTL software production schedule (available to field)**
 - **This cycle may not be required.**
 - **Decision to deliver this set of products will be made in August, 2008**
 - **Shuttle Data Tape** **October 22, 2008**
 - **Mass Memory Unit Contents** **November 5, 2008**

- **Open Items**

- **None**

- **Issues or Concerns**

- **Potential for a PASS implementation of SCR 93262, Film ET Camera, on the ADTL cycle. SCR is currently under evaluation and not yet approved**

STS-119 DLSFR BACKUP

- **Potential Modifications**
- **Potential Modification Details**
- **Updates to Previously Baselined Mods**
 - Engineering, Hardware and Certification Status
 - Mod Record and MECSLSI Updates

Potential Mods /Under Review (Info Only)

The following mods are in development / evaluation with potential to be baselined for STS-119 at a later date (details in back-up):

- 30179 Mid-Deck Partition Lexan Covers
- 30189 APU GN2 QD Heater Mod
- 30231 RSB Thermal Clip Modification

Approved mods not baselined for STS-119 (opportunity mods):

- 19735 WLE Spar “Sneak Flow” Protection (RH panels 1-4, LH panels 2-4)
- 19763 Lower WLE CP Horse Collar Gap Filler Redesign (RH 1-4, LH 2-4)
- 23227 Connector Saver (ME414-0630) Redesign (LH OMS Pod, Ku Band)
- 23411 Aft Freon Coldplate Loop Filters

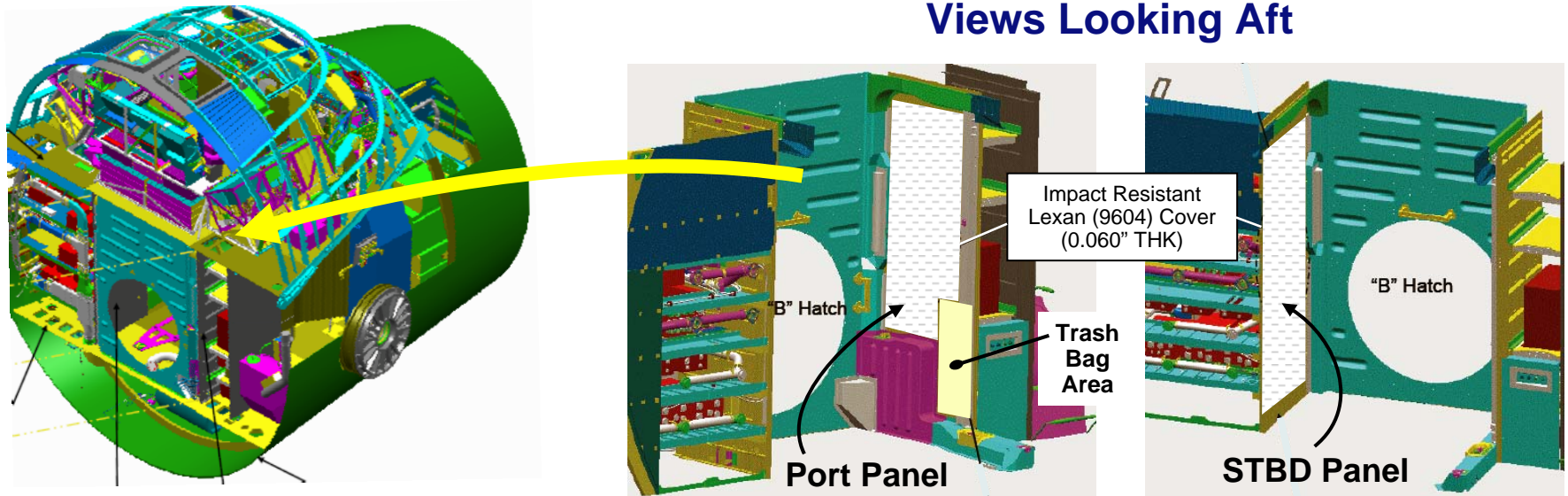
LON Requirements, if necessary

- 19798 LON Crew Rescue Recumbent Pallet System
- 19760 Recumbent Seat Kit (Seat 8) Rail Assembly

OV-103 Flight 36 - Potential Mods

• 30179 Mid-Deck Partition Lexan Covers

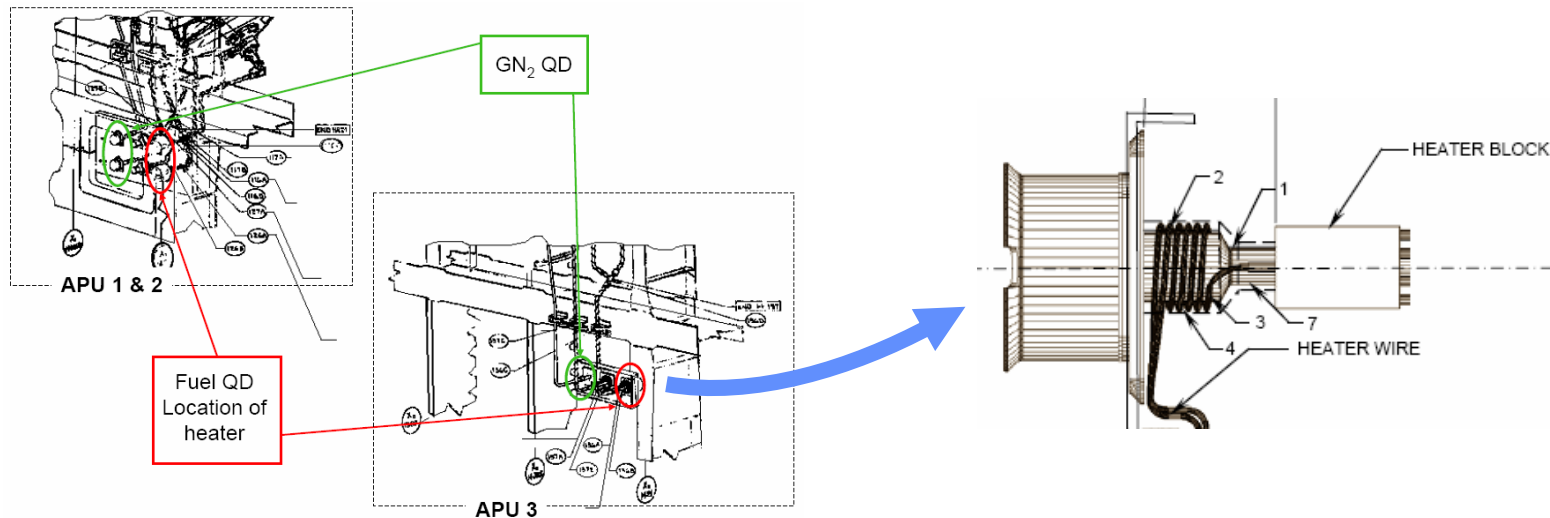
- Potential mod to implement 0.060" Lexan covers on the crew module aft mid-deck partitions (port and starboard), to provide impact protection for primary structure
 - Lexan will cover the entire surface of each partition (excluding trash bag area)
 - Warning decals previously applied on the partitions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



OV-103 Flight 36 - Potential Mods

• 30189 APU GN2 QD Heater Mod

- Potential mod being evaluated to add a heater element to the fuel tank pressurant GN2 service QDs as a mitigation of the APU fuel tank pressure decay seen during the STS-121 and STS-123 missions.
- Thermal evaluation of several heater modification options are continuing



• 30231 RSB Thermal Clip Modification

- Design options being evaluated to mitigate liberation of RSB thermal clips as occurred during STS-124

Engineering, Hardware and Certification Status

Previously Baselined Mods

MCR NO.	MCR 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 (ESTIMATE)	CERTIFICATION CR / CAR (BOEING)	REMARKS
Mods Previously Baselined										
30091 Delas	Boundary Layer Transition (BLT) Flight Experiment (FE) Mod / flight experiment consists of an integrated TPS and MADS instrumentation design with a fixed protuberance tile of .025" which will initiate BLT at approximately Mach 15. Current plan calls for the first FE to be flown on OV-103 Flt 36 with a determination made post-flight if BLT FE will be flown a second flight on OV-103 at the same protuberance height. The BLT FE protuberance will be generating a boundary layer transitional cone downstream of the protuberance. A total of thirteen thermocouples will be installed in TPS tiles: eleven will be in the affected wing area downstream of the transitional cone of influence, one in the protuberance tile, and one as a reference upstream of the protuberance. Three tiles aft of the protuberance tile will be changed from LI-900 to LI-2200 as a risk mitigation to eliminate any potential of overheating / slumping of these tiles immediately downstream of the protuberance. Ten temperature measurements of the thirteen will be selected and recorded on the MADS instrumentation system each flight via wiring to a new therm	Released	N/A	Delivered (c)	N/A	GO (b,d)	7/25/08 P 7/25/08 P	9/5/08 P 9/5/08 P	CR 07-190001-001Y CAR 33-07-190001-001Y (Wing TPS Certification)	<p>Drawings will be a mix of vehicle (V070) drawings, Orbiter mission kit (M070) drawings and tech orders (M072).</p> <p>(b) OCCB and PRCB have approved proceeding with mod implementation for STS-119.</p> <p>(c) All hardware provided by KSC USA NSLD / Logistics / TPS Backshop and has been delivered less tile fab. Wiring, TRJs and TCs will be provided by KSC - tile will be fabricated at the KSC TPS backshop.</p> <p>(d) Arc jet testing results and associated thermal/stress analysis required to certify protrusion tile and heating effects. As of 6/24/08, 3 arc jet tests have been run on the BLT configuration tile with temperatures below what was initially predicted by pre-test analysis.</p> <p>Note - other equipment will be handled as follows: (1) TRJ & hookup - Orbiter mod (V070 drawings) (2) Structures to mount TRJ and holes for the instrumentation - Orbiter mod (V070 drawings) (3) Instrumented and Protuberance Tiles - Orbiter mission kit (M070 drawings) which stay in the orbiter drawing tree and do not require manifesting on the MECSLSI</p> <p>Mod baselined at STS-119 LSRR.</p>
30010 Groo	Inertia Reel Mod for Lightweight Crew Seats Mod replace the existing LW seat MA-8 Inertia Reels with improved MA-16 Inertia Reels as a result of findings from a NASA Crew Survivability Study conducted to identify key crew survivability improvement areas. One area identified by this study was the Light Weight Seat Restraint System. The currently used MA-8 Inertia Reel only locks from differential acceleration in the forward X direction. The MA-16 Inertia Reel provides differential locking and absolute locking in +/- X, Y, and Z axes.	Released	N/A	Delivered (a)	See Note (a)	Go	6/16/08 A 6/16/08 A	6/27/08 A 6/27/08 A	CR 25-39129185-301F CAR 07-25-39129185-301F CDR & Pilot Seats	<p>Drawings affected: SED39126815 LW Mission Specialist Seat, SED39129185 LW Pilot/Commander Seat, M072-660225 & M072-660226 tech order installations, mission kit end items K225-000002 & K226-000002 and ML0101-0113 Acceptance Test Procedure.</p> <p>(a) New MA-16 inertia reels have been delivered to Boeing Crew Equipment Houston. Boeing Crew Equipment will mod pilot / commander seats on the vehicle and mission specialist seats will be modified off-line in the FCE lab during KSC GO identified window of opportunity - week of July 14 (all vehicles will have modification done at this time).</p> <p>Previously program authorized by monthly CCD Mission Equipment Modification directive S063027Y 3/5/08.</p>

Mod / MECSLSI Records

Previously Baselined Mods

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Mods Previously Baselined			
30091 Dolas	<u>Boundary Layer Transition (BLT) Flight Experiment (FE)</u> Mod / flight experiment consists of an integrated TPS and MADS instrumentation design with a fixed protuberance tile of .025" which will initiate BLT at approximately Mach 15. Current plan calls for the first FE to be flown on OV-103 Flt 36 with a determination made post-flight if BLT FE will be flown a second flight on OV-103 at the same protuberance height. The BLT FE protuberance will be generating a boundary layer transitional cone downstream of the protuberance. A total of thirteen thermocouples will be installed in TPS tiles: eleven will be in the affected wing area downstream of the transitional cone of influence, one in the protuberance tile, and one as a reference upstream of the protuberance. Three tiles aft of the protuberance tile will be changed from LI-900 to LI-2200 as a risk mitigation to eliminate any potential of overheating / slumping of these tiles immediately downstream of the protuberance. Ten temperature measurements of the thirteen will be selected and recorded on the MADS instrumentation system each flight via wiring to a new therm	<p><u>TCTIV1930091REF.0103.0</u> - TPS Instrumentation for BLT</p> <p><u>TCTIM1930091REF.0001.0</u> - TPS Protuberance Tile for Boundary Layer Transition</p> <p><u>TCTIV8830091REF.0103.0</u> - BLT Tile Instl</p> <p><u>VK70-100054-001.0103.0</u> - Wing Structures Kit for BLT</p> <p><u>VK70-756013-001.0103.0</u> - Wing Vehicle Wiring Kit for BLT</p> <p><u>K426-776103-001.0001.0</u> - MADS Mission Kit Instrumentation for BLT</p> <p><u>030091.0103.0</u> - Placeholder for BLT FE Mod</p> <p>Tech Order and MECSLSI Impact</p> <p>MECSLSI manifested tech orders will be utilized only for instrumentation wiring: (IS) M072-784634-015 (WAS) M072-784634-014 Shelf 8 Harness Instl Model MV0426A (IS) M072-786361-004 (WAS) M072-786361-003 LH Wing Wire Hsrmess Instl MV0426A</p>	<p>Drawings will be a mix of vehicle (V070) drawings, Orbiter mission kit (M070) drawings and tech orders (M072).</p> <p>(b) OCCB and PRCB have approved proceeding with mod implementation for STS-119.</p> <p>(c) All hardware provided by KSC USA NSLD / Logistics / TPS Backshop and has been delivered less tile fab. Wiring, TRJs and TCs will be provided by KSC - tile will be fabricated at the KSC TPS backshop.</p> <p>(d) Arc jet testing results and associated thermal/stress analysis required to certify protrusion tile and heating effects. As of 6/24/08, 3 arc jet tests have been run on the BLT configuration tile with temperatures below what was initially predicted by pre-test analysis.</p> <p>Note - other equipment will be handled as follows: (1) TRJ & hookup - Orbiter mod (V070 drawings) (2) Structures to mount TRJ and holes for the instrumentation - Orbiter mod (V070 drawings) (3) Instrumented and Proturberance Tiles - Orbiter mission kit (M070 drawings) which stay in the orbiter drawing tree and do not require manifesting on the MECSLSI</p> <p>Mod baselined at STS-119 LSRR.</p>

Mod / MECSLSI Records

Previously Baselined Mods

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Mods Previously Baselined			
30010 <small>Groo</small>	<u>Inertia Reel Mod for Lightweight Crew Seats</u> Mod replace the existing LW seat MA-8 Inertia Reels with improved MA-16 Inertia Reels as a result of findings from a NASA Crew Survivability Study conducted to identify key crew survivability improvement areas. One area identified by this study was the Light Weight Seat Restraint System. The currently used MA-8 Inertia Reel only locks from differential acceleration in the forward X direction. The MA-16 Inertia Reel provides differential locking and absolute locking in +/- X, Y, and Z axes.	<p><u>K225-000103-001.0001.0</u> - CDR Seat Inertia Reel Mod</p> <p><u>K225-000103-001.0002.0</u> - PLT Seat Inertia Reel Mod</p> <p><u>K226-000103-001.0002.0</u></p> <p><u>K226-000103-001.0003.0</u></p> <p><u>K226-000103-001.0005.0</u></p> <p><u>K226-000103-001.0006.0</u></p> <p><u>K226-000103-001.0008.0</u></p> <p><u>K226-000103-001.0010.0</u></p> <p><u>K226-000103-001.0012.0 thru 0017.0</u></p> <p>- Mission Specialist Crew Seats Inertia Reel Mod (Note: specific crew seat end items and associated records for STS-119 will be dependent upon FCE lab manifesting of seats)</p> <p>Tech Order and CCCD Impact</p> <p>(IS) M072-660225-012 (WAS) M072-660225-011 CDR & PLT Seats MV0225A</p> <p>(IS) M072-660226-042 thru -046 (WAS) M072-660226-036 thru -040 Mission Specialists Seats (crew of 7) MV0226A</p>	<p>Drawings affected: SED39126815 LW Mission Specialist Seat, SED39129185 LW Pilot/Commander Seat, M072-660225 & M072-660226 tech order installations, mission kit end items K225-000002 & K226-000002 and ML0101-0113 Acceptance Test Procedure.</p> <p>(a) New MA-16 inertia reels have been delivered to Boeing Crew Equipment Houston. Boeing Crew Equipment will mod pilot / commander seats on the vehicle and mission specialist seats will be modified off-line in the FCE lab during KSC GO identified window of opportunity - week of July 14 (all vehicles will have modification done at this time).</p> <p>Previously program authorized by monthly CCCD Mission Equipment Modification directive S063027Y 3/5/08.</p>



STS-119 DLSRR Flight Crew Equipment/GFE	Presenter MV5/Kenneth Brown	
	Date July 24, 2008	Page 1

STS-119 DLSFR

FCE/GFE Status

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

SPACE SHUTTLE PROGRAM

Space Shuttle Orbiter Project Office

NASA Johnson Space Center, Houston, Texas



STS-119 DLSRR

Flight Crew Equipment/GFE

Presenter MV5/Kenneth Brown	
Date July 24, 2008	Page 2

Hardware	Configuration	Project Contact	Tech Order	KSC HDW Need O/D	JSC HDW Planned O/D	KSC Remarks	JSC Remarks
(7) A (port forward)	CTVC 180 W	Randall Moore	1. M072-750025-072 Name: CCTV FWD LH W/WHITE ILLUMINATOR	11/14/2008	11/14/2008	OPF Installation is highly desirable. Based on OV-104 Landing at KSC on 10/19/08.	Camera/PTU comes from STS-125/OV-104. -510 PTU.
(8) B (port aft)	ITVC 180 W	Randall Moore	1. M072-750025-073 Name: CCTV CAMERA AFT LH W/WHITE ILLUMINATOR	11/14/2008	11/14/2008	Based on OV-104 Landing at KSC on 10/19/08. OPF/VAB/PAD need date is 11/14/08.	Camera from inventory/PTU from STS-125/OV-104. -510 PTU.
(9) C (starboard aft)	CTVC 180 W	Randall Moore	1. M072-750025-074 Name: CCTV AFT RH W/WHITE ILLUMINATOR	11/14/2008	11/14/2008	Based on OV-104 Landing at KSC on 10/19/08. OPF/VAB/PAD need date is 11/14/08.	Camera/PTU comes from STS-125/OV-104. -510 PTU.
(10) D (starboard forward)	CTVC 180 W	Randall Moore	1. M072-750025-075 Name: CCTV FWD RH W/WHITE ILLUMINATOR	11/14/2008	11/14/2008	OPF Installation is highly desirable. Based on OV-104 Landing at KSC on 10/19/08.	Camera/PTU comes from STS-125/OV-104. -510 PTU.
(12) SRMS elbow camera	CTVC 180 W	Randall Moore	1. M072-544504-005 Name: RMS ELBOW CCTV W/ ILLUMINATOR	11/14/2008	11/14/2008	OPF Installation for testing. Pad instl for flight. Based on OV-104 Landing at KSC on 10/19/08.	Camera/PTU comes from STS-125/OV-104. -510 PTU.
(13) SRMS wrist camera	CTVC 40 W	Randall Moore	1. M072-544504-006 Name: RMS WRIST CCTV W/ILLUMINATOR	10/31/2008	10/31/2008	OPF Installation Desirable. Based on OV-104 Landing at KSC on 10/19/08.	Camera from STS-125/OV-104.
(15) Centerline Airlock Camera (stowed)	CTVC	Randall Moore	1. M072-660828-002, plus Name: Centerline Airlock Camera T.O INSTL	11/14/2008	11/14/2008	OPF Installation mandatory for alignment.	Cameras from STS-124/OV-103. Cameras available now but first need date is in support of CEIT.
(17) Lefthand Umbilical Camera (aft)	16mm motion/5mm lens	Randall Moore	1. M072-705001-016 Name: Left-hand Umbilical Camera (aft)	12/29/2008	12/29/2008	VAB installation mandatory.	Camera comes from STS-125/OV-104. The 12/29/08 based on OPF roll over of 1/5/09 for LON. Date is one week prior to Orbiter Rollover.



STS-119 DLSRR
Flight Crew Equipment/GFE

Presenter MV5/Kenneth Brown	
Date July 24, 2008	Page 3

Hardware	Configuration	Project Contact	Tech Order	KSC HDW Need O/D	JSC HDW Planned O/D	KSC Remarks	JSC Remarks
(18) Righthand Umbilical Camera	Digital Still/35mm lens with Umbilical Flash	Randall Moore	1. M072-705001-028 Name: RH ET SEP CAMERA DIGITAL CAMERA W/35 MM LENS 2. M072-705001-027 Name: Flash Module Installation	12/29/2008	12/29/2008	VAB installation mandatory.	Camera comes from STS-125/OV-104. The 12/29/08 based on OPF roll over of 1/5/09 for LON. Date is one week prior to Orbiter Rollover.
(23) Digital Television (DTV)	Configuration 1	Larry Schmidt	1. M072-710570-007 Name: DIGITAL TELEVISION				
(44) MCIU/RMS Situational Awareness Display (RSAD)	Spare	Larry Schmidt	1. M072-710543-001 Name: MCIU RSAD				
(56) Portable Foot Restraint (PFR)	FWD Bulkhead PFR	Andrew Willis	1. M072-661568-029 Name: STOWAGE PLATFORM & PORTABLE FOOT RESTRAINT	9/12/2008	9/12/2008	OPF Installation highly desirable.	
(81) Tools for Rendezvous and Docking (TRAD)	2 HHLS and 1 PGSC	Larry Schmidt	1. M072-730021-019 Name: TCS	7/14/2008	7/14/2008		EV management informed the Shuttle Program that the Trajectory Control Sensor(TCS) unit currently on OV-103 will be R&R after the STS-124 mission. There were several instances of loss of tracking with the unit and the organization felt that additional assessment on the issues was warranted. Therefore, the TCS unit SN 4005 will be removed from the vehicle and
(82) Tool Stowage Assembly (TSA)	LIGHTWEIGHT PORT	Andrew Willis	1. M072-660853-002 Name: Port TSA Contingency Tools 2. M072-660850-005 Name: Port TSA Box Installation	11/7/2008	9/12/2008	OPF Installation highly desirable.	TSA Box comes from STS-125.
(85) Video Processing Unit (VPU)	1 in pnl R12 w Orbiter to ISS Video Jumper	Larry Schmidt	1. M072-710338-006 Name: VPU				Installed.
(86) Winches	PLB FWD/AFT Bikh	Andrew Willis	1. M072-6607-008 Name: Winches	9/12/2008	9/12/2008	OPF Installation highly desirable. FWD & AFT returned to JSC	TLC exp 2/7/2009 for AFT Winch.



STS-119 DLSRR
Flight Crew Equipment/GFE

Presenter MV5/Kenneth Brown	
Date July 24, 2008	Page 4

Hardware	Configuration	Project Contact	Tech Order	KSC HDW Need O/D	JSC HDW Planned O/D	KSC Remarks	JSC Remarks
(87) Wireless Video System (WVS)	Antennas S-Band	Randall Moore	1. M072-744007-001 UHF Name:WVS 2. M072-344828-001 mount Name:WVS/SSOR ANTENNA MOUNT AT AIRLOCK 3. M072-744004-014 S-BAND Name:WVS 4. M072-744004-012 S-BAND Name:WVS 5. M072-744004-015 S-BAND Name:WVS 6. M072-744004-017 S-BAND Name:WVS 7. M072-744004-018 S-BAND Name:WVS 8. M072-744004-016 S-BAND Name:WVS 9. M072-744004-013 S-BAND Name:WVS				
(89) Space to Space Orbiter Radio (SSOR)	1 UHF ANT at X0= 684 on ODS Truss	Larry Schmidt	1. M072-341828-026 Name:SSOR				
(92) RMS Sideview Camera (RSC)	RMS Sideview Camera (RSC)(PAD)- Configuration 2	Randall Moore	1. M072-710281-002 Name:RSC Camera 2. M072-000416-004 camera Name:RMS SIDEVIEW CAMERA W/SSOR	1/5/2008	1/5/2008	PAD install	Camera from STS-125. Delivery date based on roll to PAD on 1/12/09.



STS-119 DLSRR
Flight Crew Equipment/GFE

Presenter MV5/Kenneth Brown	
Date July 24, 2008	Page 5

Hardware	Configuration	Project Contact	Tech Order	KSC HDW Need O/D	JSC HDW Planned O/D	KSC Remarks	JSC Remarks
(93) Wing Leading Edge (WLE) Instrumentation - Left Wing	Wing Leading Edge (WLE) Instrumentation - Left Wing	Gary Cox	1. M072-756111-007 Name: Wing Leading Edge (WLE) Instrumentation - Left Wing				
(94) Wing Leading Edge (WLE) Instrumentation - Right Wing	Wing Leading Edge (WLE) Instrumentation - Right Wing	Gary Cox	1. M072-756111-008 Name: Wing Leading Edge (WLE) Instrumentation - Right Wing				
(T4-183482) OBSS Sensor Package 2 *** (OPF)	LCS, IDC, Mounting Plate & a wiring Harness -ISA2	Larry Schmidt	1. M072-710282-006 Name: OBSS Sensor Package 2 *	10/7/2008	10/7/2008	OBSS SP2 returns on STS-124 and goes to FCE lab.	
(T4-190124) Airlock Adapter Plate	Airlock Adapter Plate	Andrew Willis	1. SJD32101440-302 Name: Airlock Adapter Plate				
(T4-190126) Service and Cooling Umbilical	Service and Cooling Umbilical	Andrew Willis	1. M072-661606-012 Name: Service and Cooling Umbilical				
(T4-204259) OBSS SENSOR PACKAGE 1 ** (OPF)	OBSS SENSOR PACKAGE 1 ** (OPF)	Russell Yates	1. M072-710282-008 Name: OBSS SENSOR PACKAGE 1 ** (OPF)	9/30/2008	9/30/2008	OBSS SP1 returns on STS-124 and goes to FCE lab.	Flying -510 PTU.
(T4-295414) RMS-13 End Effector	RMS-13 End Effector	Kenneth Ruta	1. M072-544502-036 Name: RMS-13 End Effector	10/17/2008	10/17/2008		
(T4-305258) DTV Harness	DTV Harness	Larry Schmidt		7/21/2008	7/22/2008		

EVA Status

STS-119/15A

Delta Launch Site Flow Review

David Foltz
EVA Office
Johnson Space Center
July 24, 2008

- **Forward Bulkhead PFR**
 - Portable Foot Restraint, SED33105308-307 installed on forward bulkhead.
 - Released T.O. M072-661568-029
 - Required to protect for contingency EVA TPS inspection
- **Lightweight Port TSA**
 - Port LWTSA installation – Tech Order: M072-660850-005
 - Port LWTSA Tools installation – Tech Order: M072-660853-002
- **No Starboard TSA**
- **Winches**
 - Winch P/N SED33101570-327 on Forward Bulkhead
 - Winch P/N SED33101570-325 on Aft Bulkhead

**STS-119
ISS-15A / ITS-S6**

**Delta Launch Site Flow Review
FRWG**

Payload Cargo Engineering Status

Yvette Carmona

281-212-6492

07/21/08

STS-119 DLSFR

Engineering Flight Product Status

<u>Drawing No.</u>	<u>Title</u>	<u>Rev</u>	<u>EO</u>	<u>Released</u>
V072-200198	MECSLSI	A	A01	04/28/08
VA72-200198	Cargo Arrangement	Basic	-	01/25/08
VD72-200198	Avionics Diagram	B	B01	06/06/08
VS72-200198	Integrated Schematic	B	B01	06/06/08
VS70-540394	Retention Schematic	Basic	-	01/25/08

Engineering Open Work

- MECSLSI, VA and Tech order (M072-544201)
 - Latch guide changes at X_o 829.07 Stbd
- Payload bay wiring tech order (M072-710719)
 - Leave out two standard cables

ECD

07/18/08

07/18/08

Standardization

- Mission configuration does comply with Orbiter/Payload Integration Standardization Document NSTS 60523 except for mission-unique deviation, approved at LSFR per S063620R1, for keel camera cable and T-0 1553 cable to remain out.

Rescue Flight Status

- STS-119 vehicle for rescue of STS-126

STS-119 DLSFR

OMRSD

Baselined Files

- P510 – ISS 15A S6

Open Work

- F2V2 (Post Mate):

RCN

Title

RCN Release

ECD

- None

- F2V4 (Premate):

RCN

Title

RCN Release

ECD

- | | | | |
|-----------|------------------------------------|-----------|----------|
| • PS17714 | STS-119 FII/V4 Mission-Unique List | 05/26/08A | 07/25/08 |
| • PS17713 | FIII MUL | 05/26/08A | 07/25/08 |
| • PS17712 | Adjacent Pin Test | 05/27/08A | 07/25/08 |

- F2V6 (Shuttle Experiments):

None

Issues/Concerns

- None

STS-119 DLSFR

Annex 1

- Baselined Files

- NSTS 21510 ISS-15A

- Open Work

- ISS-15A A01 – NSTS 21510

- General Update 07/04/08A
- Interim Submittal (L-4 M) 09/22/08
 - Data required: Weight update
- Final Weight Update (L-1M) 12/23/08

CR Release

07/23/08
09/29/08
01/05/09

ECD

08/08/08
10/13/08
01/12/09

- Issues/Concerns

- None

TGHR Status

- Open Work

- Customer Submittal (L-4M)
- Release For Review (L-3M)
- Baseline (L-60 Days)

10/13/08
11/12/08
12/12/08

- Issues/Concerns

- None

STS-119 DLSFR

Interface Control Documents

<u>Document</u>	<u>Title</u>	<u>ECD</u>	<u>Status</u>
ICD-A-21342	ODS-ISS		Baselined
ICD-A-21418	RSC		Baselined
ICD-A-21420	VPU		Baselined
ICD-A-21429	DTV		Baselined
ICD-A-21403	SSV		Baselined
ICD-A-21449	Minicam		Baselined
ICD-A-21264	Orbiter Interface Unit		Baselined
ICD-A-21510-S6	ITS-S6		Baselined
- A05610*	Update Sec. 3& 20 – No Egress in Bay 12	07/28/08	In Review
- Forward Work:	Update CE attach point location compatibility; Structural/Dynamics Report numbers; Incorporate ISS IDD IRNs; Update Mechanical figures per CAD model*		
ICD-A-21510-OOR	On-Orbit Interfaces		Baselined
- Forward Work:	Update Thermal Data; Incorporate ISS IDD IRNs; Potential CE deployment violations; Add loads and robotics data (Sect 4, 11, 14)		

* Impacts Flight Products

STS-119 DLSFR

Cargo Close Clearance Process

- No clearances less than 1 inch identified by compatibility assessment
- No measurements required at this time

Cargo Integration Hardware

Delivery Status

- All required CIH has been delivered

Issues/Concerns

- None

BACK UP

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STS-119/OV-103 Ground Ops Processing

Overall to Launch Window Opening U/R Critical Path: <ul style="list-style-type: none"> ET-130 Standalone Processing and ET/SRB Integrated Closeouts to Orbiter Mate 	Program Baseline Milestones (Ref Manifest 08A-39)			
	Processing Schedule	Milestones	Date	Status
	VAB/PAD	LAUNCH	2/12/09	U/R
	OPF	ORBITER/ET MATE	1/5/09	G
	ET/SRB CLOSEOUTS	ORBITER/ET MATE	1/5/09	R
	SRB STACKING	ET/SRB MATE	12/12/08	G
ET STANDALONE	ET/SRB MATE	12/12/08	R	

ISSUES / POTENTIALS

OPF PROCESSING		
OPF POTENTIALS		
ET / SRB PROCESSING		ET-130 on dock is Under Review, KSC Need Date is November 22, 2008
LON STS-127 (LON on OV-105)	LON	ET-131 delivery date under review, KSC Need Date is March 3, 2009



G No Significant Risk

Y Significant Risk Identified that Threatens a Program Milestone, Recoverable with Mitigation

R Unachievable, Impact to a Program Milestone



→ Remains Unchanged

↑ Improving

↓ Deteriorating



STS-119 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-24-08**

Backup Material

- **SSP Systems Drawings** Attachment 1
- **SSP Authorized Modifications/Non-Standard Work** Attachment 2
- **SSP OMRS Waivers and Exceptions** Attachment 3
- **Launch Window** Not Available
- **Open Configuration Waivers** Attachment 5



STS-119 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-24-08**

SSP System Drawings

The Drawings Baseline Was Released By PRCB S115119 on 02-12-08

- V072-000001-261 (Rev. VJ) Space Shuttle System (Rel. 06-09-08)
 - V072-200198-001 (Rev. A) Mission Equipment Cargo Support (Rel. 04-28-08)
 - SGD32104442-301 (Rev. C1) Crew Compartment Configuration (Rel. 07-10-08)
 - 302 Descent
 - V070-000001-003 Orbiter General Assembly
 - V070-410100-17 SSME Installation
 - 10100-0061-170 Integrated SRB General Assembly (BI-137)
 - 80901000000-529 External Tank Assembly (ET-130)
- STS-119 LSRR + 18 days Mission Configuration Product Plan (MCP) was last published on 04-30-08 and will be republished at ORR -14 days on TBD.



STS-119 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-24-08**

SSP System Drawings – (Continued)

Ferry Configuration

- V072-000001-262 (Rev. VH) Space Shuttle System Drawing (Rel. 03-05-08)
 - V072-200198-002 (Rev. A) Mission Equipment Cargo Support (Rel. 04-28-08)
 - SGD32104442-001 (Rev. C1) Crew Compartment Configuration (Rel. 07-10-08)
 - V072-300055-015 (Rev. BN) Ferry Flight Configuration (Rel. 02-20-08)

SCA 911



STS-119 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-24-08**

Modification Impact Report

- **Mission Equipment Modifications and Orbiter Modifications analyzed for impacts to OMRSD, LCC, ICD, EMI, Software, and GSE**
- **A total of 6 MCRs have been approved and/or pending mods**
- **Current MCR impact status:**
 - **No impacts for all six disciplines 3**
 - **One or more disciplines with impacts, documentation approved and/or pending approval 0**



STS-119 Delta Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **07-24-08**

Modification Impact Report (Continued)

- Possible impacts still under review 3
- MCRs 30010, 11621, and 8720 are being reviewed for impacts

LW MAR
8929-324

ML60B 6013
-310

PRIME C/L CAM
GFE TV CONTROL

ML60E -

PGSC ACCESS

ML60M 6014
-312

B/U C/L CAM
ULTRA SONIC
LEAK DETECTOR

CDR LEE J. ARCHAMBAULT

PLT DOMINIC A. ANTONELLI

M/S #1 JOSEPH ACABA

M/S #2 STEVEN R. SWANSON

M/S #3 RICHARD R. ARNOLD II

M/S #4 JOHN PHILLIPS

M/S #5 (UP) KOICHI WAKATA

M/S #5 (DN) SANDY MAGNUS

ASCENT MODULAR LOCKER LAYOUT

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

LEADER: DANIEL CULPS

DATE: 6-5-08

LAUNCH: 12-4-08

FLIGHT STS-119/15A

VEHICLE OV-103

CREW: 7 MAN 13 + 1 + 2 DAYS

RQMTS: SRMS, ERGOMETER,
SORG, NO RCRS,
SLEEPING BAGS

MD CEIL (PORT 1)	-	E
ISS RESERVE		
MD CEIL (PORT 2)	0654 -301	F
RSK #6 ACES		
MD CEIL (STBD 1)	0275 -306	G
RCC REPAIR TILE REPAIR		
MD CEIL (STBD 2)	6665 -343	H
IELK RUNNING SHOES		
MD FLOOR (PORT 2)	0637 TBD	B
ANTIMICROB APP CWC (4)/ChECS WATER SAMPLING		
MA16J KIT (5)		
MD FLOOR (PORT 1)	-	A
CTB, LIOH CTB, LIOH LIOH-1		
MD FLOOR (STBD 2)	-	D
2 MLE (IPT RESERVE) ChECS ALSP VOA KIT HCTB, GSC		
MD FLOOR (STBD 1)	0657 TBD	C
EMU HDWR		

MIDDECK FORWARD

MF14E 2760 -306 FRESH FOOD	MF28E - PCDF-PU
MF14G 2761 -308 FRESH FOOD	6300 MF28G 6250 -345 -353 IFM TOOLS 2163-302 2161-305 2162-307 MULTIMETER
MF14H 2763 -304 MENU FOOD	MF28H - IFM BREAKOUT BOX ALTIMETER
MF14K 2764 -306 MENU FOOD	MF28K - POST INSERTION #2
MF14M 2765 -304 MENU FOOD	MF28M 2762 -307 MENU FOOD
MF14O 2766 -305 MENU FOOD	MF28O 2767 -304 MENU FOOD

MF43C 1900 -309 CLOTHING	MF43E 0631 -TBD LOGBOOK/WATCHES SOMS RESUS/CDM	MF43G 1902 -304 CLOTHING	MF43H 0305 -304 POST INSERTION	MF43K 0305 -304 CREW PREF HCTB	MF43M 8047 -304 DC VAC CTB (6015-326)	MF43O 1904 -309 M/S #5 UP CLOTH	MF43O 1904 -309 M/S #5 DN CLOTH
MF57C 8072 -302 CLOTHING	MF57E 6240 -311 ORBITER FDF SODF	MF57G 8073 -302 CLOTHING	MF57H 5473 -305 ORBITER FDF	MF57K 6291 -311 SODF CTB (0744-301)	MF57M 1908 -309 CREW SUPPORT	MF57O 6697 -326 HH LIDAR W/ NIGHTSCOPE 2nd HHL (TRAD)/SSV BPSMU	
MF71C 3005 -305 CLOTHING	MF71E - GENARA	MF71G 1903 -306 CLOTHING	MF71H 0645 -301 CREW CARE PKG ISS PHOTO/TV RSPLY HCTB	MF71K - ISS HARDWARE CTB	MF71M 8965 -311 CONDENSATE COLL SUPA (14) INGRESS HDWR O-RING/BRAYCOTE STS CSA-CP	MF71O 6299 -318 COAS/FLOUR LT SHIELDS/DCS 760 AUDIO DOSIMETER BTA	

MIDDECK AFT

MA9D/F 9882 -302 T-RAD SPARE DTV MUX SPARE DTV DSR SPARE DTV VIP	L-10 MA16D - ISS RESERVE CTB
MA9G 8737 -306 RCC COLD BAG ASSY	MA16F/G - GLACIER
5962-303 MA9J 6269 -307 PRINTER TRAYS IODINE REMOVAL 6256-303	MA16J 8723 -302 PHOTO/TV STOW-N-GO CTB
6066-321 MA9L 6629 -306 COLOR PRINTER	MA16L 0634 -305 PCS LAPTOP PCS ACCESSORIES PGSC ACCESSORIES CD STWG CASE
MA9N 7432 -317 SOFT STWG BAGS PHK'S (6) CCK/LT STICKS 8071-312 RSTRNTS/ 8070-302 FIBERSCOPE RE-ENTRY	MA16N 3006 -305 MED KITS MAK (2)

VOL B 7436
(MA73J)

HYGIENE

VOL 3B 7425
(MA73I)
-320

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

A16 8706
-314
CAM BAG
PILOT

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

VOLUME D (MD52C)
NOT INSTALLED

VOLUME F (MD76M)
1403
-306
WET TRASH

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

VOLUME H (MA23R)
8068
-310
EVA ACCESS (INBD)

VOLUME I (MA23H)
8065
-308
EVA ACCESS (OBD)

HIGH TORQUE TOOLS

4575-315 WMC 0914
-332
TOWELS AND
RESUPPLY ITEMS
WMC DISPENSER

1st DAY CLOTH
SUPA
1641-330

5557-319 EXT A/L 5555
-320
2-EMUs (PORT)

EXT A/L FLOOR
EVA TOOLS

55 LIOH:
29 LIOH + 1 ATCO
STOWED IN LIOH BOX

2 INSTLD
7 STOWED PORT FLOOR 1

6 G-SUITS

C/D JSC (XXXX-XXX)

P/D JSC (XXXX-XXX)

C/D KSC (XXXX-XXX)

P/D KSC (XXXX-XXX)

CEIT KIT (XXXX-XXX)

ISS LABEL (XXXX)

WINDOW SHADE BAG (5548-352)

OCA CABLE (B/U)

VPMP COVER (2)

WINDOW SHADES

IFM CABLES & HOSES (4259-343)

MONITOR SHIELDS

L10A1: AVIU (6686-331)

L10A2: DTV MUX

L10A3: DTV VTR/VIP

L11: PDI P 2 OIU 1/2

L12A1: SSP 1

L12A2: SSP 2

L12A3: PDI P 1

R12A1: VPU

R12A2: VPS (OPP)

CTB	HLF	SGL
LAUNCH	TBD	TBD
RETURN	TBD	TBD

* NOT APPROVED

● L-24 LATE LOAD

☒ SWAP

☒ TRANSFER HARDWARE

CTB CARGO TRANSFER BAG

HCTB HALF CARGO TRANSFER BAG

NOTE: LOCKER LAYOUTS ARE FOR REFERENCE ONLY & ARE NOT RELEASED DWGS. FOR RELEASED DRAWING, PLEASE REFER TO THE CREW COMPARTMENT CONFIGURATION DRAWING FOR THIS FLIGHT (SGD32104446)

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
011621	PLND KSC	TCTIM3611621REF	0001 006	MOD BLKTS TO FIT STR ATTACH FAST FOR BAY 5 KEEL BRIDGE-EOTF ADDED PER V073-000002 M16, -360185 A02. REF TCS-3-36-387 OP26	S115119AR1 2008-05-28	MAND 036
030010	AUTH KSC	K225-000103-001	0001 000	MOD KIT - LW PLT / CMDR SEAT MA16 REEL MODIFICATION ADDED BY EDS I/F & KIT EO NEW. REPLACES 030010,000 1, 0 IN PART	S063027Y 2008-03-05	MAND 036
	AUTH KSC	K225-000103-001	0002 000	MOD KIT - LW PLT / CMDR SEAT MA16 REEL MODIFICATION ADDED BY EDS I/F & EO KIT NEW, REPLACES 030010,000 1,0 IN PART	S063027Y 2008-03-05	MAND 036
030091	AUTH KSC	K426-776103-001	0001 000	MOD KIT - BOUNDARY LAYER TRANSITION (BLT), FLT EXPERIMENT ADDED PER KIT EO K426-776103 NEW	S115119A 2008-04-10	MAND 036
	AUTH KSC	TCTIM1930091REF	0001 000	BOUNDARY LAYER TRANSITION (BLT), TPS PROTUBERANCE TILE ADDED PER V880-191011 NEW	S115119A 2008-04-10	MAND 036

TOTAL MODS =

5

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
	AUTH KSC	J6116	0103 003	AMES GAP FILLER REMOVAL AND REPLACEMENT	ORB-0082B 2006-08-16	MAND 036
	AUTH KSC	J6209	0103 000	REMOVAL AND REPLACEMENT OF OV-103 BODY FLAP (BF) POWER DRIVE UNIT (PDU)	S-J6209 2007-09-21	MAND 036
	AUTH KSC	J6275A	0103 000	ORBITER STRUCTURE IML SURFACE CORROSION SAMPLING INSPECTION CORROSION SAMPLING CAPABILITIES WILL BE PROJECTED AT LSFR AND FINALIZED AT DLSFR FOR EACH FLOW.	S-J6275A 2008-02-26	MAND 036
	AUTH KSC	J6296	0103 001	OV-103 IR THERMOGRAPHY REQUEST	S-J6296 2007-11-07	MAND 036
	AUTH KSC	J6327	0103 001	WLE RCC JOGGLE INSPECTION	S-J6327 2008-02-14	MAND 036
	AUTH KSC	J6331A	0103 001	STS-124 ELBOW CAMERA TO JEM PM MEASUREMENT CLEARANCE MEASUREMENTS WILL BE PERF'D AS PART OF STS-124 PAD PLB CLOSEOUT. POST FLT MSRMENTS WILL BE	S-J6331A 2008-05-07	MAND 036
	AUTH KSC	J6334A	0103 000	ASA #3 & #4 AND ATVC #3 & #4 R&R FOR OV-103, FLT 36 CURRENT & PROPOSED MANIFESTS WILL PROVIDE FOR THE IMPLEMENTATION OF THIS CHIT AS A PARALLEL EFFORT	S-J6334A 2008-04-04	MAND 036
	AUTH KSC	J6341A	0103 000	EVALUATION OF OMS POD LI-900 TILE INSTALLED ON 0.090" SIP LI-900 TILE INSTLD ON .090 SIP WILL BE INSPD FOR DEFECTS PER CHIT ON NEAR TERM FLOWS UNTIL RCN IS	S-J6341A 2008-04-09	MAND 036
	AUTH KSC	J6345	0103 000	INSTALLATION OF TEMPERATURE INDICATORS ON MAIN LANDING GEAR (MLG) SHOCK STRUT AXLES	S-J6345 2008-04-09	MAND 036
	AUTH KSC	J6357	0103 000	ORBITER HIGH DEFINITION VIDEO DOWNLINK TEST RQMNTS (OPF) HIGH DEFINITION VIDEO DOWNLINK TEST WILL BE ACCOM'D IN PARALLEL WITH PLANNED KU DTV I/F TEST	S-J6357 2008-05-30	MAND 036
	AUTH KSC	J6371	0103 000	MEASUREMENT OF MLGD TO THERMAL BARRIER STAND-OFF MLGD MEASUREMENTS WILL BE PERF'D IN PARALLEL WITH PLANNED OPF GROUND PROCESSING.	S-J6371 2008-06-10	MAND 036
	AUTH KSC	J6377	0103 000	SKY GENIE DESCENT LINE ASSEMBLY INSPECTION	S-J6377 2008-07-08	MAND 036
	AUTH KSC	J6380	0103 000	EVA PDU TOOL INTERFACE VERIFICATION EVA TOOL FIT CHKS WILL BE PERF'D IN PARALLEL WITH PLANNED MIDBODY PROCESS.	S-J6380 2008-07-07	MAND 036

	AUTH	K6376	0103 000	CANNIBALIZATION OF OV-103 RCC WLE 10R TO OV-105	S052924BE	MAND
	KSC		NSW		2008-06-26	036
030091	AUTH	TCTIV1930091REF	0103 000	BOUNDARY LAYER TRANSITION (BLT), TPS INSTRUMENTATION	S115119A	MAND
	KSC	NOT REQUIRED		ADDED BY EDS I/F, V070-190001 G05 & -192163 A15	2008-04-10	036
	AUTH	TCTIV8830091REF	0103 000	BOUNDARY LAYER TRANSITION ASSESSMENT, TILE INSTL	S115119A	MAND
	KSC	NOT REQUIRED		ADDED BY EDS I/F & V070-190001 G04, REF MCD GYY. W AS FLT 37, IS 36. REPLS 030091,0103,0 IN PART	2008-04-10	036

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
030091	PLND	VK70-100054-001	0103 000	BRACKET - TRJ (BLT), WING KIT	S115119A	MAND
	KSC	NOT REQUIRED		ADDED BY EDS I/F. KIT EO NEW CHGS FLT EFF FROM 35 TO 36	2008-04-10	036
	AUTH	VK70-756013-001	0103 000	BOUNDARY LAYER TRANSITION (BLT) WIRING MOD KIT	S115119A	MAND
	KSC	NOT REQUIRED		ADDED BY EDS I/F & V070-780225 A10	2008-04-10	036
	AUTH	030091	0103 000	BOUNDARY LAYER TRANSITION (BLT) FE MOD	S115119A	MAND
	KSC		CONTR	ADDED PER E. BURKE REQUEST FOR STS-119 LSRR. REPL BY TCTIV8830091REF,0103,0 IN PART	2008-04-10	036

TOTAL MODS = 19

ECP-MCR/KIT SEQUENCE

MCR/ECP	STAT	ITEM/KIT NUMBER	EISN	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
008720	APPD	K843-613001-001	0001	001	MIDDECK COOLING HARDWARE KIT	NOT REQD	
	KSC	NOT REQUIRED			ADDED PER KIT EO NEW		036

TOTAL MODS = 1

Approved STS-119 OMRS Waivers and Exceptions

WVR EXC	ELEMENT PROJECT	PRCBD NUMBER WAIVER# (STAT) (INITIAL STS)	ABSTRACT RAS REQUIREMENTS	EISN PAYLOAD	STS BEG END	
+	E	ORB	S053299DT EV10602-A (A)	OMRSD EXCEPTION REQUEST - WING LEADING EDGE SPAR STRUCTURAL SAMPL INGDEFERRAL (EV10602)	103	035 999
	RCS		S053296YK EK10327 (A)	OMRSD EXCEPTION REQUEST - RIGHT RC SOXIDIZER B-LEG PAD REGULATOR L OCKUPPRESSURE (EK10327)	0023	032 040
			S053297WA EK10452 (A)	OMRSD EXCEPTION REQUEST - RRCS FUEL GHE TANK P1 TRANSDUCER ACCURA CY (EK10452)	0023	032 039
	W	ET	S053293FZ WK03850R1 (A) (STS-093)	L02/LH2 TANK PRESSURE MONITOR FOR MOVE	ET	099 999
	OMS		S053296UM WK10299 (A)	OMRSD WAIVER REQUEST - RP03 TK302 DYNATUBE LEAK RATE (WK10299)	0023	032 040
	ORB		S053297NZ WK10415 (A)	OMRSD WAIVER REQUEST - MADS FDM CALIBRATION MANUAL MODE (WK10415)	103	031 038
			S053298VM WK10557R1 (A)	OMRSD WAIVER REQUEST - FUEL CELL POWERPLANT 3 OXYGEN FLOWMETER LO WERLIMIT (WK10557R1)	103	033 042
			S053299BB WK10603 (A)	OMRSD WAIVER REQUEST - FORWARD OXYGEN REGULATOR	103	034 039

		LOCK UP PRESSURE(WK10603)		
	S053299JU WK10653 (A)	OMRSD WAIVER REQUEST - WATER SPRAY BOILER #1 EXCEEDED 44 PSIA MAX IMUMLIMITATION (WK10653)	103	035 040
RCS	S053298VTR1 WK10559 (A)	OMRSD WAIVER REQUEST - RIGHT RCS OXIDIZER B-LEG SECONDARY REGULAT ORLOCK UP HIGH (WK10559R1)	0023	035 043
SRB	S053293WA WK03886 (A) (STS-103)	LH FWD AND RH MID SRB JOINT TEMP SENSORS	BI	099 999

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
47	S052310A	02/14/91	Fly with FRSI instead of tile	OV-103, Flight 12 & Subs (flight by flight evaluation)	OK TO RETIRE S061954B MV 4-2 RTF-130 Briefing
53	S052428A	03/27/91	Allows specified flights to fly with interim TPS repair after each mission to minimize damage to surrounding tile during ferry flight	STS-37, STS-39, STS-40, STS-42 thru STS-999	STAYS OPEN
101	S076972	11/19/91	Permit the modified GPCs (AP101-S) Battery Back-up Unit to fly with annotated fastener improvements without rolling the LRU Part Number	STS-42, STS-44, STS-47 and STS-49 thru STS-999	STAYS OPEN
327	S115114VR5	03/17/05	Partial installation of M072-784633-014 (harness installation - interface panel - MADS #3). The M072-784663-014 Technical Order was established to incorporate the crossover bracket modification at locations X0863 and X0750. The dash number configuration for the Technical Order was not baselined until January 25, 2005 (PRCBD S115114VR2). This area was closed out before this time and would cause significant impact to verify configuration of this Technical Order dash number -014.	OV-103, Flight 31 OV-103, Flight 32 WAIVER for STS-121	INS-3-28-279 (installed Tech Order)
***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****					
328	S115114WR1	04/07/05	Partial installation of M072-794500-004, for Integrated Vehicle Health Monitoring (IVHM) harness installation, calls for the removal of the unused IVHM harness and routing hardware. This requirement was manifested after the Bay 13 Longerons Bridge installation was complete. With the installation of the bridge, the removal of the IVHM harness is no longer possible without the removal of the bridge.	OV-103, Flight 31 OV-103, Flight 32 WAIVER for STS-121	OEL-3-31-304 PTL OEL-3-31-4432 PTL
***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****					

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
329	S115114AM	08/15/05	The following requirements are waived to allow OV-103, Flight 31 to fly (ferry) with the following out-of-configuration conditions: 1) V070-391139-025 (blanket under window #1 removed for ferry flight) 2) M072-421502-002 (did not perform acetone wipe prior to universal thruster plug assemblies - procedural omission) 3) V070-753110-003 (camera mount will not be installed for ferry flight) ***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****	OV-103, Flight 31	Ferry Flight from Dryden
330	S115114VR15	09/16/05	The following requirement is waived to allow OV-103 to ferry from DFRC to KSC with the following out-of-configuration condition: TCS blanket V070-362917-001 located at Door #44 NOT installed. ***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****	OV-103, Flight 31 Ferry Flight	Ferry Flight from Dryden

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
331	S115114VR15	09/16/05	<p>The following requirement is waived to allow OV-103 to ferry from DFRC to KSC with the following out-of-configuration condition:</p> <ol style="list-style-type: none">1) Two switches on Panel A15 will ferry without switch guards (P/N G070-700904-001). In lieu of switch guards at two locations, tape was installed.2) Eight GSE switch guards were left installed and not removed as required by Technical Order M072-710700-002 as called out in the ferry flight drawing.3) Three switch guards are not installed on Panel L4 for TACAN circuit breakers. The procedure does not include the switch guard installation. <p>***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****</p>	OV-103, Flight 31 Ferry Flight	Ferry Flight from Dryden
332	S115121TR8	05/04/06	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>M072-794500-004 IVHM harness installation Bay 13 called out by MECSLSI V072-200201 NOT removed from OV-103.</p> <p>During STS-114 processing this Tech Order configuration called for the removal of an un-used IVHM harness along with the routing hardware. At the time the Tech Order was made a requirement for Flight 31, the Bay 13 longeron had already been installed for flight. The harness was demated and stowed in place per MR and was deferred to a future flight at which time Bay 13 longeron will be removed since the Bay 13 longeron was not removed this flight, a configuration waiver is needed for STS-121.</p>	OV-103, Flight 32	

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
333	S115121TR8	05/04/06	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>Partial installation of M072-784633-014 (harness installation - interface panel - MADS#3). The M072-784633-014 Tech Order was established to incorporate the crossover bracket modification at locations X0863 and X0750. The dash number configuration for the Tech Order was not baselined until January 25, 2005 (PRCBD S115114VR2). This area was closed out before this time and would cause significant impact to verify configuration of this Tech Order dash number -014.</p> <p>***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****</p>	OV-103, Flight 32	
335	S115116NR2	08/18/06	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>M072-794500-004 IVHM harness installation Bay 13 called out by MECSLSI V072-200195 not removed from OV-103.</p> <p>During STS-114 processing, this Tech Order configuration called for the removal of an unused IVHM harness along with the routing hardware. At the time the Tech Order was made a requirement for Flight 31, the Bay 13 longeron had already been installed for flight. The harness was demated and stowed in place per MR and was deferred to a future flight at which time Bay 13 longeron will be removed since the Bay 13 longeron was not removed this flight, a configuration waiver is needed for STS-116.</p>	OV-103, Flight 33	

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
336	S115116NR2	08/18/06	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>M072-794500-004 IVHM harness installation Bay 13 called out by MECSLSI V072-200201.</p> <p>During OMDP, the crossover bracket modification was successfully implemented at all four locations with no technical issues by engineering defined by Orbiter drawings as well as three Tech Orders (M072-794011, M072-794021 and M072-794051). The M072-784633-014 Tech Order was established to incorporate the crossover bracket modification at two locations (X0863 and X0750).</p> <p>At the X0863 location, M072-784633-014 called for the removal of a clamp and six screws to reflect the change harness mounting due to the new wire tray shape. TPS OEL-3-31-245 incorporated the electrical portion of this modification per the vehicle drawings as well as the three tank set harness Tech Orders. During STS-114 processing, the WAD was reviewed and it was determined that an error exists in the M072-784633 engineering. This Tech Order reflects harness routing at the X0863 that does not reflect the as-built configuration on the Orbiter. A one flight configuration waiver was processed and approved for STS-114 and STS-121. All hardware on this Tech Order supports MADS wire routing, there were no observed wire routing violations noted during Flight 31 midbody closeout and all MADS testing will be completed and verified. No technical issue with hardware, installation, or function of MADS. There was no access to this area this flow to perform wire routing as-designed condition. A configuration waiver is needed for STS-116 for this Tech Order.</p>	OV-103, Flight 33	

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
337	S115116NR4	10/27/06	<p>Tech Order M072-544501-087 - install, M072-544501-027 - remove, -087 configuration is for the new over-center stops being installed. Mission-unique loads will not require these new stops. Program decision was made to not remove the RMS.</p> <p>This configuration will incorporate the over-center stops mod, the change is to all four MPM locations. The new stops, replace existing GFE stops, incorporate a stronger design to address mission-unique loads that have a potential to exceed the current mechanism capability. The decision was made not to incorporate this mod during STS-116 flow due to the low potential for load exceedence. Since -087 established the over-center stops mod along with other mods that were completed for this flow,a configuration waiver is needed for STS-116. In addition the removal of the -027 from the previous mission was not completed.</p>	OV-103, Flight 33	
338	S115116NR4	10/27/06	<p>Tech Order M072-794021-026 install, M072-794021-019 remove, -026 configuration is for the new over-center stops being installed. The change is rerouting and retaping of the wire harnesses near the over-center stops to alleviate any interference. Program decision was made to not remove the RMS.</p> <p>This configuration would reroute and retape harnesses on the MPMs to support the over-center stops mod. Since -026 established a new configuration in support of the over-center stop mod and this was not worked this flight, a configuration waiver is needed for STS-116. In addition, the removal of the -019 from the previous mission was not completed.</p>	OV-103, Flight 33	

ACTIVE WAIVERS FOR
OV-103

Item #	Authority	Date	Waiver Description	Effectivity	Wad
342	S115120DR3	09/12/07	<p>The following requirement is waived to allow OV-103 to fly with the following out-of-configuration condition:</p> <p>Tech Order M072-784633-015 harness installation - interface panel - MADS#3 called out by MECSLSI V070-200199 was established to re-route MADS harness in support of SSPTS at location X0863. There was no access to this area this flow to re-route harness to meet as-designed congiguration. At this time there is NO plan to ever open up this area again.</p>	OV-103, Flight 34 thru OV-103, Flight 999	
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>	OV-103, Flight 35 OV-104, Flight 30 OV-105, Flight 21	