

STS-120 Integrated Launch Site Flow Review

Presenter

Stephen Reilly

Date

05-24-07

Program Freeze Point

PRCB Presentation

S115120D

STS-120 Integrated Launch Site Flow Review

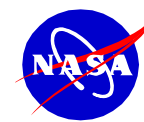
Presenter
Stephen Reilly

Date
05-24-07

Baseline the STS-120 Mission Specific Requirements and Flow Plans.

The STS-120 Integrated Launch Site Requirements were established by PRCBD S115120B dated 02-08-07. This CR and the Associated Data Package were reviewed at the 05-21-07 FRWG.

KSC Integration*		MK-SIO
Flight Integration		MO3/USA-PI
<u>Orbiter Engineering*</u>	<u>Requesting Approval</u>	<u>USA-OE</u>
Payload/Cargo Engineering*		USA-PI
Shuttle Processing*		PH-B2
	<u>Status in BackUp</u>	
Flight Software		USA-FSW
GFE FCE/EVA		MV5/XA
SSME		MP21
ISS/Payload Operations		UB-R3



STS-120 LAUNCH SITE FLOW REVIEW

Presenter Ken Nowak
Date May 24, 2007

LAUNCH

10/20/07
 39A/ MLP2
 CREW SIZE: 6+1 UP/6+1 DN

ORBIT

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

CONFIGURATION

OV-103 (34)
 LP01;RP03
 ET-120
 BI-131
 RSRM-98
PROPOSED: (1) 2050 (2) 2048 (3) 2058
 OI-32
 RMS,ODS,OBSS,SSPTS

CONSUMABLES

CRYO TANK SETS	5 (FULL)
GN2 TANKS	6 (OFFLOAD)
FWD RCS	1912# (2446# FULL)
AFT RCS	4970# (FULL)
OMS	22760#

PAYLOAD

ISS-10A (NODE 2), PDGF, MBSU, SASA(b)	ISS-10A, RAMBO, MAUI
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LANDING

SITE TAL ALT. TAL SCA	KSC ZARAGOZA MORON & ISTRES 905
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NOTE: (b) = RETURN ONLY

FDRD UPDATE REQUIRED TO MANIFEST SSME'S

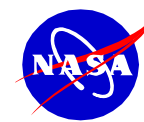


STS-120 LAUNCH SITE FLOW REVIEW

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Date May 24, 2007

PERFORMANCE MARGIN

• SIMULATION MARGIN (SPLAF120)		+2603
• WEIGHT CHANGES SINCE SIMULATION		
• PAYLOAD	+152	
• OPERATOR	+672	
• ORBITER	+740	
• NPC	+48	
• CREW COMPARTMENT	+161	
• OMS	-71	
• MPS PROP (NOT INERT)	-93	
• ET	-71	
TOTAL WEIGHT CHANGES	+1538	-1538
• OTHER PERFORMANCE PROJECTIONS		
• PROTECTION FOR DOL DISPERSIONS		-700
• 10/20/07 LAUNCH DATE (PMBT & ATMOS)		+510
• PARTIAL PROJ FOR MPS BGT GEN0701S		+7
• OMS ASSIST UPDATE FOR COPV		-105
• PMBT FOR 10/20/07 LAUNCH DATE		-90
• SRB – M/P UPDATES		+50
• SRB BR / 1.45 MIL HIGHER THAN 0.3705 AVG		+290
• ISP/THST FOR GEN BLOCK2 @ 104.5%		-225
• PROJ TO 5 MIN WINDOW FROM INPLANE		-600
• PERFORMANCE CHANGES ADJUSTMENT		+107
• CURRENT BASELINED APM (05/22/07)		+309
• PROPOSED ENGINE SET (2050, 2048, 2058)		-40
• IPT PROJECTED CHANGES + MECSLSI REV C CHANGES		+402
• PROJECTED APM		+671



STS-120 LAUNCH SITE FLOW REVIEW

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Date May 24, 2007

FLIGHT MASS PROPERTIES

<u>CASE</u>	<u>TOUCHDOWN WEIGHT pounds (LIMIT)</u>		<u>MACH 3.5 X C.G. inches (LIMIT)</u>	
NOMINAL	202549	(233000)	1079.9	(1075.2)
RTLS	240895	(245000)	1083.6	(1076.7)
TAL	239474	(244000)	1083.6	(1076.7)
AOA	235771	(242000)	1081.3	(1075.2)
CONT RTRN**	236987	(233000)	1082.9	(1075.2)

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

NOTE: **RTLS 25 SEC FRCS DUMP**
 TAL 65 SEC FRCS DUMP
 104 LBS. AFT FUS BALLAST (BOXES ONLY)

ESTIMATES BASED ON TDDP SPLAF120 AND MODIFIED FOR WEIGHT CHANGES THRU 05/22/07.



STS-120 Launch Site Flow Review

Presenter **Ken Nowak**

Date **05-24-2007**

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- **STS-120 Orbiter/Ferry Mass Properties Have Been Reviewed by Space Shuttle Program Integration and Are Within Specified Limits**

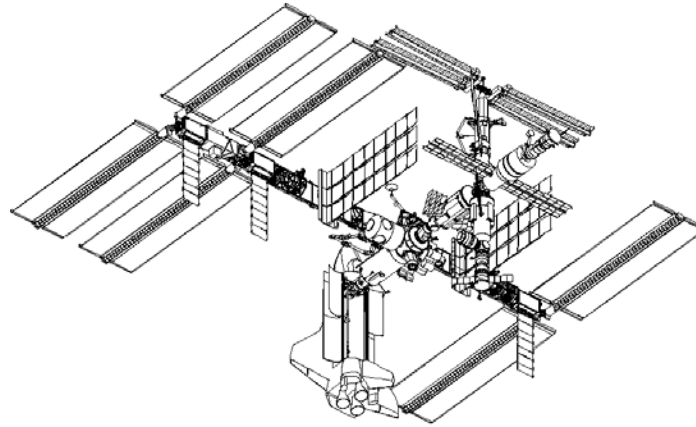
<u>Case</u>	<u>Ferry Weight (LB)</u>	<u>Center of Gravity (inch)</u>		
		<u>X</u>	<u>Y</u>	<u>Z</u>
<u>Nominal - Orbiter c.g.</u> (SCA c.g.) (0# CM Ballast, No Fluids Off-Loaded, No Payload Bay Opening)	202639	1116.1 (1411.8)	-0.3 (N/A)	371.6 (513.9)
<u>AOA - Orbiter c.g.</u> (SCA c.g.) (156# CM Ballast No Fluids Off-Loaded, No Payload Bay Opening)	233301	1113.6 (1409.5)	-0.2 (N/A)	374.8 (517.3)
<u>TAL - Orbiter c.g.</u> (SCA c.g.) (3 SSME's Removed, No Fluids Off-Loaded, No Payload Bay Opening, Max Weight 217000 LB)	212067	1074.8 (1370.8)	-0.1 (N/A)	376.4 (520.9)

X c.g. Limits (Orbiter Coordinates)

Nominal = 1060.0 TO 1128.4
 AOA = 1060.0 TO 1116.0
 TAL = 1060.0 TO 1121.6

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-120 (ISS-10A) LSFR

Flight/Mission Integration Requirements Status



Frank Moreno, Mission Integration Manager
Patrick LeMoine, USA Flight Manager
May 24, 2007



STS-120 (ISS-10A) FRWG/LSFR
Flight Requirements Status

Presenter **MO3/F. Moreno**

Date **5/24/07**

Page **2**

- **STS-120 FRD Latest Revision: 012, dated May 17, 2007**
 - No Open CR's

- **STS-322 Latest Revision: Basic, dated February 13, 2007**
 - CR's in work
 - NSTS 17462-322-002 – Update Launch Date and Rescue Mission (Evaluations due 5/24/07)

CR's posted at <http://sspweb.jsc.nasa.gov/icbdata>



SPACE SHUTTLE PROGRAM

Flight Management Office

NASA Johnson Space Center, Houston, Texas



STS-120 (ISS-10A) FRWG/LSFR Mission Integration Requirements Status		Presenter MO3/F. Moreno	
		Date 5/24/07	Page 3

NSTS 21477 ISS-10A MIP Status - Latest Version is Rev B, Change 5, 3/21/2007

(available on SSP Payload Integration Library System (PILS) : <http://sspweb.jsc.nasa.gov/pils/payload.cfm>)

PRCB CR Status

#S072120G	Change STS-120 Mission Duration, Number of EVA's, and Crew Size Designation.	5/24/07 PRCB
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MIP CR Status

#MIP21477-0012	Add ISS ESA Payloads, add DTO 853, and Update Table 4-2 (Mission On-Orbit Task Priorities)	App/Mod 5/16/07
#MIP21477-0013	Update Section 4.1.1 – Beta Angle Constraint	Out-of Board
#MIP21477-0014	Add Section 5.10 - Drag-Through Cables/Hoses	Out-of Board
#MIP21477-0015	Update Shuttle-to-CE ICD References	Out-of Board
#MIP21477-0016	Delete APCU IVT Rqmt in Section 9.3.1	Out-of Board

Issues/Concerns:

- **SASA FSE Modifications approved by ISS – KSC Grd Ops On Dock Need Date is 7/13/07**
 - Enlarges ORU EVA bolt attachment holes to facilitate ORU to FSE installation
- **PDGF and Critical Spares - OPF Installation**
 - PDGF (6/5/2007); SASA FSE & MBSU Integrated Assy (7/16-18/2007)
- **Removal of OV-103 GN2 Tank is Not Required**
 - Only tank offload will be requested to protect 400 lbp Ascent Performance Margin (APM) SSP Manager's reserve requirement

STS-120 LSFR OV-103 FLIGHT 34 CONFIGURATION UPDATES

**Alan Ling
USA Orbiter Element**

May 24, 2007

Two Orbiter Mods to be Baselined for STS-120

- **19586 Airlock Muffler Foam Liner Bond**

The airlock ISS booster fan muffler (located upstream of the fan inlet) uses an Aerofonic foam liner inside a shell housing to attenuate noise during fan operation. The foam material is being replaced off-line during the Flight 34 flow due to exceedance of a 10-year limited age life requirement.

During off-line foam replacement, an update to the adhesive bond procedure requirement was implemented to allow curing at ambient temperature (for 7 day minimum duration) to facilitate ease of repair

- Bond spec MA0106-340 spec allows option of ambient cure or oven cure at 190 +/-10F for 2.5 +/- 0.5 hours

The reworked muffler part number will be updated but will be interchangeable at the Tech Order level (ref M072-643402) - No MECSLSI update required

- **30005 Convert Ceramic Inserts to Bonded FRSI Plugs on Aft Fuselage OMS Pod Leading Edge Tiles**

Mod replaces ceramic inserts with bonded FRSI plugs in the OMS Pod forward-outboard corner tiles (1 carrier panel with 3 tiles having 5 fastener inserts per pod).

Ceramic insert failures (becoming dislodged) have occurred on the vehicles, and it is desired to eliminate them in areas which reduce potential debris risk. SE&I assessment shows the forward areas of the OMS pods provide the most risk reduction in areas not previously addressed.

One Orbiter Tech Order Update to be Baselined for STS-120

- **Mid-Fuselage Linear Accelerometer Installation**

The linear accelerometer located on the mid-fuselage Xo 919 frame was demanifested for OV-103 previous flight (STS-116) and remained uninstalled for STS-122 flight due to potential Keel Bridge 6 interference.

With STS-122/120 manifest swap on OV-103, there will no keel bridge installed at this location, so the accelerometer will be reinstalled to aid in loads analysis

M072-754130-001 replaces -002 for MECSLSI V072-200199-003 and -004 (MV0426A)

Note: M072-754130-001 = Accelerometer installed configuration

M072-754130-002 = Accelerometer uninstalled config (w/ connector capped & stowed)

**STS-120
ISS – 10A NODE 2
LAUNCH SITE FLOW REVIEW**

PAYLOAD CARGO ENGINEERING STATUS

**Yvette Carmona
USH-700D, 281-212-6492**

5/24/07

STS-120 LSFR

ENGINEERING FLIGHT PRODUCT STATUS

<u>DRAWING NO</u>	<u>TITLE</u>	<u>REV</u>	<u>EO</u>	<u>RELEASED</u>
V072-200199	MECSLSI	C	C01	04/24/07
VA72-200199	CARGO ARRANGEMENT	A	A01	01/19/07
VD72-200199	AVIONICS DIAGRAM	A	A02	05/04/07
VS72-200199	INTEGRATED SCHEMATIC	A	A03	05/04/07
VS70-540315	RETENTION SCHEMATIC	A	A01	01/17/07

ENGINEERING OPEN WORK

- Bay 10 Keel Latch change from Middle Weight to Standard Weight 06/07/07
- Cargo Arrangement Drawing Update 06/19/07
 - Add MBSU, vehicle swap, OBSS WIF, Node 2 PIRNS

STANDARDIZATION

- Mission configuration does comply with NSTS 60523 Orbiter/Payload Integration Standardization Document, except for mission-unique deviation approved on 05/02/07 per S063620 to remove two cables (46P77W718 and W880) to save weight and ground processing time.

RESCUE FLIGHT STATUS

- Reconfiguration Engineering products will be developed by the Engineering Order to Follow (EOTF) process.

KSC Launch and Landing Project
STS-120
Launch Site Flow Review

May 24, 2007

Agenda

- OPF Resource Summary S.Stilson / NASA
- Milestone Interface Chart S. Stilson / NASA
- Flight Element Processing W.Bingham / USA



Multi Flow

S.Stilson

OPF Resource Summary 07A - 29, 2007 - 2008

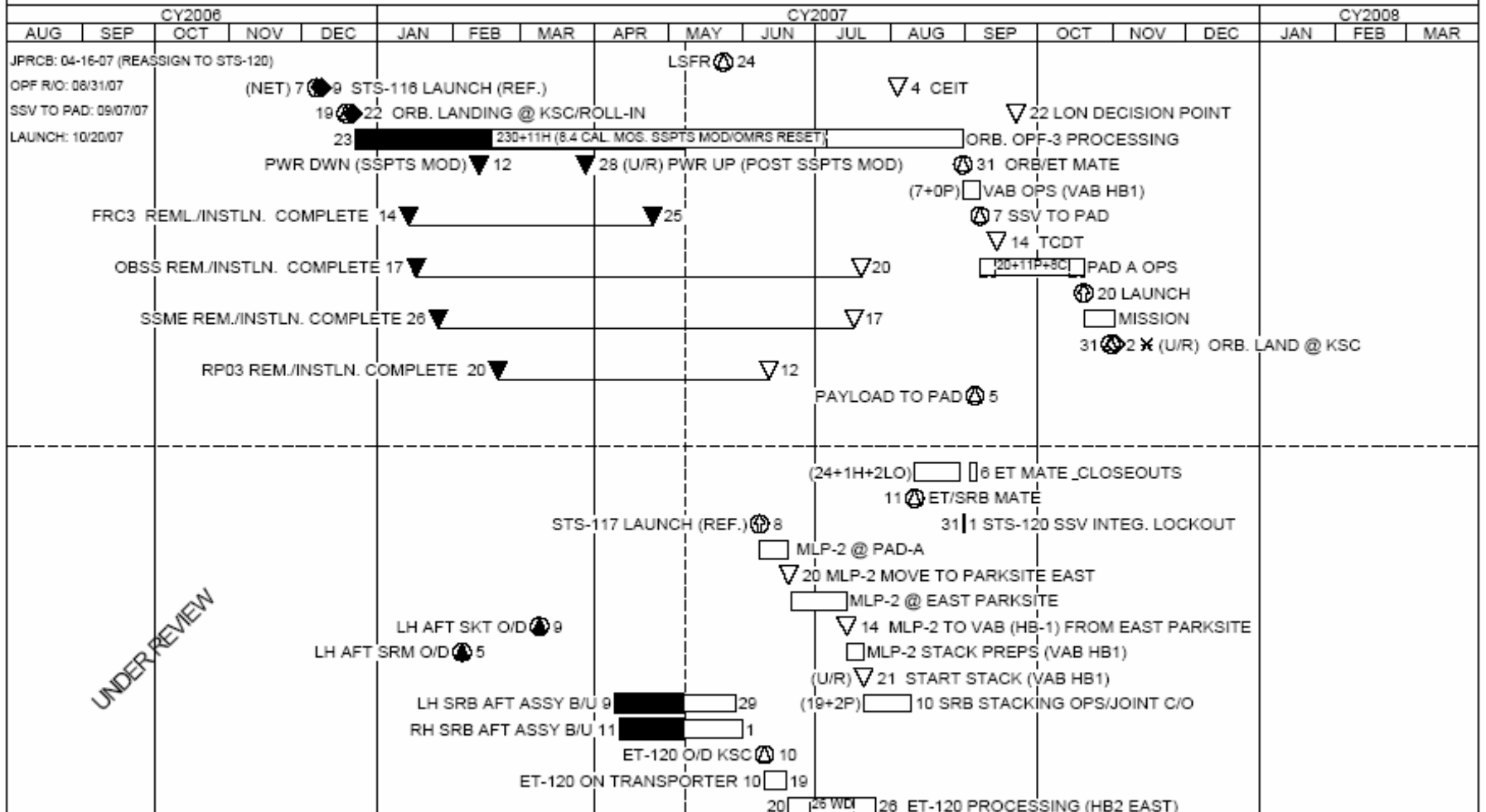
VEH	CY2007												CY2008																							
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC												
103	<p>THREATS:</p> <ol style="list-style-type: none"> NO TIME ALLOCATED FOR VAB OMRSD FILE VI FACILITY REQUIREMENTS (WAIVER REQUIRED) SERIAL PROCESSING THROUGH ONE VAB INTEGRATION CELL FROM STS-117 THROUGH STS-122 ACCELERATED ET/SRB PROCESSING TIMELINES (STS-118 THROUGH STS-122) GROUND PROCESSING RESOURCES AND BUDGET VIOLATES OV-103 8-FLIGHT OMDP REQUIREMENT OV-104 3-YEAR OMRSD REQUIREMENT (STS-127) 																								<p>Study Only</p>											
	<p>DISCOVERY</p> <p>8.4 CALENDAR MONTHS OPF FLOW</p> <p>STS-322: 5-OCT-07 LON FOR STS-118 (31 7 1)</p> <p>STS-324: 10-APR-08 LON FOR STS-123 (17 25 5)</p> <p>OPF3: 240+11H (11A) (11) OPF3 (118+13H+6D) (11A) (10) OPF3 (152+3H+6D) (11A) (15) OPF3</p> <p>SSPTS MOD OMRSD RESET</p> <p>ET-120 O/D: 10-JUN-07 (4) M2</p> <p>STS-120: 20-OCT ISS-23-10A NODE 2</p> <p>ET-128 O/D: 6-DEC-07 (5) M1</p> <p>STS-124: 24-APR ISS-26-1J JEM PM</p> <p>ET-130 O/D: 2-JUN-08 (6) M2</p> <p>STS-126: 20-NOV ISS-28-ULF2 MPLM</p>																																			
104	<p>ATLANTIS</p> <p>7 154 16 20</p> <p>STS-320: 2-DEC-07 LON FOR STS-120 (30 6 19)</p> <p>OPF1: (11A) (1) (11) OPF1 (124+2H+6D) (11A) (12) OPF1 (196+13H+6D) (11A) (11) OPF2 (136+11H+6D)</p> <p>(2) M2</p> <p>STS-117: 8-JUN ISS-21-13A S3/S4 ARRAYS</p> <p>ET-125 O/D: 27-JUL-07 (3) M1</p> <p>STS-122: 6-DEC ISS-24-1E COLUMBUS</p> <p>ET-127 O/D: 10-APR-08 (4) M1</p> <p>STS-125: 28-AUG HST</p> <p>ET-131 O/D: 11-AUG-08</p>																																			
	<p>ENDEAVOUR</p> <p>SSPTS MOD IMPLEMENTATION</p> <p>STS-318: 28-JUL-07 LON FOR STS-117 (5 12 24)</p> <p>STS-323: 31-JAN-08 LON FOR STS-122 (7 14 1)</p> <p>STS-319: 23-JUL-08 LON FOR STS-124 (7 13)</p> <p>STS-419: 4-SEP-08 LON FOR STS-125 - HST (2 18)</p> <p>OPF2: 805+34H (11A) (14) OPF2 (116+14H+6D) (3A) (15) OPF2 (120+2H+6D) (3B) (15) OPF1 (139+11H+6D)</p> <p>ET-117 O/D: 10-APR-07 (1) M1</p> <p>STS-118: 9-AUG ISS-22-13A.1 SPACEHAB-SM</p> <p>ET-126 O/D: 25-SEP-07 (2) M3</p> <p>STS-123: 14-FEB ISS-25-1JA ELM PS</p> <p>ET-129 O/D: 6-FEB-08 (3) M3</p> <p>STS-119: 2-OCT ISS-27-15A S6 ARRAY</p>																																			
OV-103	3	2	2	2	2	2	1	1	3	3	2	2	1	1	1	3	3	3	2	1	1	3	3	3												
OV-104	1	3	3	3	3	3	2	2	1	1	3	3	2	2	2	1	1	1	1	2	2	1	1	1												
OV-105	2	1	1	1	1	1	3	3	2	2	2	2	3	3	2	2	2	2	3	3	3	3	2	2												

STS-120 KSC Milestone Interface Chart

OPR: USA - J. HAZELTON, INTEG. OPS.
NASA - S. STILSON, PH-O

OV-103/34/ ISS-23-10A / NODE-2
CREW / DURATION: 7 / 13 ✕
ET 120 / BI131 RSRM 98 / MLP-2 / PAD-A / VAB HB1

SSP APPROVED MANIFEST 04-16-07 (REF. CR #S042013GH)
Status as of:
05/09/2007



UNDER REVIEW

THREATS: 1. SRB STACKING 2. ET MATE & CLOSEOUTS ✕ 3. EXTENDED PAD FLOW (PEAK HURRICANE SEASON)	NOTES: 1. TWENTY-THIRD ISS/SSP FLIGHT 2. ORB. REASSIGNMENT (FROM OV-104)
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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 Not Presented
 - Stoplight Chart To Be Presented

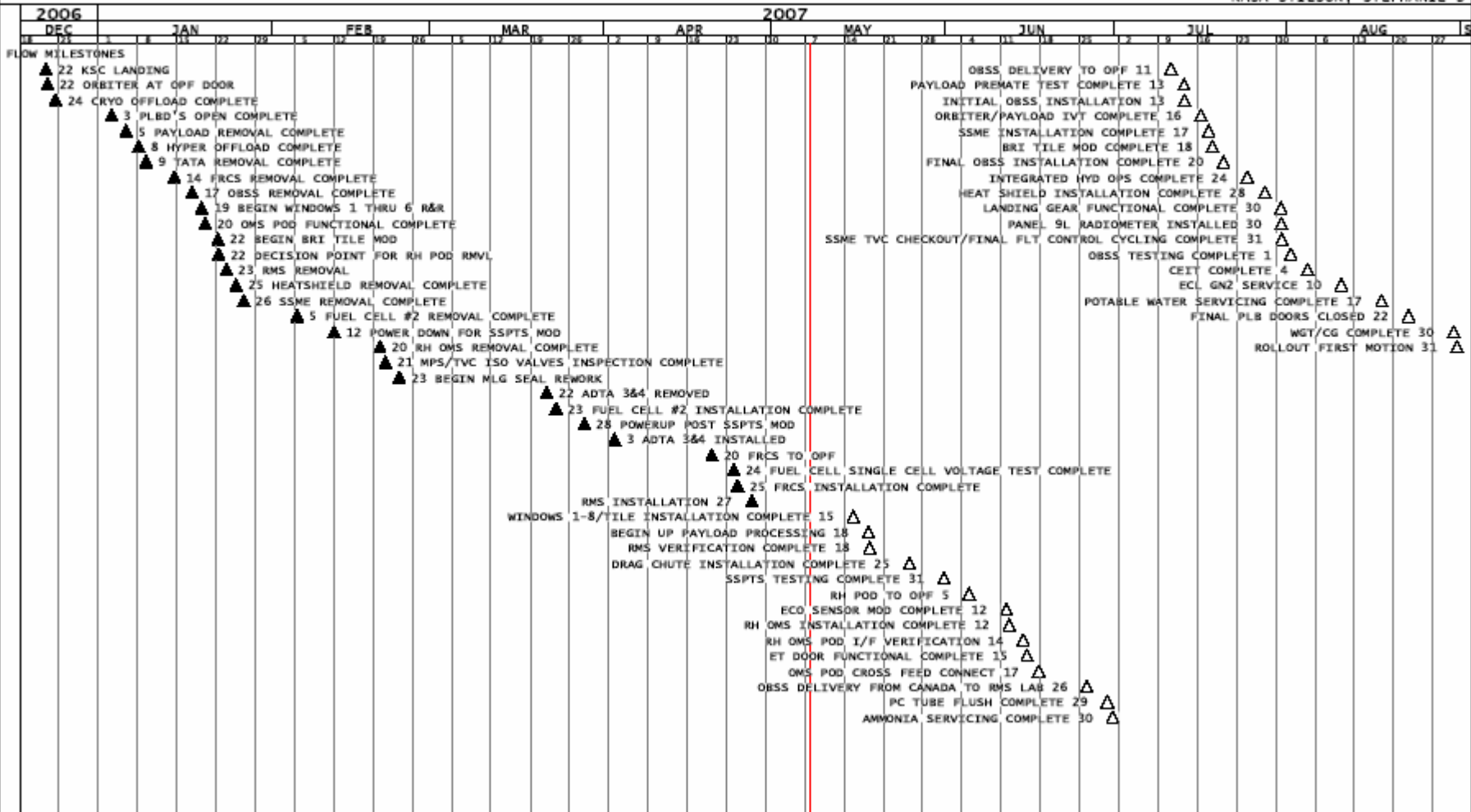
STATUS

USA	NASA
C	C
CUSORC	HCNRT-CORC

STS-120/OV-103 OPF FLOW MILESTONES
 DOWN PAYLOAD:ISS-20-12A.1/SHAB UP PAYLOAD:ISS-23-10A/NODE-2

Creation Date: 3-OCT-2006
 Revision Date: 8-MAY-2007
 Revision :AM

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



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

STATUS DATE: 8-MAY-2007:1 PLOT DATE: 9-MAY-2007, 7.28 am NETWORK: OPF122.280 CONTACT: B. COREY, 7-8334 OPF RAY-3 EXE:CUSOPFSU.27

LSFR/ Δ LSFR TPS Cavity Comparison

	LSFR	Δ LSFR	LSFR
● Deferred Tile/ Fib For 1 Flight (Minimum)	19	19	22
● In-Flight Damage	60*	8*	63
● Putty Repair Inspection	10*	10*	6
● FIB Inspection	20*	20*	9
● Operational Damage / Processing Support	12*	9*	54
● Removals From 1400 Gap Filler R&R	4*	4*	3
● Radiometer	1	1	1
● BRI Priority 1, 2, 4 (Priority 5 Complete)			
● MLG	28	28	44
● ET DOORS	0	11	22
● BRI (Priority 6-7)			
● Windows	--	--	10
● R/H LESS #6	--	--	3
● Lockbolts	20*	9	8
● FRCS			1
● R/H OMS			<u>10</u>
Totals	174	119	256

***Guestimated**

TPS Status

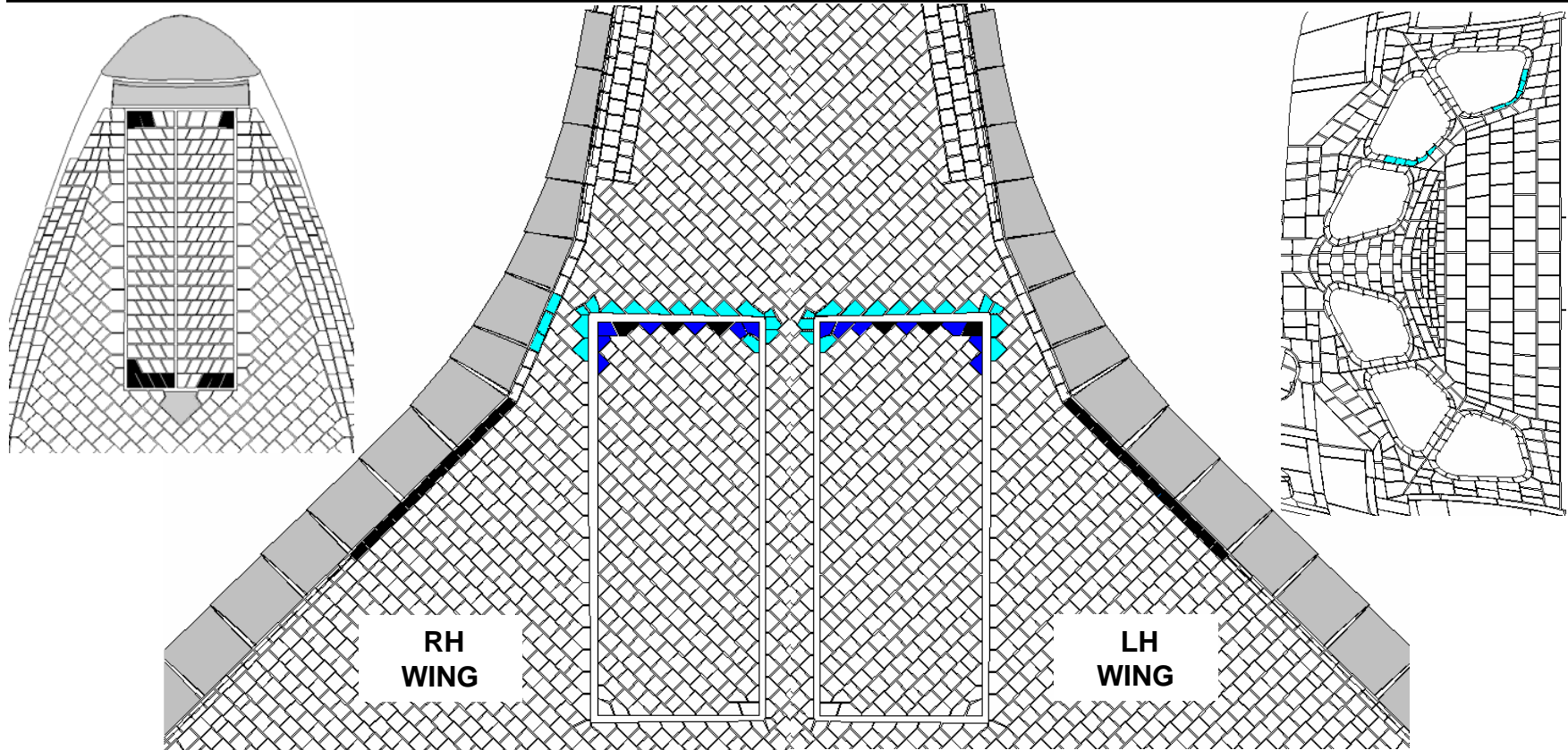
- **TPS Inspections 100% Complete**

- 256 Cavities
- 1775 Total WADs
- 1283 Closed WADs
- 147 Need Engineering Dispo
- 492 Open WADs

- **Gap Fillers**

- Gap Filler Inspections 100% Complete
 - 508 Bonded

BRI Current Status (STS-120)



RH
WING

LH
WING

RE
T

LE
T

- COMPLETE PRIOR TO STS-120= (41)
- STS-120 COMPLETE= (25)
- STS-120 TO GO= (54)

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TOTAL= (120)

Issues and Concerns

- **R/H Pod Installation**
- **Payload Swap Products**
- **PLBD Actuator #1 Potential Removal**
- **WSB #1 Relief Valve R/R**
- **Node 2 Clearance Checks**
- **Potential COPV Tank Inspection**

STATUS

OPR: USA - J. Taylor, INTEG FM (1-7420)
NASA - S. Stilson, PH-O (1-9103)

USA NASA

C C

CONCUR

Creation Date: 17 APR 07
Revision Date:
Revision:

STS-120 / OV-103

Integrated Operations Assessment Summary

Payloads: ISS-23-10A NODE 2 (VERT)

C=Concur NC=Non-Concur

AUGUST

SEPTEMBER

2007

OCTOBER

▲ ORB/ET MATE

▲ PL TO PAD

▲ SSV TO PAD

▲ TCDT

STS-120 LAUNCH ▲

VAB HB-1/MLP-2

■ S0004 ORB/ET MATE

■ S0008 SHUTTLE I/F TEST

■ V1149 UMB I/F CKS

■ A5214 ROLLOUT PREPS

■ S0044 SIM RUN

PAD A

■ A5214 SSV XFER TO PAD

■ S0009 LAUNCH PAD VALIDATION

■ V1308 /V1046.001/.002/V1202 ENG FRT/He SIG/BALL SEAL LK CKS

■ S0024 HYPER PREPS

■ S0017 TCDT

▨ S0024 PRELAUNCH PROPELLANT LOAD

■ CRYO SIM

■ S0600.001 PL INSTL-PCR

■ S0600.001 OPEN PLBDs

■ S0600.001 PL INSTL-PLB

■ S0600.001 OBSS SENSORS INSTL/TSTG

▲ F/C PL INSP

■ S08120 PL CLOSEOUTS

■ S08120 CLOSE PLBDs FOR FLT

■ S1287 ORB AFT CLOSEOUT

■ V1103 EMU FUNCTIONAL/CKOUT

■ FCS 1ST VERTICAL STOW

▨ S5009 ORD INSTL-PART 3

▨ S0071 HYPER/MPS PRESS/CLOSEOUT

■ S1005/S1006 ET PURGES

▨ S0007 LAUNCH CD

▲ T-0

Workdays Required

7 VAB (0 P)

24 PAD (11 P/8 C)

CONTINGENCY

PREMIUM DAYS

STS-120 Launch Site Flow Review

STS-120 Modification Deferrals

Mike Storm

OV-103 Project Engineer

USA Ground Operations

Introduction

Seven (7) Partial or Complete Deferral Items

- At the STS-122 LSFR, a number of modifications were baselined to be worked on an Opportunity/Mandatory basis. These modification efforts were partnered with the program and the work performed is consistent with the planned efforts at KSC. The remaining portion of the modifications that were not performed need to be deferred to a future flight.

Introduction

Partial or Complete Deferral Items:

(1) MCR 19546 Inboard Elevon Drain Hole Relocation

TCTIV1919546REF,0103,0

VK70-100048-001,0103,0

(2) MCR 19735 Front Spar Sneak Flow

TCTIV1019735REF,0103,3

TCTIV1919735REF,0103,3

(3) MCR 19763 Horse Collar Gap Filler Redesign

TCTIV1919763REF,0103,3

(4) MCR 23227R1 Connector Saver KU Band

VK70-795153-001,0103,2

Introduction

Partial or Complete Deferral Items (Continued):

(5) MCR 23227 Connector Saver-LP01

K598-430013-001,0011,2

K598-430013-002,0011,2

(6) MCR 23411 Freon Aft Coldplate Network Filter

VK70-635308-001,0103,0

VK70-854103-001,0103,0

(7) MCR 23420 Elimination of 0 Gage Wire Damage

TCTIV3423420REF,0103,0

VK70-794137-001,0103,0

VK70-794137-002,0103,0

STS-120 Integrated Launch Site Flow Review

Presenter
Stephen Reilly

Date
05-24-07

Backup Material

FRWG Presentation (With Minor Changes)



STS-120 Launch Site Flow Review	Presenter MK-SIO / A. Swift	
	Date 5-24-07	Page 1

Mandatory RCNs:

KV17298 V56 - ET UMB DOOR TST RQMT U/D 06/01/07

Non-Mandatory Value Added RCNs:

OV17370 V45 - FCP FLEXHOSE INSPECTION PRELIMINARY
KS17372 SOO - ADD EXCEPTION FOR APCU AND OPCU 06/08/07

BACKUP

- **Mod Record and MECSLSI Updates**
- **Engineering, Hardware and Certification Status**

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Modifications for Baseline			
30005 Barnum	<p><u>Convert Ceramic Inserts to Bonded FRSI Plugs on Aft Fuselage OMS Pod Leading Edge Tiles</u></p> <p>Replaces ceramic inserts with bonded FRSI plugs in the OMS Pod forward-outboard corner tiles (1 carrier panel with 3 tiles having 5 fastener inserts per pod). Ceramic insert failures have occurred on the vehicles and, where possible, it is desired to eliminate ceramic inserts in areas of the vehicle in order to reduce a potential debris risk should they become dislodged during flight. SE&I assessment showed the forward areas of the OMS pods provide the greatest risk reduction for areas not addressed to date</p>	<p>SUB-EO-30005.0011.0 - Convert from ceramic to bonded FRSI plugs on tiles at fwd/outbd corner of OMS pods (LH)</p> <p>SUB-EO-30005.0023.0 - Convert from ceramic to bonded FRSI plugs on tiles at fwd/outbd corner of OMS pods (RH)</p> <p>No Tech Order / MECSLSI Impact</p>	Installation engineering release 5/31/07, tree-up engineering release 6/5/07
19586 Benedict	<p><u>Airlock Muffler Mod to Accommodate Foam Changeout</u></p> <p>The airlock ISS booster fan muffler uses an Aerofonic foam liner inside a shell housing to attenuate noise during fan operation. The foam material is being replaced off-line during the Flight 34 flow due to exceedance of the 10-year limited age life requirement. During off-line foam replacement, rework to the duct housing is required (cut and splice) and an update to the adhesive bond procedure requirement was implemented to allow curing at ambient temperature to facilitate ease of repair (bond spec MA0106-340 spec allows option of 7 day ambient cure or oven cure at 190 +/-10F for 2.5 +/- 0.5 hours)</p>	<p>TCTIM6419586REF.0002.0 - Airlock Muffler Mod</p> <p>Tech Order Affected but no dash roll / No MECSLSI Impact M072-643402-009 (interchangeability)</p>	

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Baselined Mandatory Mods			
17222 Kadri / Munoz	WLE Sensor System Voltage Boost Regulator The WLE sensor system is being updated with a Voltage Boost Regulator (VBR) circuit to expand the on-orbit operational temperature range of the WLEIDS hardware to allow operation at lower temperatures (currently limited below ~ 0 degrees F). The VBR will be installed in series internal to the WLEIDS hardware, between the battery assembly and the WLE electronics (sensor and sensor-side relay units). Also, a new specification will be developed and referenced on the tech order to document proper installation, inspection and service procedures for the WLEIDS GFE box and an associated OMRS update (Ref MCR 23470).	TCTIM0017222REF.0001.3 - End item update to V886-000002 for new GFE WLE IDS part number Tech Order & MECSLSI Impacts: (IS) M072-756111-005 & -006 (WAS) M072-756111-003 & -004 Model MV0886A	Both tech order and new WLE sensor hardware instl spec (ML0303-0089) are released. V886-000002 A12 released 5/2/07 (a) Hardware and certification to be provided by GFE
17222 Kadri	IBA Worksite Interface Fixture (WIF) Socket Addition The Integrated Boom Assy (IBA) aft transition will be modified by adding one EVA Worksite Interface Fixture (WIF) socket interface which will allow EVA on the end of the IBA if required to reach the under belly of the vehicle in support of potential on-orbit tile repair operations. Boeing OBSS installation tech will be updated to reflect revised GFE IBA configuration.	TCTIM0017222REF.0001.1 - End item update to V092-000002 for new IBA GFE part number Tech Order & MECSLSI Impacts: (IS) M072-544506-003 (WAS) M072-544506 -002 Model MV0092A	Boeing tech order based on provided GFE design data (d) Tech order engineering released - V092-000002 ERD 5/30/07 (b) Hardware and certification to be provided by GFE. For OV-103 WIF Adapter will be provided installed on delivered IBA end item 3.
17222 Kadri	Camera PTU and Illuminator Fastener Change Modification to increase the strength of the pan-tilt unit (PTU) of the 4 payload bay bulkhead cameras, the OBSS sensor package 1 PTU, the RMS Elbow camera PTU, and the RMS Wrist Camera fasteners in the CTVC Illuminator Assembly. Fasteners change will eliminate the current negative margin of safety for yielding and associated waivers. Boeing installation tech orders will be updated to reflect the modified GFE PTU / fastener configurations.	017222.0103.5 - End item updates to V548-000002 & V092-000002 for new GFE camera, sensor package and illuminator part numbers TCTIM0017222REF.0005.7 - End item update to V082-000002 for new RMS GFE cameras Tech Order & MECSLSI Impacts: Bulkhead cameras: (IS) M072-750025 -072, -073, -074 & -075 (WAS) M072-750025-058, -067, -060 & -061 Model MV0548A OBSS Sensor Package 1: (IS) M072-710282-008 (MECSLSI update in place) Model MV0092A RMS Elbow Camera: (IS) M072-544504-005 (WAS) M072-544504 -001 Model MV0082A RMS Wrist Illuminator: (IS) M072-544504-006 (WAS) M072-544504 -003 Model MV0082A	(e) Tech order engineering is released. ERD for tree-up end item updates: V548-000002 ERD 5/30/07 V092-000002 ERD 5/30/07 V082-000002 E11 rel'd 5/10/07 (c) Hardware and certification to be provided by GFE Note: New FCE Camera assy options drawing PTU does not account for specific configurations for specific combinations of camera type, PTU config, etc. ITVC vs CTVC camera configs (camera B location ITVC and camera A, C & D location CTVC for STS-120) not specifically accounted for in bulkhead camera engineering tech order release. Camera configuration control disclaimer will be added to Boeing tech orders per 4-17-07 OCCB.

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Baselined Mandatory Mods			
19755 Riley / Bacon	RMS MPM Pedestal Over-Center Stops New Boeing stops to replace GFE stops on RMS MPMs (Shoulder, FWD, MID and AFT locations) due to potential that mission unique loads will exceed MPM over-center mechanism capability	VK82-544010-003.0005.2 - RMS MPM Pedestal Over-Center Stops No MECSLSI update required from STS-116 configuration: M072-544501-087 (Ref) Mod config established at -045 Config waiver taken at flt 33 for unworked dash numbers prior to -087 (MV0082A)	Requirement for new stops dependent upon flight specific loads analysis, completed late in the flow per loads analysis template.
19789 Lee	Shuttle-Station Power Transfer System (SSPTS) Station-Shuttle Power Transfer System (SSPTS) will provide the capability to convert 120 Vdc International Space Station (ISS) secondary power to 28 Vdc Orbiter power to supplement power from the Orbiter fuel cells for Orbiter electrical loads, thereby providing increased on-orbit docked mission duration with the ISS. The SSPTS also provides the capability for converting 28 Vdc Orbiter power to 120 Vdc to feed power to Shuttle payloads. Includes development, delivery and integration of the following: ISS Jumpers provided by Space Station: Routes 120 Vdc SSPTS input power from the ISS Remote Power Controller Modules to the existing APAS 'X' connectors; Power Transfer Units (PTUs) for Shuttle provided by Hamilton Sundstrand Rocketdyne to convert 120 Vdc power from the ISS to 28 Vdc power for use by the Orbiter and converts 28 Vdc Orbiter power to 120 Vdc for use by the Shuttle payloads; Orbiter Mod Kits (wiring, structures, switches, contacts & misc hardware) provided by Boeing used to route the 120 Vdc input power from the APAS 'X' connectors thru the Orbiter to the PTUs, route 28 Vdc output power from the PTU to the Orbiter Main Distribution Control Assembly (MDCA), route 120 Vdc output power from the PTU to the Shuttle payloads, and enables modification to Orbiter A15 Panels and MDCAs.	VK70-347413-001.0103.0 - Mid fuselage structure and wiring supports for SSPTS VK70-360312-001.0103.0 - TCS modifications to accommodate SSPTS VK70-360312-002.0103.0 - Additional TCS modification kit parts VK70-704022-001.0103.0 - Mid fuselage & crew module avionics & panels modifications VK70-730481-001.0103.0 - Crew module D&C panels A12 & A15 modifications VK70-773363-001.0103.0 - Crew module harness intl VK70-774353-001.0103.0 - Crew module, mid, aft wiring instl VK70-775373-001.0103.0 - Aft fuselage harness instl K828-341013-001.0002.0 - Kit parts for payload bay support longeron K828-774353-001.0002.0 - ODS/airlock wiring mission kit mod TCTIM3419789REF.0001.0 - Transfers fluid longeron from MV0766A mission kit to orbiter to support SSPTS K845-346631-001.0001.1 - Kit contains hardware for M072-340087 for all vehicles - seq 1 will cover usage for OV-103 Tech Order & MECSLSI Impacts: M072-340175-001 Adds additional support fittings to existing bay 2 port side fluid longeron supports (MV0828A) M072-340084-007 Adds support brackets to Xo807 & Xo863 frames to support added SSPTS wiring (MV0845A) M072-341828-028 External airlock config with SSPTS mods (MV0828A) M072-367000-026 DLSFR update to return to previous -026 config as -032 TCS partial liner config with SPTS mods to Xo576 bulkhead will not be worked since liner is not required for STS-122 (MV0532A) M072-784633-015 Adds config/views for SSPTS cross-ship wiring at Xo863 frame (MV0426A MADS) M072-794011-048 Adds config / views for SSPTS cross-ship wiring at Xo863 & Xo807 frames (MV0525A Tank Set 4) M072-794031-026 Adds config / views for SSPTS cross-ship wiring at Xo576 bulkhead, Xo863 & Xo807 frames (MV0544A Tank Set 3) M072-794051-051 SSPTS wiring at Xo863 frame and bay 5 shelf 6 (MV0566A Tank Set 5) M072-794746-004 Orbiter sidewall & sill to external airlock harness instl (MV0828A)	(4a) Boeing mod kit hardware delivered (4b) PTU units 3 & 4 delivery for OV-103 (4c) GSE Output Over-voltage Tester (OOVT) delivery date (4) Go for scar / wiring installation. Go for PTU installation given at 1/24/07 OPO tagup. New data as of 1/29/07 indicates improper conformal coating in PTUs. Will fly PTUs as-is on MOU for STS-120 with plan to recycle spares for rework into the fleet during OV-105's and OV-103's next flows. DCR scheduled for 5/16/07 - PTU CAR submittal / approval will not occur until Chit J6236 Ripple Voltage Test is complete and data evaluated. Note: checkout for initial implementation flow on OV-03 will be by Chit J6230. Chit J6236 is also required to perform EMI ripple voltage characterization checks on the vehicle. Checkout for second SSPTS flow (OV-103 / STS-122) will be by OMRSD RCN, which will incorporate 'lessons learned' from the OV-105 & OV-103 checkouts.

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Baselined Mandatory Mods			
19810 Rodriguez	AMEC/EMEC SMIA Mounting Nut Mod Replaces five nuts, used to mount the serial multiplexer interface adapter (SMIA) sub-module to the multiplexer interface adapter (MIA) module or parent assembly, with smaller diameter nuts to properly fit into their respective SMIA cutout or counterbore. Corrective action for condition found during final inspection following repair of AMEC S/N 4. MC450-0016-0009 revised to MC450-0016-0029 for AMEC and MC450-0016-0007 revised to MC450-0016-0027 for EMEC (interchangeability for OV-103). OV-103 hardware modified during flt 31 flow by restricted MR due to lead time required to implement design change via vendor engineering. This will be a 'paper modification' closing the work performed by MRs (less replacement of the re-ID labels for the internal module and external LRU - ref PR EPD-3-31-1588 & PR EPD-3-31-1590) to the design engineering.	TCTIV7019810REF.0103.0 - MEC SMIA mounting nut mod No Tech Order / MECSLSI Impact	(27) Modified nuts already installed - MR documentation to be replaced by mod engineering ('paper modification') only less application of SRU / LRU, ID labels provided by vendor to Logistics. Note: Plan is to combine implementation of this mod with fleet LRU recycle plan (NSLD work) for tin whisker mitigation by chit J6165. As of 1/31/07 both units recycled from OV-105 have been reworked (mod completion & tin whisker mitigation) by NSLD and delivered. SRU tin eyelets are embedded with RTV.
19896 Hunt	Emergency Egress Slide Lanyard Mod (CCCD Mod) This mod adds a shorter lanyard to the Emergency Egress Slide to reduce the risk of an incomplete deployment.	TCTIM0019896REF.0001.0 - Emergency Egress Slide Deployment Mechanism Lanyard Mod CCCD update required: (IS) M072-661651-033 (WAS) M072-661851-029 Model MV0651A CCCD CR S063027W authorized 3/5/07	Hardware delivery date for third modified slide from vendor. Note that OV-103 could use this unit or a unit previously delivered and flown on another vehicle.
23420 Antonios	0-Gauge Wire Protection for Lower Midbody Wire Tray Implements corrective actions to eliminate damage to 0-gauge harnesses from milson fasteners on wire tray covers and tray clamp fasteners by primarily rotating harness bundle clamps to provide additional clearance to tray cover fasteners and adding chafe protection as required. Works with MCR 19618 Wire Tray Riser Removal to eliminate wire tray risers at some locations to prevent wire harness crowding and associated tray cover bulging.	TCTIV3423420REF.0103.0 - Wire tray structure related mod VK70-794137-001, 0103, 0 - Wire harness routing and clamping mod VK70-794137-002, 0103, 0 - Additional misc bolt & nut kit hardware No Tech Order / MECSLSI Impact	Partial implementation likely as dictated by specific wire tray condition and impacts of implementing Wire Tray Riser Removal and SSPTS. None of this mod performed during this flow - will defer at STS-120 DLSFR.

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Baselined Mandatory Mods			
23448 Antonios	<p><u>ECO Sensor System Instrumentation</u> Implements voltage measurements for all four MPS ECO LO2 and LH2 Sensor Transducer Circuits to provide insight into ECO sensor system performance anomalies. In the event of recurrence, the added measurements will help identify the source and type of the anomaly in the Point Sensor Transducer circuits. However, the added voltage measurements will not be able to differentiate between the ET and Orbiter wiring/transducer anomalies. The Point Sensor Checkout System combined with the added voltage measurements provides tools to assist in allowing deviation of the Launch Commit Criteria which presently requires 4 of 4 ECO sensors to not be indicating dry. In addition, these measurements allow real time discernment of failed wet ECO sensors during ascent.</p> <p>See also MCR 30070 for ECO Sensor Instrumentation Re-Wire follow-on Mod</p>	<p><u>TCTIV3523448REF.0103.0</u> - ECO Sensor Av Bay 5 & 6 instrumentation rewire (structures tree-up drawings) <u>TCTIV7023448REF.0103.0</u> - ECO Sensor DSC mod <u>TCTIV7723448REF.0103.0</u> - ECO Sensor Av Bay 5 & 6 instrumentation rewire</p> <p>No Tech Order / MECSLSI Impact</p>	<p>Avionics/electrical implementation EOs, upper level avionics and structures accum / tree-up drawings released (8) Parts (wiring / splices) available on site</p> <p>Ref OCRD S165037</p> <p>Schematics and SAIL drawings released. MAST II software DCR submitted.</p> <p><i>(8a) Implementation of original mod engineering was on hold pending final re-design definition to address a design deficiency with the mod. The current design can potentially induce a failure in the MPS Point Sensor Box (resulting in erroneous sensor reading) due to inadvertent short circuit on the ECO Sensor instrumentation return circuit wiring, which is not electrically isolated. Corrective engineering is being implemented by EOTF, based on re-design initially implemented on OV-105 (ref MCR 30070). Additional fallout also showed crit 1 wiring runs in common harness bundles, in violation of wire routing requirements. Evaluation of OV-103 wire harness runs is under evaluation to determine if additional corrective actions are required.</i></p>
30005 Barnum	<p><u>Arrowhead Blanket Stitch Mod</u> Corrective action modification to the Arrowhead RCC thermal blanket by tying off stitches at one inch intervals on the inboard attachment sleeving to mitigate blanket protrusion and potential for early boundary layer transition during re-entry (protruding sleeving noted during STS-116). This will reduce the potential for increased heating on the lower surfaces and prevent blanket sleeving from liberating and becoming a debris source.</p>	<p><u>TCTIV3930005REF.0103.0</u> - Arrowhead Blanket Stitch Mod</p> <p>No Tech Order / MECSLSI Impact</p> <p>OPO authorization per OCRD S165153A PRCBD authorization per S115122R3 2/14/07</p>	
30005 Barnum	<p><u>Bond FRSI Plugs into Emergency Egress Access Door TPS Panel</u> (Mandatory) The four FRSI plugs installed in the TPS panel of the RH forward fuselage emergency egress access door installation are a potential debris source. This mod will apply RTV bond to the FRSI plug installation to reduce the likelihood dislodging during flight. This change does not affect ground crew rescue procedures.</p>	<p><u>TCTIV3930005REF.0103.1</u> - Bond Emergency Access Door Panel FRSI plugs</p> <p>No Tech Order / MECSLSI Impact</p>	Certification not affected

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Baselined Mandatory Mods			
30005 Task 9 Barnum	<u>Oversize FRSI Plugs on Forward OMS Pod Locations</u> (Mandatory) Installs oversize FRSI plugs into a total of six tiles on each OMS Pod, which are installed on composite carrier panels on the forward edges of each OMS Pod. Thermal assessment showed that if the FRSI plugs at these locations were inadvertently released, the carrier panels could be exposed to temperatures above their material limits. Modifying these locations to use oversize FRSI plugs will significantly reduce the likelihood of them becoming dislodged during flight.	<u>TCTIV3930005REF.0011.0</u> - REPLACE FRSI PLUGS WITH OVERSIZED FRSI PLUGS (LP01) <u>TCTIV3930005REF.0024.0</u> - REPLACE FRSI PLUGS WITH OVERSIZED FRSI PLUGS (RP03) No Tech Order / MECSLSI Impact	All installation and tree-up engineering released
30005 Barnum	<u>Convert Ceramic Inserts to Bonded FRSI Plugs on Aft Fuselage OMS Pod Leading Edge Tiles</u> Replaces ceramic inserts with bonded FRSI plugs into the tiles at the aft fuselage forward edge interface to the OMS pods. Ceramic insert failures have occurred on the vehicles and, where possible, it is desired to eliminate ceramic inserts in areas of the vehicle in order to reduce a potential debris risk should they be dislodged during flight. SE&I assessment showed the forward areas of the OMS pods provide the greatest risk reduction for areas not addressed to date. The 17 tiles on each side of the vehicle at the forward edge interface to each OMS pod installed on carrier panels are rarely removed as part of normal OPF flow operations, including OMS pod removal.	<u>TCTIV3930005REF.0103.2</u> - Convert Ceramic Inserts to Bonded FRSI Plugs on Aft Fuselage OMS Pod Leading Edge Tiles No Tech Order / MECSLSI Impact	All installation and tree-up engineering released
30070 Reinders	<u>ECO Point Sensor System Measurement Rework</u> Design changes to original ECO system instrumentation (ref MCR 23448) to eliminate instrumentation wire return ground issue which could cause failure of the ECO sensors being instrumented. Includes wire separation, added wire protection and circuit resistors.	<u>030070.0103.0</u> - ECO Sensor System Instrumentation Redesign No Tech Order / MECSLSI Impact	(f) Implementation and rework details for wire separation being implemented by TPS-EOTF. CR S062808 approved at 4/6/07 noon PRCB. <i>Additional fallout also showed crit 1 wiring runs in common harness bundles, in violation of wire routing requirements. Evaluation of OV-103 wire harness runs is under evaluation to determine if additional corrective actions are required.</i>

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Authorized Non-Flight Specific / Attrition Mods for Opportunity Implementation			
19618 Antonios	Wire Tray Riser Removal (Partial) To be worked as a partial mod with MCR 19789 SSPTS and MCR 23420 0-Gauge Wire Protection implementation. Removes the risers in the bottom of the wire trays; adds protective Teflon sheeting at inter-tray gaps; opens up EMI barrier cutouts and adds grommets on cutout edges; replaces torque set screws with hi-Loks; adds protective coating on payload wire tray cover Milson fastener receptacles.	VK70-340023-001, 0103.1 - Wire tray structures mod engineering & hardware TCTIV7919618REF.0103.0 - Wiring installation changes Authorized as non-flight specific by PRCBD S115114AC. No Tech Order / MECSLSI Impact	Authorized as non-flight specific by PRCBD S115114AC
19546 Barnum	Inboard Elevon Tile Enhancement (Hub Tile Mod) Replaces 2 hub tiles on the inboard elevon area with a single, more robust tile / tile design.	SUB-EO-19546.0103.0 - New Inbd Elevon Hub Tile (Substitution) Authorized as attrition by PRCBD S086425DB No Tech Order / MECSLSI Impact	(16) Parts to be fabricated at KSC Attrition authorized PRCBD S086425DB
19001 Closed	Elevon Cove Columbium Seal Spring Mod (Attrition) This mod implements the redesigned elevon cove columbium seal spring to provide greater seal stiffness. Stiffer spring will improve sealing and reduces potential for seal cocking and cove heating structure damage.	SUB-EO-19001.0103.0 - Stiffened Columbium Seal Spring No Tech Order / MECSLSI Impact Attrition authorization in place per S086425BE	
23141 Closed	Thermal Window 7/8 Thicker Pane Mod (Attrition) This mod implements a thicker thermal pane for overhead observation windows 7 and 8, which has more capability with respect to ascent debris damage and MMOD. Includes redesigned window retainer and reversed installation of the Window 8 pyro sep bolt, which will allow R&R of window 8 without scrapping the pyrotechnic cord	SUB-EO-23141.0103.0 - Thicker windows and redesigned retainers for Windows 7 & 8 No Tech Order / MECSLSI Impact Attrition authorization in place per S086425ED	(d) Updated windows certification with latest SE&I loads inputs and refined modeling analysis. Cert plan reviewed by OPO in mid February - install at risk decision to made at that time. Certification estimated submittal date is 5/16/07

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Baselined Opportunity Mods			
19546 Barnum	<u>Inboard Elevon Drain Hole Relocation</u> Elevon structural drain hole will be relocated from the side of the elevon to the top of the elevon. The old drain hole tile will be replaced with a "normal" tile. Provides a new RTV drain plug which will allow drainage and prevent rain water intrusion into the drain hole and elevon cavity (new RTV drain plug authorized under MCR 23422 with engineering released under MCR 19546 mod codes).	<u>TCTIV1919546REF.0103.0</u> - Modification of inboard elevon tile for relocated drain hole <u>VK70-100048-001.0103.0</u> - Structural mod to relocate elevon drain hole No Tech Order / MECSLSI Impact	(1) Design center provided kits delivered. Drain hole plug to be fabricated on-site at KSC
19735 Barnum	<u>WLE Spar "Sneak Flow" Protection</u> Implements partial deferral of remaining Non-RTF mandatory panels (1-4)	<u>TCTIV1019735REF.0103.3</u> - Front Spar protect for sneak flow - Structures (Panels 1-4) <u>TCTIV1919735REF.0103.3</u> - Front Spar protect for sneak flow - TPS/RCC (Panels 1-4) No Tech Order / MECSLSI Impact	(2) Hardware provided by KSC Back-Shop.
19743 Barnum	<u>BRI-18 TPS Hardening - MLG Door</u> Implements TUF-coated BRI tile which is tougher than the current RCG-coated LI-2200 and FRCL-12 tiles. This MCR authorizes implementation on an attrition basis for the MLGD periphery tile locations.	<u>SUB-EO-19743.0103.0</u> - MLGD TPS Hardening Substitution No Tech Order / MECSLSI Impact Note: Mod record is authorized attrition mod and require no additional program authorization.	(17) Current authorization provides 160 billets of BRI-18 material per vehicle & 50 containers of TUF/Slurry under MCR 19743, which also will be used to cover attrition implementation under MCR 19874. As of 11/3/06, all of the 480 total billets and all 50 total containers of slurry have been delivered. Will require billet allocation and final KSC backshop fabrication prioritization based on vehicle attrition needs. CAR 30 covers full 17 mission certification.
19763 Barnum	<u>Lower WLE Carrier Panel Horse Collar Gap Filler Redesign</u> Implements partial deferral of remaining Non-RTF mandatory panels (1-4)	<u>TCTIV1919763REF.0103.3</u> - WLE Horse Collar Redesign (Panels 1-4) No Tech Order / MECSLSI Impact	(3) Hardware provided by KSC Back-Shop.

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
<u>Baselined Opportunity Mods</u>			
19874 Barnum	<u>BRI-18 TPS Hardening - Other Vehicle Areas</u> Implements TUF-coated BRI tile which is tougher than the current RCG-coated LI-2200 and FRCL-12 tiles. This MCR authorizes implementation on an attrition basis for the NLGD periphery, ET Door periphery, Window (1-6) carrier panels and lower LESS Carrier Panel locations.	<u>SUB-EO-19874.0103.0</u> - NLG Door BRI-18 Hardening (SUBST) No Tech Order / MECSLSI Impact	NLG Door Portion of Mod (17) - Applies to all MCR 19874 material deliverables. Current authorization provides 160 billets of BRI-18 material per vehicle & 50 containers of TUF/Slurry under MCR 19743, which also will be used to cover attrition implementation under MCR 19874. As of 11/3/06, all of the 480 total billets and all 50 total containers of slurry have been delivered. Will require billet allocation and final KSC backshop fabrication prioritization based on vehicle attrition needs. CAR 34 covers full 17 mission certification.
		<u>SUB-EO-19874.0103.1</u> - LESS Carrier Panel BRI-18 Hardening (SUBST) No Tech Order / MECSLSI Impact	Lower WLE Carrier Panel Portion of Mod (18) All 14 drawings including tree-up released Cert covers full 17 flight certification - 'Go' implementation based on completed sequence of environment cycle testing (report released 8/18/06) and additional vehicle area specific analysis. CAR revision 42 superceded CAR 41 document updated environments in the aero thermal analysis.
		<u>SUB-EO-19874.0103.2</u> - W1-6 Carrier Panel BRI-18 Hardening (SUBST) No Tech Order / MECSLSI Impact	Window Carrier Panel Portion of Mod (19) All engineering released 7/28/06 due to ground ops request for re-prioritization. Cert submittal will cover full 17 flight certification - 'Go' implementation based on completed sequence of environment cycle testing (report released 8/18/06) and additional vehicle area specific thermal analysis.
		<u>SUB-EO-19874.0103.3</u> - Placeholder for ET Door Perimeter BRI-18 Hardening (SUBST) Attrition authorization in place per S086425FM 1/24/07. No Tech Order / MECSLSI Impact	ET Door Perimeter Portion of Mod (20) SWRI ice impact testing completed and evaluation of results reviewed with OPO 1/10/07 resulting in OK for implementation. Engineering release complete (2 working level drawings and 1 tree-up). Vehicle side drawing released 2/1/07 Door side engineering released 2/2/07

Mod Record / MECSLSI Updates for STS-120 LSFR

MCR NO.	MCR TITLE	KIT-MOD RECORD / TECH ORDER IMPACT DESCRIPTION	REMARKS
Baselined Opportunity Mods			
23227 Antonios	Connector Saver Redesign Redesigned connector savers (ME414-0630) provide proper interfacial seal and wavy washer engagement retention force to reduce risk of inadvertent demate during use. Implementation at remaining unworked locations (OMS Pods and Ku-Band) as Opportunity.	VK70-795153-001,0103,2 - Vehicle Conn. Saver Redesign (Ku-Band) K598-430013-001,0011,2 & K598-430013-002,0011,2 - LP01 OMS Pod Conn. Saver Kits K598-430014-001,0023,2 & K598-430014-002,0023,2 - RP03 OMS Pod Conn. Saver Kits No Tech Order / MECSLSI Impact	Non-implementation will require inspection of existing connector savers and tape
23411 Antonios	Aft Freon Coldplate Loop Filters Adds filters to the Freon Aft Cold-plate (ACP) Network to minimize the risk of flow blockage due to contamination to this network of coldplates. The filters will be installed in both freon loops between the FES tee and the flow meters and will be supported by new structural brackets. The filter has a greater capacity than other 25 micron filters and hence will not add additional periodic maintenance. The filters are off-the-shelf filters from Wintec LLC. Flow restriction due to contamination has occurred twice, both times resulting in significant impacts: STS-109 with near early mission termination & OV-103 post J3 OMM with 9 months of extensive, invasive vehicle inspection and hardware replacement. An off-the-shelf 25 micron filter will be used, built by the current supplier for many Shuttle filters.	VK70-635308-001,0103,0 - ECLSS filter & line modification VK70-854103-001,0103,0 - Structures supports for filter No Tech Order / MECSLSI Impact	(23) Structures and ECLSS kit delivered (24) Hardware certification to be by analysis & test - delta qualification for Shuttle vibration environment required was completed by vendor 10/25/06 - system level cert documentation complete. Waiver for OVEI requirement of 30 mission cycles will be required as qual test / cert will be for 10 mission cycles (end of program cost & schedule considerations) Mod has no effect on Software, LCC, OMRSD, Flight Rules Candidate for CR deferral.
23467 Bacon	WCS Configuration Change (CFE) Revises WCS dash number to WCS1000-25 with the following changes: a. Change vendor on dual vane compactor material webbing (new vendor qualification). b. Change WCS commode stave heat shrink material. c. Revise Check Valve gasket and o-ring seat material, check valve lubricant, revise poppet material specification. d. Add back shells to all Fan separators. e. Provides heel cups and inner & outer straps for the WCS foot restraint. Requires update to Boeing installation drawing, V070-623002 to reflect WCS part number change.	TCTIV6223467REF,0103,0 - WCS-25 configuration installation No Tech Order / MECSLSI Impact	(14) Installation drawing & certification is Boeing responsibility - Instl EO and tree-up released (15) WCS hardware delivery and certification is USA CFE responsibility
30001 Antonios	ET Umbilical Camera Flash Scar Installation (Opportunity) Mod installs a flash unit in the RH ET Umbilical to be utilized with the ET Umbilical Digital Camera to provide supplemental light to illuminate the ET for enhanced photographic and motion picture images during external tank (ET) separation. Flash will fill in shadow areas during day light and provide illumination for night launch. Flash unit and cable are GFE provided hardware. Plan is to install the GFE cable scar in the aft fuselage during this flow and install and utilize the flash unit during flight 35.	TCTIV7930001REF,0103,0 - Installation of GFE cable for umbilical camera flash No Tech Order / MECSLSI Impact for STS-122	(e) Installation engineering released - top accur / tree-up drawings ERD 5/25/07. (f) 7/26/07 is delivery date for GFE cable as of 5/8/07 - ground ops will attempt to implement based on improved delivery date. (g) No Boeing Orbiter certification - cert if required will be GFE responsibility Potential deferral candidate - pending final call on mod implementation

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Modifications for Baseline										
30005 Barnum	Convert Ceramic Inserts to Bonded FRSI Plugs on Aft Fuselage OMS Pod Leading Edge Tiles Replaces ceramic inserts with bonded FRSI plugs in the OMS Pod forward-outboard corner tiles (1 carrier panel with 3 tiles having 5 fastener inserts per pod). Ceramic insert failures have occurred on the vehicles and, where possible, it is desired to eliminate ceramic inserts in areas of the vehicle in order to reduce a potential debris risk should they become dislodged during flight. SE&I assessment showed the forward areas of the OMS pods provide the greatest risk reduction for areas not addressed to date	5/31/07	5/31/07	N/A	N/A	Go	N/A	N/A	N/A	Installation engineering release 5/31/07, tree-up engineering release 6/5/07
19586 Benedict	Airlock Muffler Mod to Accommodate Foam Changeout The airlock ISS booster fan muffler uses an Aerofoamic foam liner inside a shell housing to attenuate noise during fan operation. The foam material is being replaced off-line during the Flight 34 flow due to exceedance of the 10-year limited age life requirement. During off-line foam replacement, rework to the duct housing is required (cut and splice) and an update to the adhesive bond procedure requirement was implemented to allow curing at ambient temperature to facilitate ease of repair (bond spec MA0106-340 spec allows option of 7 day ambient cure or oven cure at 190 +/-10F for 2.5 +/- 0.5 hours)	Released	N/A	N/A	N/A	Go	N/A	N/A	N/A	
Baselined Mandatory Mods										
17222 Kadri / Munoz	WLE Sensor System Voltage Boost Regulator The WLE sensor system is being updated with a Voltage Boost Regulator (VBR) circuit to expand the on-orbit operational temperature range of the WLEIDS hardware to allow operation at lower temperatures (currently limited below ~ 0 degrees F). The VBR will be installed in series internal to the WLEIDS hardware, between the battery assembly and the WLE electronics (sensor and sensor-side relay units). Also, a new specification will be developed and referenced on the tech order to document proper installation, inspection and service procedures for the WLEIDS GFE box and an associated OMRS update (Ref MCR 23470).	Released	N/A	Delivered (a)	N/A	Go	N/A (a)	N/A (a)	N/A	Both tech order and new WLE sensor hardware instl spec (ML0303-0089) are released. V886-000002 A12 released 5/2/07 (a) Hardware and certification to be provided by GFE
17222 Kadri	IBA Worksite Interface Fixture (WIF) Socket Addition The Integrated Boom Assy (IBA) aft transition will be modified by adding one EVA Worksite Interface Fixture (WIF) socket interface which will allow EVA on the end of the IBA if required to reach the under belly of the vehicle in support of potential on-orbit tile repair operations. Boeing OBSS installation tech will be updated to reflect revised GFE IBA configuration.	Released (d)	N/A	N/A (b)	TBD	Go	N/A (b)	N/A (b)	N/A	Boeing tech order based on provided GFE design data (d) Tech order engineering released - V092-000002 ERD 5/30/07 (b) Hardware and certification to be provided by GFE. For OV-103 WIF Adapter will be provided installed on delivered IBA end item 3.

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Mods Authorized Since LSFR (Reference Only)										
19874 Barnum	BRI-18 TPS on ET Door Perimeter (Attrition)	Released	N/A	Delivered	N/A	Go	3/14/07 P 3/14/07 P	4/25/07 P 4/25/07 P	CR 07-395001-001X CAR 28-07-395001-001X	Engineering implementation has begun with release consists of 2 working level drawings and 1 tree-up. Vehicle side drawing released 2/1/07 Door side drawing released 2/13/07
19896 Hunt	Emergency Egress Slide Lanyard Mod (CCCD Mod) This mod adds a shorter lanyard to the Emergency Egress Slide to reduce the risk of an incomplete deployment.	Released	N/A	6/29/07	TBD	Go	12/8/07 A 12/8/07 A	2/14/07 A 2/14/07 A	05-25-623-0015-0001F CAR 25-623-0015-0001F CR	Hardware delivery date for modified slide from vendor.
19001 Closed	Elevon Cove Columbium Seal Spring Mod (Attrition) This mod implements the redesigned elevon cove columbium seal spring to provide greater seal stiffness. Stiffer spring will improve sealing and reduces potential for seal cocking and cove heating structure damage.	Released	N/A	N/A	N/A	Go	N/A	N/A	N/A	
23141 Closed	Thermal Window 7/8 Thicker Pane Mod (Attrition) This mod implements a thicker thermal pane for overhead observation windows 7 and 8, which has more capability with respect to ascent debris damage and MMOD. Includes redesigned window retainer and reversed installation of the Window 8 pyro sep bolt, which will allow R&R of window 8 without scrapping the pyrotechnic cord	Released	N/A	Delivered	N/A	No Go (d)	9/27/04 A 10/5/04 A 10/8/04 A 6/17/05 A 5/12/06 A 5/1/07 P 5/1/07 P	6/28/05 A 6/28/05 A 7/8/05 A 7/8/05 A 6/26/06 A 6/15/07 P 6/15/07 P	CR 07-390001-001M CR 07-390001-001M Err CAR 22-07-390001-001M CAR 24-07-390001-001M CAR 27-07-390001-001N Dev CR 07-390001-001P CAR 30-07-390001-001P	(d) Updated windows certification with latest SE&I loads inputs and refined modeling analysis. Cert plan to be reviewed by OPO by mid February - install at risk decision to made at that time. Certification submittal estimated to be ~5/1/07
30005 Barnum	Arrowhead Blanket Stitch Mod Corrective action modification to the Arrowhead RCC thermal blanket by tying off stitches at one inch intervals on the inboard attachment sleeving to mitigate blanket protrusion and potential for early boundary layer transition during re-entry (protruding sleeving noted during STS-116). This will reduce the potential for increased heating on the lower surfaces and prevent blanket sleeving from liberating and becoming a debris source.	Released	N/A	N/A	N/A	Go	3/8/07 P 3/8/07 P	5/19/07 P 5/19/07 P	CR 07-391001-001AC CAR 36-07-391001-001AC	

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Baselined Mandatory Mods										
17222 Kadri	Camera PTU and Illuminator Fastener Change Modification to increase the strength of the pan-tilt unit (PTU) of the 4 payload bay bulkhead cameras, the OBSS sensor package 1 PTU, the RMS Elbow camera PTU, and the RMS Wrist Camera fasteners in the CTVC Illuminator Assembly. Fasteners change will eliminate the current negative margin of safety for yielding and associated waivers. Boeing installation tech orders will be updated to reflect the modified GFE PTU / fastener configurations.	Released (e)	N/A	N/A {c}	TBD	Go	N/A {c}	N/A {c}	N/A	(e) Tech order engineering is released. ERD for tree-up end item updates: V548-000002 ERD 5/30/07 V092-000002 ERD 5/30/07 V082-000002 E11 rel'd 5/10/07 (c) Hardware and certification to be provided by GFE Note: New FCE Camera assy options drawing PTU does not account for specific configurations for specific combinations of camera type, PTU config, etc. ITVC vs CTVC camera configs (camera B location ITVC and camera A, C & D location CTVC for STS-120) not specifically accounted for in bulkhead camera engineering tech order release. Camera configuration control disclaimer will be added to Boeing tech orders per 4-17-07 OCCB.
19755 Riley / Bacon	RMS MPM Pedestal Over-Center Stops New Boeing stops to replace GFE stops on RMS MPMs (Shoulder, FWD, MID and AFT locations) due to potential that mission unique loads will exceed MPM over-center mechanism capability	Released	N/A	Delivered	N/A	Go	6/9/06 A	11/27/06 A	CAR 08-44-000002-001K	Requirement for new stops dependent upon flight specific loads analysis, completed late in the flow per loads analysis template.

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Baselined Mandatory Mods										
19789 Lee	Shuttle-Station Power Transfer System (SSPTS) Station-Shuttle Power Transfer System (SSPTS) will provide the capability to convert 120 Vdc International Space Station (ISS) secondary power to 28 Vdc Orbiter power to supplement power from the Orbiter fuel cells for Orbiter electrical loads, thereby providing increased on-orbit docked mission duration with the ISS. The SSPTS also provides the capability for converting 28 Vdc Orbiter power to 120 Vdc to feed power to Shuttle payloads. Includes development, delivery and integration of the following: ISS Jumpers provided by Space Station; Routes 120 Vdc SSPTS input power from the ISS Remote Power Controller Modules to the existing APAS 'X' connectors; Power Transfer Units (PTUs) for Shuttle provided by Hamilton Sundstrand Rocketdyne to convert 120 Vdc power from the ISS to 28 Vdc power for use by the Orbiter and converts 28 Vdc Orbiter power to 120 Vdc for use by the Shuttle payloads; □ Orbiter Mod Kits (wiring, structures, switches, contacts & misc hardware) provided by Boeing used to route the 120 Vdc input power from the APAS 'X' connectors thru the Orbiter to the PTUs, route 28 Vdc output power from the PTU to the Orbiter Main Distribution Control Assembly (MDCA), route 120 Vdc output power from the PTU to the Shuttle payloads, and enables modification to Orbiter A15 Panels and MDCAs.	Released	N/A	Delivered (4a) Delivered (4b) Delivered (4c)	N/A	Go (4)	7/3/06 A 7/3/06 A 5/11/06 A 5/25/07 P 2/21/07A	3/15/07 A 3/14/07 A 2/9/07 A 7/6/07 P TBD P	CR 09-367000-001Y CAR 15-09-367000-001Y (TCS cert) CR 21-409-0547-0010 CR & errata CAR 01-21-409-0547-0010B (Power Transfer Unit) CAR 164-02-340004-002M (Structures - PTU Instl on Av Bay 5, Shelf 6)	(4a) Boeing mod kit hardware delivered (4b) PTU units 3 & 4 delivery for OV-103 (4c) GSE Output Over-voltage Tester (OOVT) deliv'd 5/18/07 (4) Go for scar / wiring installation. Go for PTU installation given at 1/24/07 OPO tagup. New data as of 1/29/07 indicates improper conformal coating in PTUs. Will fly PTUs as-is on MOU for STS-120 with plan to recycle spares for rework into the fleet during OV-105's and OV-103's next flows. DCR held 5/16/07 - PTU CAR submittal / approval will occur after Chit J6236 Ripple Voltage Test is complete and data evaluated. Note: checkout for initial implementation flow on OV-03 will be by Chit J6230. Chit J6236 is also required to perform EMI ripple voltage characterization checks on the vehicle. Checkout for second SSPTS flow (OV-103 Flt 35) will be by OMRSD RCN, which will incorporate 'lessons learned' from the initial OV-105 & OV-103 checkouts.
19810 Rodriguez	AMEC/EMEC SMIA Mounting Nut Mod Replaces five nuts, used to mount the serial multiplexer interface adapter (SMIA) sub-module to the multiplexer interface adapter (MIA) module or parent assembly, with smaller diameter nuts to properly fit into their respective SMIA cutout or counterbore. Corrective action for condition found during final inspection following repair of AMEC S/N 4. MC450-0016-0009 revised to MC450-0016-0029 for AMEC and MC450-0016-0007 revised to MC450-0016-0027 for EMEC (interchangeability for OV-103). OV-103 hardware modified during fit 31 flow by restricted MR due to lead time required to implement design change via vendor engineering. This will be a 'paper modification' closing the work performed by MRs (less replacement of the re-ID labels for the internal module and external LRU - ref PR EPD-3-31-1588 & PR EPD-3-31-1590) to the design engineering.	Released	N/A	N/A (27)	N/A (27)	Go	6/17/05 A 6/17/05 A	7/13/05 A 2/13/06 A	CR 21-450-0016-0007C CAR 02-21-450-0016-0007C CR 21-450-0016-0009C CAR 02-21-450-0016-0009C	(27) Modified nuts already installed - MR documentation to be replaced by mod engineering ('paper modification') only less application of SRU / LRU, ID labels provided by vendor to Logistics. Note: Plan is to combine implementation of this mod with fleet LRU recycle plan (NSLD work) for tin whisker mitigation by chit J6165. As of 1/31/07 both units recycled from OV-105 have been reworked (mod completion & tin whisker mitigation) by NSLD and delivered. SRU tin eyelets are embedded with RTV.

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Baselined Mandatory Mods										
19896 Hunt	Emergency Egress Slide Lanyard Mod (CCCD Mod) This mod adds a shorter lanyard to the Emergency Egress Slide to reduce the risk of an incomplete deployment.	Released	N/A	6/29/07	TBD	Go	12/8/07 A 12/8/07 A	2/14/07 A 2/14/07 A	05-25-623-0015-0001F CAR 25-623-0015-0001F CR 25-651-000002-001G CR 07-25-651-000002-001G CAR	Hardware delivery date for third modified slide from vendor. Note that OV-103 could use this unit or a unit previously delivered and flown on another vehicle.
23420 Antonios	0-Gauge Wire Protection for Lower Midbody Wire Tray Implements corrective actions to eliminate damage to 0-gauge harnesses from milson fasteners on wire tray covers and tray clamp fasteners by primarily rotating harness bundle clamps to provide additional clearance to tray cover fasteners and adding chafe protection as required. Works with MCR 19618 Wire Tray Riser Removal to eliminate wire tray risers at some locations to prevent wire harness crowding and associated tray cover bulging.	Released	N/A	Delivered	N/A	Go	N/A	N/A	N/A	Partial implementation likely as dictated by specific wire tray condition and impacts of implementing Wire Tray Riser Removal and SSPTS. None of this mod performed during this flow - will defer at STS-120 DLSFR.
23448 Antonios	ECO Sensor System Instrumentation Implements voltage measurements for all four MPS ECO LO2 and LH2 Sensor Transducer Circuits to provide insight into ECO sensor system performance anomalies. In the event of recurrence, the added measurements will help identify the source and type of the anomaly in the Point Sensor Transducer circuits. However, the added voltage measurements will not be able to differentiate between the ET and Orbiter wiring/transducer anomalies. The Point Sensor Checkout System combined with the added voltage measurements provides tools to assist in allowing deviation of the Launch Commit Criteria which presently requires 4 of 4 ECO sensors to not be indicating dry. In addition, these measurements allow real time discernment of failed wet ECO sensors during ascent. See also MCR 30070 for ECO Sensor Instrumentation Re-Wire follow-on Mod	Released (8a)	N/A	N/A (8)	N/A (8)	Go	1/22/07 A 1/22/07 A 1/26/07 A 1/26/07 A	2/14/07 A 2/14/07 A 2/14/07 A 2/14/07 A (8a)	CR 21-770000L CAR 10-21-770000L (Avionics cert) CR 10-432-0205-001H CAR 02-10-432-0205-001H (MPS system cert)	Avionics/electrical implementation EOs, upper level avionics and structures accum / tree-up drawings released (8) Parts (wiring / splices) available on site Ref OCRD S165037 Schematics and SAIL drawings released. MAST II software DCR submitted. <i>(8a) Implementation of original mod engineering was on hold pending final re-design definition to address a design deficiency with the mod. The current design can potentially induce a failure in the MPS Point Sensor Box (resulting in erroneous sensor reading) due to inadvertent short circuit on the ECO Sensor instrumentation return circuit wiring, which is not electrically isolated. Corrective engineering is being implemented by EOTF, based on re-design initially implemented on OV-105 (ref MCR 30070). Additional fallout also showed crit 1 wiring runs in common harness bundles, in violation of wire routing requirements. Evaluation of OV-103 wire harness runs is under evaluation to determine if additional corrective actions are required.</i>

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Baselined Mandatory Mods										
30005 Barnum	Arrowhead Blanket Stitch Mod Corrective action modification to the Arrowhead RCC thermal blanket by tying off stitches at one inch intervals on the inboard attachment sleeving to mitigate blanket protrusion and potential for early boundary layer transition during re-entry (protruding sleeving noted during STS-116). This will reduce the potential for increased heating on the lower surfaces and prevent blanket sleeving from liberating and becoming a debris source.	Released	N/A	N/A	N/A	Go	N/A	N/A	N/A	
30005 Barnum	Bond FRSI Plugs Into Emergency Egress Access Door TPS Panel (Mandatory) The four FRSI plugs installed in the TPS panel of the RH forward fuselage emergency egress access door installation are a potential debris source. This mod will apply RTV bond to the FRSI plug installation to reduce the likelihood dislodging during flight. This change does not affect ground crew rescue procedures.	Released	TBD	N/A	N/A	Go	N/A	N/A	N/A	Certification not affected
30005 Task 9 Barnum	Oversize FRSI Plugs on Forward OMS Pod Locations (Mandatory) Installs oversize FRSI plugs into a total of six tiles on each OMS Pod, which are installed on composite carrier panels on the forward edges of each OMS Pod. Thermal assessment showed that if the FRSI plugs at these locations were inadvertently released, the carrier panels could be exposed to temperatures above their material limits. Modifying these locations to use oversize FRSI plugs will significantly reduce the likelihood of them becoming dislodged during flight.	Released	N/A	N/A	N/A	Go	N/A	N/A	N/A	All installation and tree-up engineering released
30005 Barnum	Convert Ceramic Inserts to Bonded FRSI Plugs on Aft Fuselage OMS Pod Leading Edge Tiles Replaces ceramic inserts with bonded FRSI plugs into the tiles at the aft fuselage forward edge interface to the OMS pods. Ceramic insert failures have occurred on the vehicles and, where possible, it is desired to eliminate ceramic inserts in areas of the vehicle in order to reduce a potential debris risk should they be dislodged during flight. SE&I assessment showed the forward areas of the OMS pods provide the greatest risk reduction for areas not addressed to date. The 17 tiles on each side of the vehicle at the forward edge interface to each OMS pod installed on carrier panels are rarely removed as part of normal OPF flow operations, including OMS pod removal.	Released	N/A	N/A	N/A	Go	N/A	N/A	N/A	All installation and tree-up engineering released

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Baselined Mandatory Mods										
30070 Reinders	ECO Point Sensor System Measurement Rework Design changes to original ECO system instrumentation (ref MCR 23448) to eliminate instrumentation wire return ground issue which could cause failure of the ECO sensors being instrumented. Includes wire separation, added wire protection and circuit resistors.	TBD (f)	TBD (f)	N/A	N/A	Go	N/A	N/A	N/A	(f) Implementation and rework details for wire separation being implemented by TPS-EOTF. CR S062808 approved at 4/6/07 noon PRCB. <i>Additional fallout also showed crit 1 wiring runs in common harness bundles, in violation of wire routing requirements. Evaluation of OV-103 wire harness runs is under evaluation to determine if additional corrective actions are required.</i>
Authorized Non-Flight Specific / Attrition Mods for Opportunity Implementation										
19618 Antonios	Wire Tray Riser Removal (Partial) To be worked as a partial mod with MCR 19789 SSPTS and MCR 23420 0-Gauge Wire Protection implementation. Removes the risers in the bottom of the wire trays; adds protective Teflon sheeting at inter-tray gaps; opens up EMI barrier cutouts and adds grommets on cutout edges; replaces torque set screws with hi-Loks; adds protective coating on payload wire tray cover Milson fastener receptacles.	Released	N/A	Delivered	N/A	Go	N/A	N/A	N/A	Authorized as non-flight specific by PRCBD S115114AC
19546 Barnum	Inboard Elevon Tile Enhancement (Hub Tile Mod) Replaces 2 hub tiles on the inboard elevon area with a single, more robust tile / tile design.	Released	N/A	N/A (16)	N/A	Go	7/18/01 A	9/26/01 A	CAR 25-07-190001-001U	(16) Parts to be fabricated at KSC Attrition authorized PRCBD S086425DB
19001 Closed	Elevon Cove Columbium Seal Spring Mod (Attrition) This mod implements the redesigned elevon cove columbium seal spring to provide greater seal stiffness. Stiffer spring will improve sealing and reduces potential for seal cocking and cove heating structure damage.	Released	N/A	N/A	N/A	Go	N/A	N/A	N/A	
23141 Closed	Thermal Window 7/8 Thicker Pane Mod (Attrition) This mod implements a thicker thermal pane for overhead observation windows 7 and 8, which has more capability with respect to ascent debris damage and MMOD. Includes redesigned window retainer and reversed installation of the Window 8 pyro sep bolt, which will allow R&R of window 8 without scrapping the pyrotechnic cord	Released	N/A	Delivered	N/A	Go (d)	9/27/04 A 10/5/04 A 10/8/04 A 6/17/05 A 5/12/06 A 5/18/07 A	6/28/05 A 6/28/05 A 7/8/05 A 7/8/05 A 6/26/06 A 7/6/07 P	CR 07-390001-001M CR 07-390001-001M Err CAR 22-07-390001-001M CAR 24-07-390001-001M CAR 27-07-390001-001N (Dev) CAR 30-07-390001-001O	(d) Updated windows certification with latest SE&I loads inputs and refined modeling analysis. Cert plan reviewed by OPO in mid February - install at risk decision to made at that time. Certification estimated submittal date is 5/16/07

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Baselined Opportunity Mods										
19546 Barnum	<u>Inboard Elevon Drain Hole Relocation</u> Elevon structural drain hole will be relocated from the side of the elevon to the top of the elevon. The old drain hole tile will be replaced with a "normal" tile. Provides a new RTV drain plug which will allow drainage and prevent rain water intrusion into the drain hole and elevon cavity (new RTV drain plug authorized under MCR 23422 with engineering released under MCR 19546 mod codes).	Released	N/A	Delivered (1)	N/A	Go	7/18/01 A	9/26/01 A	CAR 25-07-190001-001U	(1) Design center provided kits delivered. Drain hole plug to be fabricated on-site at KSC
19735 Barnum	<u>WLE Spar "Sneak Flow" Protection</u> Implements partial deferral of remaining Non-RTF mandatory panels (1-4)	Released	N/A	N/A (2)	N/A	Go	10/6/04 A 10/6/04 A 10/6/04 A	6/16/05 A 6/16/05 A 6/23/05 A	CR 08-199200-003T CAR 39-08-199200-003T CAR 146-05-100004-002J	(2) Hardware provided by KSC Back-Shop.
19743 Barnum	<u>BRI-18 TPS Hardening - MLG Door</u> Implements TUF1-coated BRI tile which is tougher than the current RCG-coated LI-2200 and FRCL-12 tiles. This MCR authorizes implementation on an attrition basis for the MLGD periphery tile locations.	Released	N/A	See Remarks (17)	See Remarks (17)	Go	10/13/05 A 10/24/05 A 01/25/06 A 9/1/06 A	5/03/06 A 5/03/06 A 5/03/06 A 11/20/06 A	CR 07-190001-001X CAR 28-07-190001-001X CAR 29-07-190001-001X CAR 30-07-190001-001X	(17) Current authorization provides 160 billets of BRI-18 material per vehicle & 50 containers of TUF1/Slurry under MCR 19743, which also will be used to cover attrition implementation under MCR 19874. As of 11/3/06, all of the 480 total billets and all 50 total containers of slurry have been delivered. Will require billet allocation and final KSC backshop fabrication prioritization based on vehicle attrition needs. CAR 30 covers full 17 mission certification.
19763 Barnum	<u>Lower WLE Carrier Panel Horse Collar Gap Filler Redesign</u> Implements partial deferral of remaining Non-RTF mandatory panels (1-4)	Released	N/A	N/A (3)	N/A	Go	10/6/04 A 10/6/04 A	6/16/05 A 6/16/05 A	CR 08-199200-003T CAR 39-08-199200-003T	(3) Hardware provided by KSC Back-Shop.

Engineering, Hardware and Certification Status

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
Baselined Opportunity Mods										
19874 Barnum	BRI-18 TPS Hardening - Other Vehicle Areas Implements TUF-coated BRI tile which is tougher than the current RCG-coated LI-2200 and FRCI-12 tiles. This MCR authorizes implementation on an attrition basis for the NLGD periphery, ET Door periphery, Window (1-6) carrier panels and lower LESS Carrier Panel locations.	Released	N/A	See Remarks (17)	See Remarks (17)	Go	3/06/06 A 3/06/06 A 9/1/06 A	5/21/06 A 5/21/06 A 11/20/06 A	CR 07-391001-001AB CAR 33-07-391001-001AB CAR 34-07-391001-001AB	NLG Door Portion of Mod (17) - Applies to all MCR 19874 material deliverables. Current authorization provides 160 billets of BRI-18 material per vehicle & 50 containers of TUF/Slurry under MCR 19743, which also will be used to cover attrition implementation under MCR 19874. As of 11/3/06, all of the 480 total billets and all 50 total containers of slurry have been delivered. Will require billet allocation and final KSC backshop fabrication prioritization based on vehicle attrition needs. CAR 34 covers full 17 mission certification.
		Released (18)	N/A	See Remarks (17)	See Remarks (17)	Go	8/25/06 A 8/25/06 A 11/8/06 A	11/20/06 A 11/20/06 A 11/30/06 A	CR 08-199200-003U CAR 40-08-199200-003U CAR 42-08-199200-003U	Lower WLE Carrier Panel Portion of Mod (18) All 14 drawings including tree-up released Cert covers full 17 flight certification - 'Go' implementation based on completed sequence of environment cycle testing (report released 8/18/06) and additional vehicle area specific analysis. CAR revision 42 superceded CAR 41 document updated environments in the aero thermal analysis.
		Released (19)	N/A	See Remarks (17)	See Remarks (17)	Go	1/5/07 A	2/14/07 A	CAR 35-07-391001-001AB	Window Carrier Panel Portion of Mod (19) All engineering released 7/28/06 due to ground ops request for re-prioritization. Cert submittal will cover full 17 flight certification - 'Go' implementation based on completed sequence of environment cycle testing (report released 8/18/06) and additional vehicle area specific thermal analysis.
		Released (20)	N/A	See Remarks (17)	See Remarks (17)	Go (20)	4/26/07 A 4/26/07 A	6/11/07 P 6/11/07 P	CR 07-395001-001X CAR 28-07-395001-001X	ET Door Perimeter Portion of Mod (20) SWRI ice impact testing completed and evaluation of results reviewed with OPO 1/10/07 resulting in OK for implementation. Engineering release complete (2 working level drawings and 1 tree-up). Vehicle side drawing released 2/1/07 Door side engineering released 2/2/07

Engineering, Hardware and Certification Status

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
Baselined Opportunity Mods										
23227 Antonios	Connector Saver Redesign Redesigned connector savers (ME414-0630) provide proper interfacial seal and wavy washer engagement retention force to reduce risk of inadvertent demate during use. Implementation at remaining unworked locations (OMS Pods and Ku-Band) as Opportunity.	Released	N/A	N/A	N/A	Go	10/11/05 A 10/11/05 A	3/17/06 A 3/17/06 A	CR 21-770000K CAR 08-21-770000K	Non-implementation will require inspection of existing connector savers and tape
23411 Antonios	Aft Freon Coldplate Loop Filters Adds filters to the Freon Aft Cold-plate (ACP) Network to minimize the risk of flow blockage due to contamination to this network of coldplates. The filters will be installed in both freon loops between the FES tee and the flow meters and will be supported by new structural brackets. The filter has a greater capacity than other 25 micron filters and hence will not add additional periodic maintenance. The filters are off-the-shelf filters from Wintec LLC. Flow restriction due to contamination has occurred twice, both times resulting in significant impacts: STS-109 with near early mission termination & OV-103 post J3 OMM with 9 months of extensive, invasive vehicle inspection and hardware replacement. An off-the-shelf 25 micron filter will be used, built by the current supplier for many Shuttle filters.	Released	N/A	Delivered (23)	N/A	Go (24)	1/22/07 A 1/22/07 A 2/6/07 A 2/6/07 A	4/4/07 A 4/4/07 A 3/15/07 A 3/15/07 A	24-634480L 07-24-634480L (Hardware cert) CR 24-610005-OFTC CAR 06-24-610005-OFTC (System cert)	(23) Structures and ECLSS kit delivered (24) Hardware certification to be by analysis & test - delta qualification for Shuttle vibration environment required was completed by vendor 10/25/06 - system level cert documentation complete. Waiver for OVEI requirement of 30 mission cycles will be required as qual test / cert will be for 10 mission cycles (end of program cost & schedule considerations) Mod has no effect on Software, LCC, OMRSD, Flight Rules Candidate for CR deferral.
23467 Bacon	WCS Configuration Change (CFE) Revises WCS dash number to WCS1000-25 with the following changes: a. Change vendor on dual vane compactor material webbing (new vendor qualification). b. Change WCS commode stove heat shrink material. c. Revise Check Valve gasket and o-ring seat material, check valve lubricant, revise poppet material specification. d. Add back shells to all Fan separators. e. Provides heel cups and inner & outer straps for the WCS foot restraint. Requires update to Boeing installation drawing, V070-623002 to reflect WCS part number change.	Released (14)	N/A	7/6/07 (15)	7/6/07	Go (15)	2/5/07 P (15) 11/27/06 A 11/27/06 A (14)	5/22/07 P (15) 1/15/07 A 1/15/07 A (14)	25-WCS1000 (15) USA Cert CR 23-623000-001G CAR 06-23-623000-001G (14) Boeing Cert	(14) Installation drawing & certification is Boeing responsibility - Instl EO and tree-up released (15) WCS hardware delivery and certification is USA CFE responsibility
30001 Antonios	ET Umbilical Camera Flash Scar Installation (Opportunity) Mod installs a flash unit in the RH ET Umbilical to be utilized with the ET Umbilical Digital Camera to provide supplemental light to illuminate the ET for enhanced photographic and motion picture images during external tank (ET) separation. Flash will fill in shadow areas during day light and provide illumination for night launch. Flash unit and cable are GFE provided hardware. Plan is to install the GFE cable scar in the aft fuselage during this flow and install and utilize the flash unit during flight 35.	Released (e)	N/A	7/26/07 (f)	TBD (f)	Go	N/A (g)	N/A (g)	N/A (g)	(e) Installation engineering released - top accum / tree-up drawings ERD 5/25/07. (f) 7/26/07 is delivery date for GFE cable as of 5/8/07 - ground ops will attempt to implement based on improved delivery date. (g) No Boeing Orbiter certification - cert if required will be GFE responsibility Potential deferral candidate - pending final call on mod implementation

BACK UP

STS-120/OV-103 Ground Ops Processing

Overall to Launch Window Opening	G	Milestones (07A-29)			
Critical Path: SRB Stacking - STS-118 SSV Roll Out to the Pad - SRB/ET critical path to Orbiter mate		Schedule	Milestones	Date	Status
		INTEGRATED	LAUNCH	10/20/07	G
		OPF	ORBITER ROLL OVER	8/31/07	Y →
		ET/SRB INTEGRATED	ORBITER ROLL OVER	8/31/07	Y →
		SRB STACKING	ET/SRB MATE	8/9/07	Y →
		ET STANDALONE	ET/SRB MATE	8/9/07	G

ISSUES / CONCERNS / POTENTIALS / REMARKS

OPF		SSPTS, OMRS RESET
R Pod Installation	Y →	Fuel OMS Helium reg R&R @ HMF
WSB #1 RV	Y →	RV R&R requires lowering of WSB #1
POTENTIALS		
Payload Swap	U/R	Delivery of supporting products
PLBD Actuator	U/R	Latch failure, potential remove/test/install - no spare
Node 2 Clearance Check	U/R	Additional PLBD cycling required
ET / SRB		ET-125 on dock 7/27
SRB Stack	Y →	Constraint to SRB Stacking is STS-118 Roll Out to Pad (single VAB Integration Cell)
LON STS-320 (LON on OV-104)	LON	ET-126 on dock date of 9/25/06

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

Back Up

Item (1) Inboard Elevon Drain Hole Relocation

Background

- Mod Record TCTIV1919546REF,0103,0 & VK70-100048-001,0103,0
- Modification was authorized at STS-122 LSFR to be worked as opportunity (S115122R1)

Recommendation

- Approve deferral, to be worked on a future flight
- This is a complete deferral

Item (2) WLE Front Spar Sneak Flow

Background

- Mod Record TCTIV1019735REF,0103,3 & TCTIV1919735REF,0103,3
- Modification was authorized at STS-122 LSFR to be worked as opportunity (S115122R1)
 - Panels 1 right, 2-4 left and right remain to be completed
 - Panel 1 left was completed this flow
 - Panels 5 – 22 were completed during STS-114 & STS-121

Recommendation

- Approve deferral (Panels 1 right, 2-4 left and right), to be worked on a future flight
- This is a partial deferral, Panel 1 LH complete

Item (3) Horse Collar Gap Filler Redesign

Background

- Mod Record TCTIV1919763REF,0103,3
- Modification was authorized at STS-122 LSFR to be worked as opportunity (S115122R1)
 - Panels 1 right, 2-4 left and right remain to be completed
 - Panel 1 left was completed this flow
 - Panels 5 – 22 were completed during STS-114 & STS-121

Recommendation

- Approve deferral (Panels 1 right, 2-4 left and right), to be worked on a future flight
- This is a partial deferral, Panel 1 LH complete

Item (4) Connector Saver KU Band

Background

- Mod Record VK70-795153-001,0103,2
- KU Band LRUs utilize connector savers with earlier design locking feature-new connector savers have re-designed locking feature
- Modification was authorized at STS-122 LSFR to be worked as opportunity (S115122R1)
- The existing connector savers have been inspected and safety wired or MR taped
- KU Band LRUs are located in the forward avionics bay 3A (approximately 19 connector savers)
- Extensive retest drove the decision to not perform the mod this flow

Recommendation

- Approve deferral, to be worked on a future flight
- This is a complete deferral

Item (5) Connector Saver LP01

Background

- Mod Record K598-430013-001,0011,2 & K598-430013-002,0011,2
- OMS Pods utilize connector savers with earlier design locking feature-
new connector savers have re-designed locking feature
- Modification was authorized at STS-122 LSFR to be worked as
opportunity (S115122R1)
- The existing connector savers have been inspected with no anomalies
- OMS pod connector saver mod can be performed without pod removal
however any damage would drive Pod removal-decision was made to
not work this flow based on that risk

Recommendation

- Approve deferral, to be worked on a future flight
- This is a complete deferral

Item (6) Freon Aft Coldplate Network Filter

Background

- Mod Record VK70-635308-001,0103,0 & VK70-854103-001,0103,0
- Modification was authorized at STS-122 LSFR to be worked as opportunity (S115122R1)
- Freon Loops were not deserviced so mod was not accomplished

Recommendation

- Approve deferral, to be worked on a future flight
- This is a complete deferral

Item (7) Elimination of '0' Gage Wire Damage

Background

- Mod Record TCTIV3423420REF,0103,0, VK70-794137-001,0103,0
VK70-794137-002,0103,0
- Modification was authorized at STS-122 LSFR to be worked as mandatory (S115122R1N)
 - SSPTS modification did not require implementation of this mod

Recommendation

- Approve deferral, to be worked on a future flight
- This is a complete deferral

STS-120/322 OV-103 Launch Site Flow Review Flight Software Overview

Tom Stansel

FRWG 5/21/07

PRCB 5/24/07

STS-120/322 LSFR (FSW)

- **STS-120/OV-103 Base2 is the First Scheduled Flight of Operational Increment (OI) 32 Flight Software (FSW)**
 - SASCBC SCR 98085D documents PASS and BFS OI 32 content
- **STS-120/OV-103 Base2 Flight Software Payload Support:**
 - ISS-10A
 - 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)
 - (first OV-103 SSPTS hardware implementation)
- **Major New Flight Software Support Items:**
 - First OV-103 implementation of MCR 23448 (ECO Sensor System Instrumentation Installation)

STS-120/322 LSFR (FSW)

- **STS-120 Source Changes/Edits for Primary Flight Software (Base and Base2)**
 - SCR 92962 - Effectivity Change for SCR 92880 (STS-114 SSME Downlist Requirements)
 - SCR 93175 Expand effectivity of SCR 93160B (Year End Roll Over (YERO) Reset)

- **STS-120 Patch Implementation for Primary Flight Software (Base2)**
 - None

- **STS-120 Patch Implementation for Backup Flight Software (Base2)**
 - SCR 93158, BFS GMT/MET Update for TAL Aborts, will be patched on the delivered mass memory

STS-120/322 LSFR (FSW)

- **Products**

- **STS-120/OV-103 Base2 software production schedule (available to field)**

- **Shuttle Data Tape** **July 13, 2007**

- **Mass Memory Unit Contents** **July 27, 2007**

- **STS-322/OV-103**

- **STS-322/OV-103 will use the STS-122 Base (OV-103) SDT/Mass Memory**

- **Pre call-up**

- **STS-322 Flight Specific I-Loads scheduled to be available on July 05, 2007**

- **Includes YERO (from STS-122 Base)**

- **SCR 93158, BFS GMT/MET Update for TAL Aborts - DR 110667, Class 1 patch is carried forward from the STS-122 Base system**

- **Post call-up changes if required**

- **No non-standard work currently identified**

STS-120/322 LSFR (FSW)

- **Open Items**

- **STS-120/OV-103 Base2 Flight Specific I-Load DCRs are scheduled for SASCB approval on 6/28/07**
- **Living SCR 98099, defining the Rescue LON Flight Software Configuration for OV-103 (STS-322) targeted for mod A to reflect orbiter swap is scheduled for SASCB approval on 6/21/07**

- **Concerns or issues**

- **There are no known concerns or issues with Flight Software supporting STS-120 or STS-322**



STS-120 LSFR Flight Crew Equipment/GFE	Presenter MV5/Kenneth Brown	
	Date May 24, 2007	Page 1

STS-120 LSFR

FCE/GFE Status

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



STS-120 LSFR Flight Crew Equipment/GFE	Presenter MV5/Kenneth Brown	
	Date May 24, 2007	Page 2

- **Delivery dates and need dates not yet partnered – teams working to partner dates through CIR, IPT and weekly GFE telecons**
 - ET sep camera dates under review

- **Tech orders and hardware list noted in backup charts**

- **Changes since DLSFR:**
 - **Vehicle swap CR from STS-120**
 - **First flight of new Pan Tilt Units (-510)**



STS-120 LSFR
Flight Crew Equipment/GFE

Presenter
MV5/Kenneth Brown

Date May 24, 2007

Page 3

BACKUP



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



STS-120 LSFR
Flight Crew Equipment/GFE

Presenter MV5/Kenneth Brown	
Date May 24, 2007	Page 4

Tech Order numbers are identified for reference only. Report generated 5/16/07.

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	In MEC	Cert O/C	HDW Need	HDW Planned	JSC Remarks	JSC Contact
A (port forward)	M072-750025-072	6/2/07		4/26/07	O	7/3/07	7/3/07	New PTU 2294822-510 required. Note:JSC must modify PTU's with higher strength fastner's . PTU's will be delivered on 7/3/07. The camera is not available until removal from STS-117. Assume 1 week to assemble camera/PTU and perform PIA.	Randall Moore
B (port aft)	M072-750025-073	6/2/07		4/26/07	O	7/3/07	7/3/07	New PTU 2294822-510 required. Note:JSC must modify PTU's with higher strength fastner's . PTU's will be delivered on 7/3/07.The camera is not available until removal from STS-117. Assume 1 week to assemble camera/PTU and perform PIA.	Randall Moore
C (starboard aft)	M072-750025-074	6/2/07		4/26/07	O	7/3/07	7/3/07	New PTU 2294822-510 required. PTU's will be delivered on 7/3/07. The camera is not available until removal from STS-117. Assume 1 week to assemble camera/PTU and perform PIA.	Randall Moore
D (starboard forward)	M072-750025-075	6/2/07		4/26/07	O	7/3/07	7/3/07	New PTU 2294822-510 required. PTU's will be delivered on 7/3/07. The camera is not available until removal from STS-117. Assume 1 week to assemble camera/PTU and perform PIA.	Randall Moore
SRMS elbow camera	M072-544504-005	6/2/07		4/26/07	O	7/3/07	7/3/07	New PTU 2294822-510 required. PTU's will be delivered on 7/3/07. The camera is not available until removal from STS-117. Assume 1 week to assemble camera/PTU and perform PIA.	Randall Moore
SRMS wrist camera	M072-544504-006	6/2/07		4/26/07	O	7/3/07	7/3/07	First Flight of modified wrist bracket.	Randall Moore
Centerline Airlock Camera (stowed)	M072-660828-002, plus CCCD stow		3/17/99	4/26/07	C			Same Camera as STS-117.	Randall Moore
Lefthand Umbilical Camera (forward)	M072-705001-017	7/24/07	6/7/07	4/26/07	C	8/24/07	8/24/07		Randall Moore
Lefthand Umbilical Camera (aft)	M072-705001-016		10/28/04	4/26/07	C	8/24/07	8/24/07		Randall Moore
Righthand Umbilical Camera	M072-705001-024	7/24/07	6/7/07		O	8/24/07	8/24/07		Randall Moore
Digital Television (DTV)	M072-710570-007			2/2/07	C			Installed hardware.	Larry Schmidt



STS-120 LSFR
Flight Crew Equipment/GFE

Presenter MV5/Kenneth Brown	
Date May 24, 2007	Page 5

Tech Order numbers are identified for reference only. Report generated 5/16/07.

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	In MEC	Cert O/C	HDW Need	HDW Planned	JSC Remarks	JSC Contact
MCIU/RMS Situational Awareness Display (RSAD)	M072-710543-001		3/7/00	4/26/07	O			Installed hardware.	Larry Schmidt
Portable Foot Restraint (PFR)	M072-661568-029	5/25/07	3/11/05	4/26/07	C	6/25/07	6/25/07	This hardware will be delivered to support CEIT on 8/4/07.	Sandy Peterson
Tools for Rendezvous and Docking (TRAD)	M072-730021-017		3/9/05	4/26/07	O			Installed hardware. Open Cert. STS-120 will be supported by TCS unit 1007 and will be R&R after the	Larry Schmidt
Tool Stowage Assembly (TSA)	M072-660853-002 M072-660850-005	6/22/07		4/26/07	C	7/23/07	7/23/07	This hardware will be delivered to support CEIT on 8/4/07. Note: this delivery only applies to EVA tools.	Sandy Peterson
Video Processing Unit (VPU)	M072-710338-006		7/5/01	4/26/07	C			Installed hardware.	Larry Schmidt
Winches	V070-650007-085		11/19/04	4/26/07	C			sAME HARDWARE AS sts-117?	Sandy Peterson
Wireless Video System (WVS)	M072-744007-001 UHF M072-344828-001 mount M072-744004-014 S-BAND M072-744004-013 S-BAND M072-744004-012 S-BAND M072-744004-015 S-BAND M072-744004-017 S-BAND M072-744004-018 S-BAND M072-744004-016 S-BAND			4/26/07	C			Installed hardware.	Gary Cox
Space to Space Orbiter Radio (SSOR)	M072-344828-002 M072-740828-002 antenna				C			Installed hardware.	Larry Schmidt
RMS Sideview Camera (RSC)	M072-710281-002 M072-000416-004 camera	8/24/07	11/24/04	4/26/07	C	9/25/07	9/25/07	Pad Installation. No OPF testing is required.	Randall Moore



STS-120 LSFR
Flight Crew Equipment/GFE

Presenter MV5/Kenneth Brown	
Date May 24, 2007	Page 6

Tech Order numbers are identified for reference only. Report generated 5/16/07.

Hardware	Tech Order	KSC Eng Need	Eng(TO) Release	In MEC	Cert O/C	HDW Need	HDW Planned	JSC Remarks	JSC Contact
Wing Leading Edge (WLE) Instrumentation - Left Wing	M072-756111-005				O			Adding Voltage Regulator and decals. Part number and Tech Order changes required. Action 3 - MV5 Gary Cox must provide the necessary definition to meet the 5/01/2007 KSC need date	Gary Cox
Wing Leading Edge (WLE) Instrumentation - right Wing	M072-756111-006			4/26/07	O			Adding Voltage Regulator and decals. Part number and Tech Order changes required. Action 3 - MV5 Gary Cox must provide the necessary definition to meet the 5/01/2007 KSC need date	Gary Cox
WING LEADING EDGE BATTERIES	M072-756111-005 M072-756111-006	1/9/07		4/26/07	O	7/20/07	7/20/07		Gary Cox
OBSS Sensor Package 2 *** (OPF)	M072-710282-006				O			Delivery date of LCS is under review. Swap of LCS and change of IDC are required.	Larry Schmidt
Airlock Adapter Plate				4/26/07	O			Installed	Sandy Peterson
Service and Cooling Umbilical				4/26/07	O			Installed.	Sandy Peterson
WLE Batteries - Voltage Regulator	M072-756111-005 M072-756111-006	3/9/07			O	6/15/07	3/15/07	The voltage regulators will be installed as part of the battery changeout.	Gary Cox
OBSS WORKSITE INTERFACE FIXTURE (WIF)	M072-544506-003	4/4/07		4/26/07	O	5/4/07	5/10/07	The OBSS Tech Order is M072-544506-002 and will change to M072-544506-TBD. NOTE: WIF socket verified model (used for VA0 has been delivered to Houston on 3/22/07.	Kenneth Ruta
OBSS Sensor Package 1 * (OPF)	M072-710282-008	5/25/07		4/26/07	O	6/27/07	6/27/07	PTU 2294822-508 is required.	Randall Moore
OBSS *	M072-544505-016 M072-544506-003	5/21/07		4/26/07	O	6/21/07	6/21/07		Kenneth Ruta
OBSS Blanket		5/4/07		4/26/07	O	6/4/07	6/4/07		Kenneth Ruta

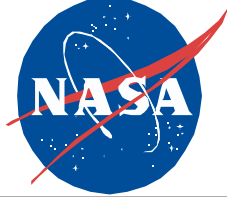


EVA Status

STS-120/10A

Launch Site Flow Review

**XA/John Raines
Johnson Space Center
May 24, 2007**



- **No Changes since LSFR**

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

- **Port TSA (Lightweight)**
 - Port LWTSA installation – Tech Order: M072-660850-005
 - Port LWTSA Tools installation – Tech Order: M072-660853-002

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

BACKUP

STS-120 LSFR

OMRSD

Baselined Files

- P477 ISS-10A

RCNs

F2V2 (Post Mate)

PP17392

PPTBD

Title

P477 – Node 2 IVT Update

P477 – SWAB Addition

ECD

06/12/07

07/20/07

F2V4 (Premate)

PS17388

PS17390

PS17391

STS-120 F2V4 MUL (OV-103)

STS-120 File III MUL

STS-120 Adjacent Bent Pin Test

06/12/07

06/12/07

06/12/07

Issues/Concerns

- None

TGHR Status

TGHR Skeleton (L-6M)

02/26/07A

Customer Submittal (L-4M)

06/20/07

Release for Review (L-3M)

07/20/07

Baseline (L-60 DAYS)

08/20/07

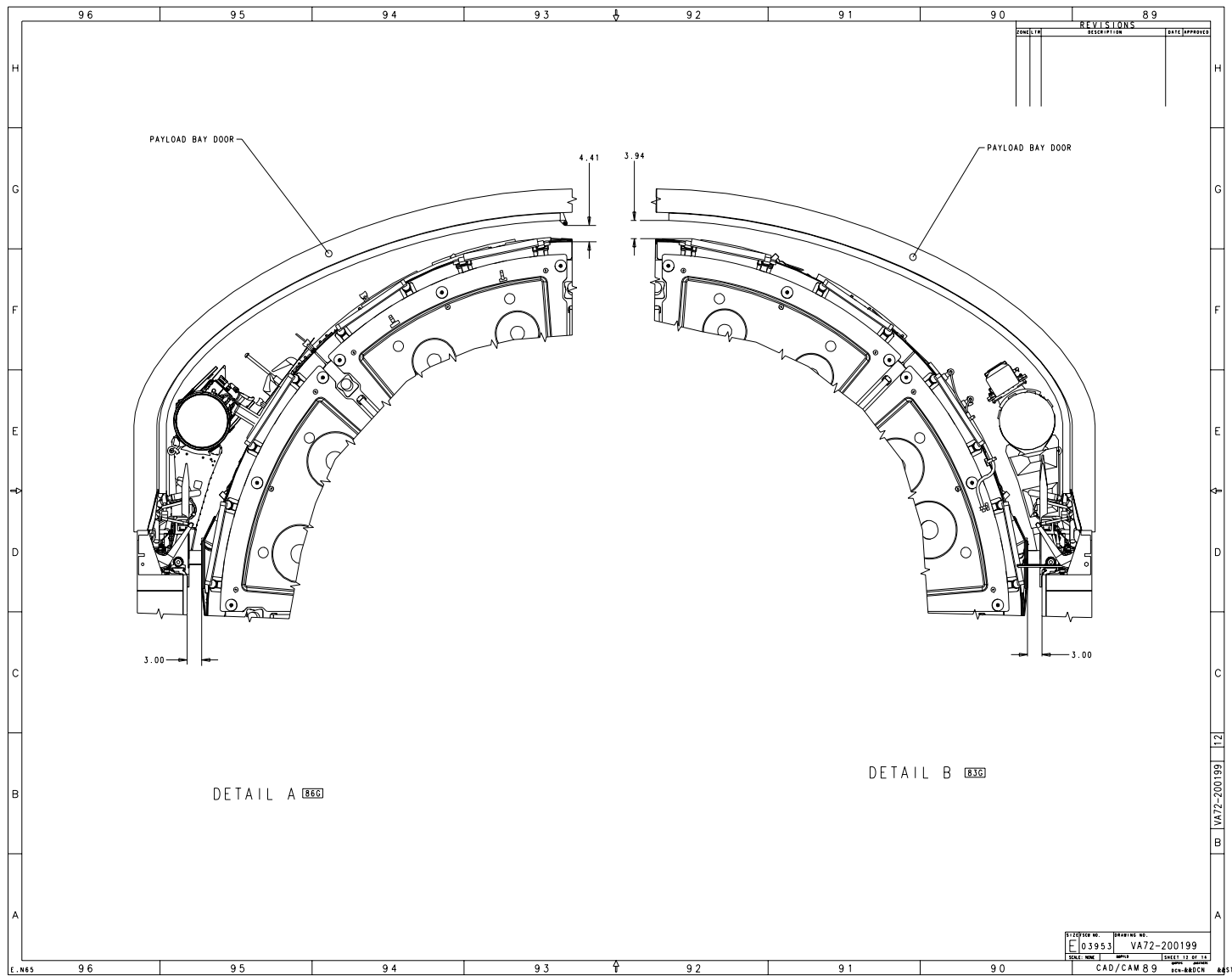
STS-120 LSFR

CARGO CLOSE CLEARANCE

- The following close clearance areas have been identified (see following figures):
 - Egress at Xo 985.69 (Port) to Node 2
 - PLB door top centerline latches (2) to Node 2
 - Twelve points on Node 2 with Orbiter structure
- Verification of close clearance points
 - Node 2 DPA requests submitted
 - J6228 Chit to measure points on Orbiter (wire trays, egress, main frame, radiators) approved at 05/17/07 Noon Board
 - Note – Chit J6240 for aft bulkhead and PLB door bellcrank measurements for future flights was processed in parallel to reduce future flow impact
- Chit measurements will be performed at the OPF with PLB doors closed. No Pad measurements required.

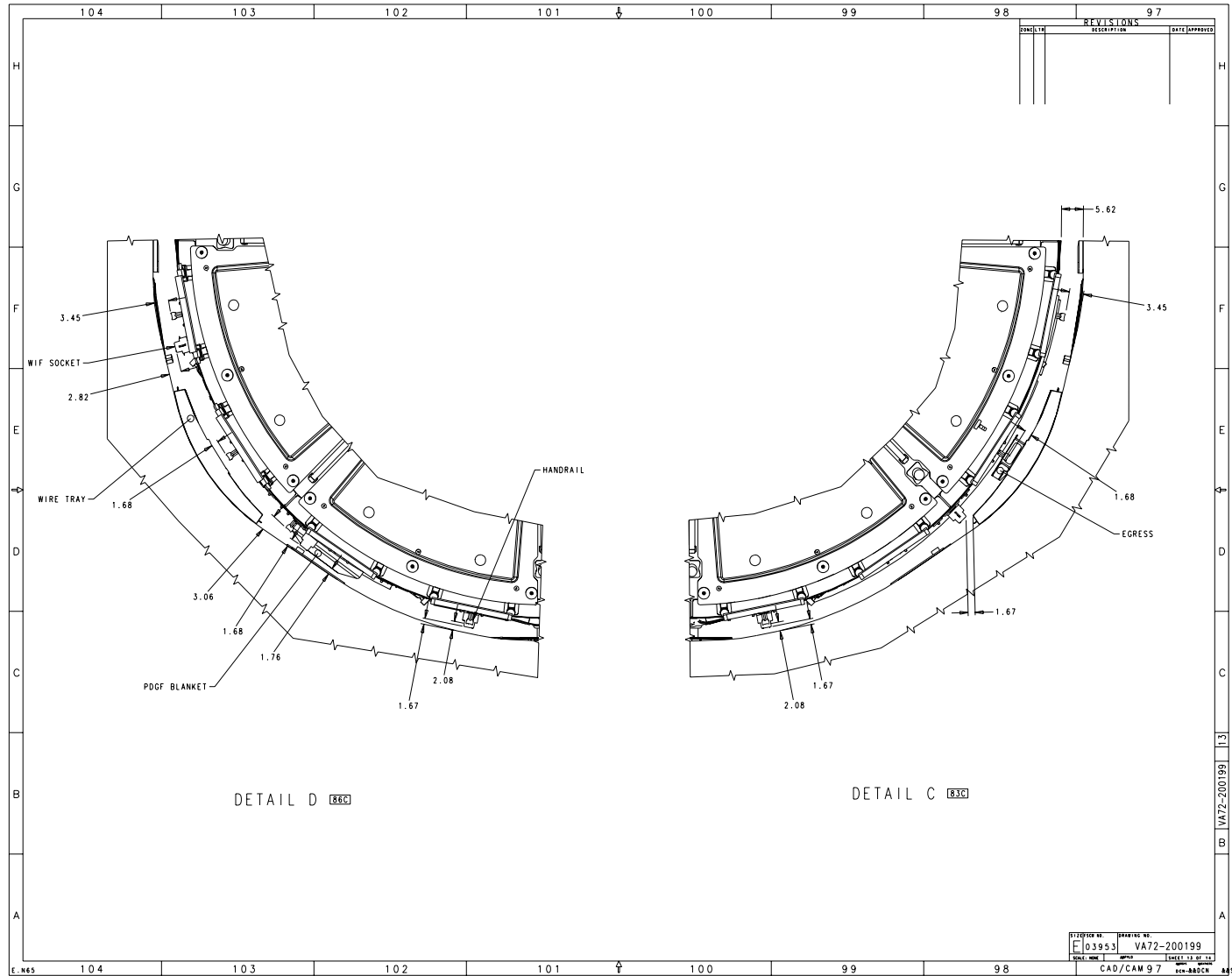
STS-120 LSFR

Close Clearance Points



STS-120 LSFR

Close Clearance Points



STS-120 LSFR

Annex 1

Baselined Files

- NSTS 21477 ISS 10A

Open Work

ISS-10A A01 – NSTS 21477

Node 2, SASA MBSU Update

SUBMITAL

03/22/07A

RELEASE

05/25/07

ECD

06/08/07

Interim Submittal (L-4mo)

05/30/07

06/06/07

06/20/07

Final Weight Update (L-1mo)

09/06/07

09/13/07

09/20/07

Issues/Concerns

- None

Cargo Integration Hardware Status

Delivery Status

- New SPDU

ECD

06/22/07

Issues/Concerns

- None

STS-120 LSFR

PAYLOAD ICDs/PIRNs

PIRNs THAT IMPACT FLIGHT PRODUCTS

ICD-A-21477-NODE2	Node 2	Baselined	
• A05339	Node 2 Wire Tray Intrusions	06/10/07	In Development
• A05409	Document SSPTS	06/07/07	In Review
ICD-A-21477-SASA	SASA	Baselined	
• A05431	Power and Bonding	06/06/07	In Review



Discovery STS-120

Launch Site Flow Review

Space Shuttle Main Engine

21 May 2007

**SSME- KSC
Greg Haile
(321) 861-4060**

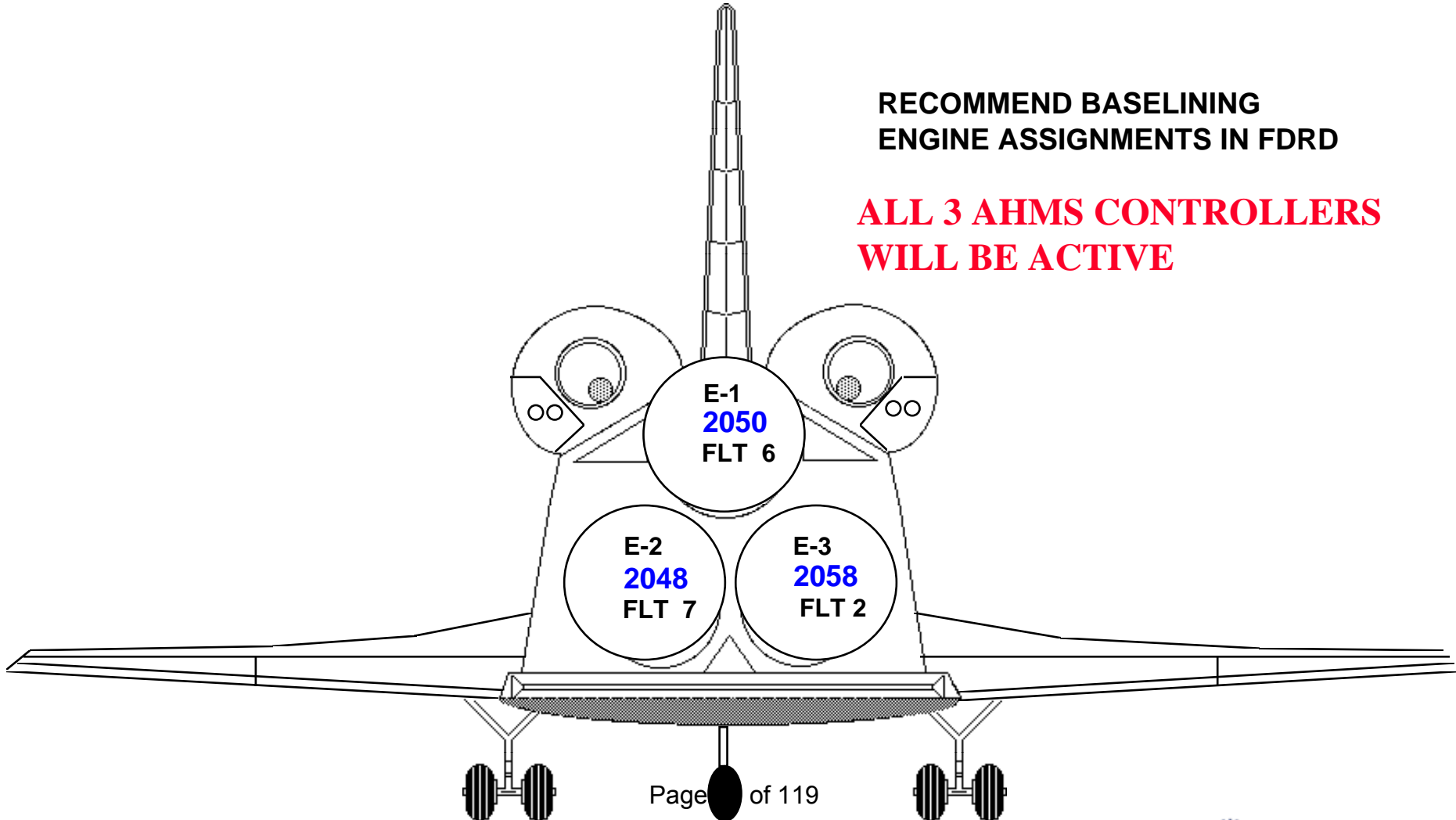


STS-120 Launch Site Flow Review

Engine Allocation/Location

**RECOMMEND BASELINING
ENGINE ASSIGNMENTS IN FDRD**

**ALL 3 AHMS CONTROLLERS
WILL BE ACTIVE**





STS-120 Launch Site Flow Review

SSME Planned Modifications

ECP	Kit No	Description	Weight Impact	SPAR No./ CR No.	Engine	Status
1354	2R053848-10	Controller Coolant Duct	+0 LB	ME-0225 R02 ME-0227 Basic	ME2048 ME2050	Complete Complete
1480	2R091575-10	AHMS Controller	+0LB	ME-0225 R01 ME-0227 R01	ME2048 ME2050	Complete Complete
1511	2R091613-10	AHMS Weight Update		ME-0225 R01 ME-0227 R01	ME2048 ME2050	Complete Complete



STS-120 Launch Site Flow Review

Rocketdyne Action Requests (RAR)

RAR		Engine(s)	SPAR #	Status
KLO-1569	Dye Pen Inspect HPFTP Speed Sensor	2048	ME-0225 B	In-Work
KLO-1573	Perform First Flight Inspections	2058	ME-0229 B	In-Work
KLO-1574	Measure Fuel Preburner Liner Extension	2058	ME-0229 B	In-Work
KLO-1575	Fit Check Helium Manifold Tee	2058	ME-0229 B	Complete
KLO-1576	Load Revised "Boot Loader" Software on AHM Controller	2058	ME-0229 B	In-Work
KLO-1574R1	Measure ME2058 Metering Gaps	2058	ME-0229 B	In-Work

STS-120 Launch Site Flow Review

ISS-23-10A

Node-2 (DDCU Racks/RSRs/ZSRs)

MBSU/PDGF/SASA Rtn FSE

KSC ISS & Spacecraft Processing

Glenn Chin

Mission Manager

May 24, 2007



Planned Processing Milestones

PRE-SHUTTLE INTEGRATION ACTIVITIES

Space Station Processing Facility

- Node-2
 - Final Powered Activities 02-21-07
 - CEIT 04-25-07
 - RSR Stowage 05-16-07
 - Aft Hatch Closed for Flight 06-07-07
 - Payload Wt/CG 08-07-07
 - Node-2 Ready for Shuttle Integration 08-20-07

- SASA FSE Integ/Checkout 07-12-07

- MBSU Integ/Checkout 07-12-07



Planned Processing Milestones

SHUTTLE INTEGRATION ACTIVITIES

Orbiter Processing Facility

- PDGF Install 06-15-07
- SASA Rtn FSE Install/IVT 07-19-07
- MBSU Install/IVT 07-19-07

PAD

- Payload Transfer to Pad 09-05-07
- Payload installed into Orbiter 09-10-07
- FRGF installation to Node-2 09-13-07
- Node-2/Orbiter IVT 09-13-07
- Payload Closeouts 09-18-07
- LAUNCH (N.E.T.) 10-20-07



KSC/ISS Processing Summary

ISSUES and CONCERNS

- Tight MBSU delivery schedule to meet planned OPF installation
 - Missed OPF installation would drive a contingency pad install
 - Exception/Waiver required for exceeding LRU Handler Arm weight capacity

The KSC STS-120/10A - ISS Mission Processing Team is ready to proceed with processing the STS-120 Mission payload complement.





STS-120 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-24-07**

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 4



STS-120 Launch Site Flow Review	Presenter Kenneth Nowak	
	Date 05-24-07	

SSP System Drawings

The Drawings Baseline Was Released By PRCB S115120A on 11-01-06

- **V072-000001-163** (Rev. UY) Space Shuttle System (Rel. 05-08-07)
 - **V072-200199-003** (Rev. C) Mission Equipment Cargo Support (Rel. 04-24-07)
 - **SGD32104443-301** (Rev. B) Crew Compartment Configuration (Rel. 02-12-07)
 - 302** Descent
 - **V070-000001-003** Orbiter General Assembly
 - **V070-410100-017** SSME Installation
 - **10100-0061-167** Integrated SRB General Assembly (BI-131)
 - **80901000000-510** External Tank Assembly (ET-120)
-
- **STS-120 LSRR + 18 days Mission Configuration Product Plan (MCP) was last published on 02-12-07 and will be republished at ORR - 14 days on TBD.**



STS-120 Launch Site Flow Review

Presenter **Kenneth Nowak**

Date **05-24-07**

SSP System Drawings (Cont'd)

Ferry Configuration

- **V072-000001-164** (Rev. UY) Space Shuttle System Drawing (Rel. 05-08-07)
 - **V072-200199-004** (Rev. C) Mission Equipment Cargo Support (Rel. 04-24-07)
 - **SGD32104443-001** (Rev. B) Crew Compartment Configuration (Rel. 02-12-07)
 - **V072-300055-027** (Rev. BL) Ferry Flight Configuration (Rel. 06-21-06)

SCA 905



STS-120 Launch Site Flow Review	Presenter Kenneth Nowak	
	Date	05-24-07

Modification Impact Report

- **Mission Equipment Modifications and Orbiter Modifications analyzed for impacts to OMRSD, LCC, ICD, EMI, Software, and GSE.**
- **A total of 8 MCRs have been approved and/or pending mods**
- **Current MCR impact status:**
 - **No impacts for all six disciplines** **5**
 - **One or more disciplines with impacts, documentation approved and/or pending approval** **0**



STS-120 Launch Site Flow Review	Presenter Kenneth Nowak
	Date 05-24-07

Modification Impact Report – Cont'd

- Possible impacts still under review 3
 - MCR 23411, 23440, and 23467 are being reviewed for OMRSD impacts
 - MCR 23467 is being reviewed for ICD impacts

MCR/ECP	STAT SITE	ITEM/KIT NUMBER TCTI NUMBER	SEQ EISN NO.	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIOR FLT
B02093D	INC KAS	E180	0120 000	LO2 FEEDLINE BELLOWS HEATERS RTF CAIB RECOMMENDATION 3.2-1 FOR ET THERMAL PROTECTION SYSTEM MODIFICATION.	S062612A 2005-05-13	
	INC KAS	FEC KET-0089	0120 000	REFERENCE MARKS TO LO2 FEEDLINE BELLOWS AT XT 1106 FOR ET-120 TANKING TEST	S062593 2005-04-14	
B02093-R1	INC MAF	N005	0120 000	ET BIPOD AREA REDESIGN	S064001R1 2004-03-09	
B02093A	INC MAF	N009	0120 000	ET INFLIGHT CAMERA RTF CAIB RECOMMENDATION 3.4-3 FOR ON-VEHICLE ASCENT IMAGERY	S064005 2004-01-08	
	INC MAF	N011	0120 000	LH2 INTERTANK FLANGE ENHANCEMENT RTF CAIB RECOMMENDATION 3.2-1 FOR ET THERMAL PROTECTION SYSTEM MODIFICATION.	S064001R1 2004-03-09	
	INC MAF	N013	0120 000	LO2 FEEDLINE BELLOWS RTF CAIB RECOMMENDATION 3.2-1 FOR ET THERMAL PROTECTION SYSTEM MODIFICATION.	S064001R1 2004-03-09	
B02085	INC MAF	N032	0120 000	REDESIGN BOLT CATCHER INSERTS REDESIGN BOLT CATCHER INSERTS IN FORWARD ET/SRB FITTINGS.	S061988G 2004-12-07	
B02093A	INC MAF	N039	0120 000	LH2 PAL RAMP PARTIAL REPLACEMENT AND NDE RTF CAIB RECOMMENDATION 3.2-1 FOR ET THERMAL PROTECTION SYSTEM MODIFICATION.	S064001R1 2004-03-09	
	INC MAF	N054	0120 000	LH2/INTERTANK FLANGE (INTERTANK VENTING)	S064001R1 2004-03-09	
B02093D	INC MAF	N061	0120 000	BIPOD THROUGH-BOLTS	S064001R1 2004-03-09	
	INC MAF	N068	0120 000	ET FORWARD LONGERON TPS CLOSEOUT ENHANCEMENTS	S064001R1 2004-03-09	
TOTAL MODS =		11				

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
011621	PLND KSC	TCTIM5411621REF	0001 000	MOD SHOULDER MPM TCS SUBASSYS DUE TO INTERFERNCE W/OBSS-EOTF ADDED PER V092-544010 C02. REF: PR TCS-3-34-3580. MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122R1 2006-12-14	MAND 034
017222	AUTH KSC	TCTIM0017222REF	0001 003	WLE SENSOR SYSTEM VOLTAGE BOOST REGULATOR MOD ADDED PER E. BURKE REQUEST FOR STS-122 DLSFR, REPL S 017222, 0103,3.	S115122R4 2007-03-21	MAND 034
	AUTH KSC	017222	0103 005 CONTR	CAMERA PTU AND ILLUMINATOR FASTENER CHANGE ADDED PER E. BURKE REQUEST FOR STS-122 DLSFR, FOR MODELS MV0548A, MV0092A, MV0082A	S115122R4 2007-03-21	MAND 034
019755	AUTH KSC	VK82-544010-003	0005 002	RMS MPM PEDESTAL OVER-CENTER STOPS ADDED PER V092-544254 NEW. REPLS VK82-544010-001,0 005,0). E/I 7 -1 ON STS-114. WAIVER FOR TO IN WORK	S115122 2006-11-20	MAND 034
019789R1	PLND KSC	K828-341013-001	0002 000	SUPPORT - HARNESS ROUTING, ISSA/ODS KIT ADDED PER R1 OF MCR MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122 2006-11-20	MAND 034
019789R2	PLND KSC	K828-774353-001	0002 000	SSPTS IMPLEMENTATION MOD KIT, ODS/AIRLOCK ADDED PER R1 OF MCR/R2 CHGD MCR FLT TO 35 MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122 2006-11-20	MAND 034
019789	COMP KSC	K845-346631-001	0001 001	SSPTS UPGRADE FOR ADDITIONAL SUPPORT ASSYS TO WIRE HARNESS ADDED PER EO V845-346610 B01, E/I SPLIT, REF SEQ 0 & 2)- MOVED TO STS-120 PER REMANFT REF. A042013GH	S115122 2006-11-20	MAND 034
	COMP KSC	TCTIM3419789REF	0001 000	SSPTS - FLUID LINE SUPPORT MOD ADDED PER V766-340103 B01. HDWE TRANSFERRED TO ORB HDWE (REF: MCD GGM)-MOVED TO STS-120 FROM STS-122	S115122 2006-11-20	MAND 034
019896	AUTH KSC	TCTIM0019896REF	0001 000	EMERGENCY EGRESS SLIDE DEPLOYMENT MECHANISM LANYARD MOD ADDED PER V651-000002 B01 OPPORTUNITY MOD	S063027W 2007-03-05	OPTY 034

TOTAL MODS = 9

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIO
-----	SITE	TCTI NUMBER	EISN NO.	-----	AUTHDATE	FLT
011621	AUTH KSC	TCTIV3511621REF	0023 004	REPL BLANKET ASSY'S W/NEW PARTS TO ELIM INTERFERENCE - EOTF ADDED BY EDS I/F & 73A840098 C07, REF: RP03-35-154 5 & 1549/ MOVED TO STS-120 PER REMANIFEST	S115122R1 2006-12-14	MAND 035
023227	AUTH KSC	K598-430013-001	0011 002	KIT-CONNECTOR SAVER REDESIGN, LP01 OMS POD, (W/W -002) ADDED BY EDS I/F & V070-430007 B07. DEFERRED FROM STS-121, STS-116-MOVED TO STS-120 PER REMANIFEST	S115122 2006-11-20	OPTY 034
	AUTH KSC	K598-430013-002	0011 002	MODIFICATION KIT - CONNECTOR PROTECTOR REDESIGN, (W/W -001) ADDED BY EDS I/F & K598-430013 A01. OBTAIN PARTS F ROM VK70- 795153. DEF'D FROM STS-121, STS-116	S115122 2006-11-20	OPTY 034
	COMP KSC	K598-430014-001	0023 002	KIT-CONNECTOR SAVER REDESIGN, RP03 OMS POD, (W/W -002) ADDED BY EDS I/F & V070-430010 A93. DEFERRED FROM STS-121, STS-116-MOVED TO STS-120 PER REMANIFEST	S115122 2006-11-20	OPTY 034
	AUTH KSC	K598-430014-002	0023 002	MOD KIT CONNECTOR PROTECTOR REDESIGN, (W/W -001) ADDED BY EDS I/F & K598-430014 A01. OBTAIN PARTS F ROM VK70- 795153. DEF FROM STS-121, STS-116	S115122 2006-11-20	OPTY 034
030005	AUTH KSC	TCTIV3930005REF	0011 000	REPLACE FRSI PLUGS WITH OVERSIZED FRSI PLUGS (LP01) ADDED BY EDS I/F & V070-396014 C03. REPLACES 03000 5,0011,0/ MOVED TO STS-120 PER REMANIFEST	S115122F 2007-04-30	MAND 037
	AUTH KSC	TCTIV3930005REF	0023 000	REPLACE FRSI PLUGS WITH OVERSIZED FRSI PLUGS (RP03) ADDED BY EDS I/F & V070-396014 C03. REPLACES 3000 5,0023,0/ MOVED TO STS-120 PER REMANIFEST	S115122F 2007-04-30	MAND 035

TOTAL MODS =

7

MCR/ECP	STAT SITE	ITEM/KIT NUMBER TCTI NUMBER	SEQ EISN NO.	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
	PLND KSC	J5881A	0103 001 SPAR	LOWER LESS ACCESS CARRIER PANEL POST FLT TORQUE CK VERIF	ORB-0079R01 2006-06-05	SCHD 034
	PLND KSC	J5883A	0103 000 SPAR	HUB AND DRAIN HOLE TILE MANUAL DEFLECTION TEST J5883A SUPPLEMENTS J5883 IN ITS ENTIRETY.	ORB-0079 R25 2007-01-29	MAND 034
	PLND KSC	J5884A	0103 000 SPAR	THERMAL BARRIER FLOW PATH INSPECTIONS J5884A SUPPLEMENTS J5884 IN ITS ENTIRETY.	ORB-0079R26 2007-01-29	MAND 034
	PLND KSC	J5885A	0103 000 SPAR	ARROWHEAD TILE INSPECTIONS J5885A SUPPLEMENTS J5885 IN ITS ENTIRETY.	ORB-0079R27 2007-01-29	MAND 034
	PLND KSC	J5919B	0103 002 SPAR	0-GAUGE PROTECTION FOR OV-103 FLIGHT 32-35 AND OV-104 FLIGHT 27-30	ORB-0079B 2005-11-09	MAND 034
	PLND KSC	J6104	0103 001 SPAR	POST FLIGHT AMES GAP FILLER VERIFICATION AND PULL TESTING	ORB-0079R06 2006-08-01	MAND 034
	COMP KSC	J6106A	0103 000 SPAR	ASA #1 & #2, ATVC #1 & #2, & RJDF #2 R&R FOR OV-103, FLT 34 CHIT J6106A SUPERSEDES J6106 IN ITS ENTIRETY.	ORB-0079R10 2006-09-25	MAND 034
	PLND KSC	J6109	0103 000 SPAR	OV-103 PANEL 9L RADIOMETER REMOVAL	ORB-0079R16 2006-12-13	MAND 034
	PLND KSC	J6115	0103 001 SPAR	MICRO INSPECTION OF SMALL WIDTH AFRSI BLANKETS OV-103, FLT.34 EFFECTIVITY	ORB-0079R05 2006-07-27	MAND 034
	AUTH KSC	J6116	0103 001 SPAR	AMES GAP FILLER REMOVAL AND REPLACEMENT	ORB-0079R07 2006-08-16	MAND 034
	PLND KSC	J6117A	0103 001 SPAR	INSPECTION OF PUTTY REPAIRS FOR POTENTIAL LOSS OV-103 FLT. 34 EFFECTIVITY	ORB-0079R04 2006-07-26	MAND 034
	PLND KSC	J6117B	0103 000 SPAR	INSPECTION OF PUTTY REPAIRS FOR POTENTIAL LOSS	ORB-0079R14 2006-11-22	MAND 034
	PLND KSC	J6118	0103 001 SPAR	EXTERNAL TANK (ET) DOOR PAINT STRIPE POSTFLIGHT VERIFICATION	ORB-0079R02 2006-07-19	MAND 034
	PLND KSC	J6119	0103 001 SPAR	ET DOOR CAVITY SCREED EVALUATION	ORB-0079R08 2006-08-22	MAND 034
	PLND KSC	J6120	0103 001 SPAR	POSTFLIGHT DAMAGE 3-D ACQUISITION	ORB-0079R03 2006-07-19	MAND 034
	AUTH	J6132A	0103 000	MID POWER CONTROL ASSY (MPCA) FUSE HOLDER SOLDER JOINT INSP	ORB-0079 R31	MAND

KSC		SPAR	ECTION FOR OV-103	2007-03-23	034
AUTH	J6139	0103 000	POST STS-116 VERNIER THRUSTER PC TUBE FLUSH	ORB-0079R11	MAND
KSC		SPAR		2006-10-04	034
COMP	J6141	0103 001	PERFORM MEASUREMNTS ON OBSS SHOULDER AFTER OV-103 FLTS 33&34	ORB-0079 R12	MAND
KSC		SPAR		2006-10-24	034

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB	PRIOR
	SITE	TCTI NUMBER	EISN NO.		AUTHDATE	FLT
	PLND	J6165	0103 000	E/AMEC TIN WHISKER MITIGATION & SMIA NUT MOD COMPLETION FOR	ORB-0079R18	MAND
	KSC		SPAR	OV-103	2007-01-04	034
	COMP	J6170	0103 001	STS-116 CLOSE CLEARANCE PAD MEASUREMENTS	ORB-0079 R13	MAND
	KSC		SPAR	POST STS-116 MEASUREMENTS	2006-10-25	034
	PLND	J6176A	0103 000	OV-103 MID-FUSELAGE LOCK BOLT SAMPLING AND FASTENER REPLACE-	ORB-0079R17	MAND
	KSC		SPAR	MENT REV. A SUPERSEDES BASIC CHIT IN ENTIRETY.	2007-01-04	034
	PLND	J6178	0103 000	REMOVAL AND REPLACEMENT OF OV-103 WINDOWS THERMAL PANE 1	ORB-0079R15	MAND
	KSC		SPAR	THROUGH 6 IN SUPPORT OF FLIGHT 34 (STS-122)	2006-12-13	034
	AUTH	J6179A	0103 000	ADTA #3 AND #4 RETROFIT FOR OV-103, FLT 34	ORB-0079R40	MAND
	KSC		SPAR	CHIT J6179A SUPERSEDES BASIC CHIT IN ENTIRETY.	2007-05-09	034
	PLND	J6186	0103 000	INSPECTION BOOM ASSEMBLY (IBA) POST FLIGHT INSPECTION	ORB-0079R20	MAND
	KSC		SPAR		2007-01-05	034
	PLND	J6192	0103 000	INSPECTION OF OV-103 RADIATOR RETRACT CONTAINER ASSEMBLIES	ORB-0079R28	MAND
	KSC		SPAR		2007-02-02	034
	AUTH	J6194A	0103 000	REMOVE AND REPLACE EMU SERVICE AND COOLING UMBILICAL (SCU)	ORB-0079R36	MAND
	KSC		SPAR	ON OV-103 IN SUPPORT OF STS-122	2007-04-10	034
	PLND	J6195	0103 000	INSPECTION OF OV-103 LEFT WLE RCC PANELS 19-22	ORB-0079R22	MAND
	KSC		SPAR		2007-01-19	034
	PLND	J6196	0103 000	CERAMIC INSERT INSPECTION	ORB-0079R29	MAND
	KSC		SPAR		2007-02-05	034
	PLND	J6200	0103 000	REMOVAL/REPLACEMENT OF OV-103 SYSTEMS 1,2,& 3 WATER SPRAY	ORB-0079R24	MAND
	KSC		SPAR	BOILERS AGING COMPONENTS	2007-01-23	034
	PLND	J6208	0103 000	HYDRAULIC LANDING GEAR & BRAKE ISOLATION VLAVE OVERHAUL	ORB-0079R30	MAND
	KSC		SPAR		2007-02-09	034
	PLND	J6212	0103 000	EVALUATION OF CERAMIC INSERT PLUGS	ORB-0079R34	MAND
	KSC		SPAR		2007-04-05	034
	PLND	J6212A	0103 000	EVALUATION OF CERAMIC INSERT PLUGS	ORB-0079R35	MAND
	KSC		SPAR		2007-04-10	034
	AUTH	J6216	0103 000	PERFORM VOLTAGE BOOST REGULATOR SYSTEMS ACCEPTANCE TESTING	S052923ZY	MAND
	KSC		NSW	MOVED TO STS-120 FROM STS-122 PER REMANIFEST REF. A042013GH	2007-03-07	034
	COMP	J6219	0103 000	REQUIREMENT TO INSPECT RADAR ALTIMETERS TO ASSESS TIN USAGE	S052924A	MAND

KSC		NSW	MOVED TO STS-120 FROM STS-122 PER REMANIFEST REF. A042013GH	2007-03-15	034
COMP	J6224	0103 000	PROTOTYPE FLASH MODULE FITCHECK	ORB-0079R32	MAND
KSC		SPAR		2007-03-26	034
PLND	J6224A	0103 000	PROTOTYPE FLASH MODULE FITCHECK	ORB-0079R39	MAND
KSC		SPAR		2007-05-07	034

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
-----	SITE	TCTI NUMBER	EISN NO.	-----	-----	-----
	AUTH KSC	J6226	0103 000	STS-122 PDGF FIT CHECK SPAR	ORB-0079R33 2007-03-27	MAND 034
	PLND KSC	J6230	0103 000	OV-103/34 SSPTS TEST REQUIREMENTS (OPF) SPAR	ORB-0079 R37 2007-04-23	MAND 034
	AUTH KSC	K6182A	0103 000	WINDOW CAVITY CONDITIONING SYSTEM MANIFOLD FLOW TEST NOTE: CHIT K6182A SUPPLEMENTS BASIC CHIT K6182.	ORB-0079 R38 2007-05-02	MAND 034
011621	APPD KSC	TCTIVXX11621REF	0103 021	SHUTTLE TURNAROUND PR/TPS EO-TO-FOLLOW, OV-103 FLT 34 TO HOUSE EO'S WORKED BY PR/TPS EO-TO-FOLLOW ONLY MOVED TO STS-120 FROM STS-122 PER REMANIFEST	NOT REQD	034
	COMP KSC	TCTIV3111621REF	0103 000	BLNKT INSTRUCTION TO PREVENT 378 BULKHEAD VENT BLOCKAGE-EOTF ADDED BY EDS I/F & V070-316002 K20, -361900 E11, R EF: FRC3- 34-1125, -1130)- REMANIFEST A042014GH	S115122R1 2006-12-14	MAND 034
	AUTH KSC	TCTIV3611621REF	0103 032	REPL HI-LOKS W/SCREWS TO PREVENT DAMAGE TO LINER SUPP - EOTF ADDED PER V070-366965 E06 MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122R1 2006-12-14	MAND 034
	COMP KSC	TCTIV7711621REF	0103 004	PYRO CONNECTORS SAFER STOWAGE - EOTF ADDED PER EO'S V070-775702 C05 & V070-775703 C05, (REF PR: OEL-3-34-5169)-MOVED TO STS-120	S115122R1 2006-12-14	MAND 034
	AUTH KSC	TCTIV8511621REF	0103 011	MOD BLNKTS TO REMOVE INTERFERENCE W/RP03 BEEF-UP STRAP, EOTF ADDED BY EDS I/F & V070-854336 J07, REF: TCS-3-A00 91/MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122R1 2006-12-14	MAND 034
019546	AUTH KSC	TCTIV1919546REF	0103 000	INBOARD ELEVON TILE ENHANCEMENT ADDED BY EDS I/F. PAR'D FROM J3 TO J4 BY K1871, MO VED TO FLT 34 PER V070-190001 F91. REF MCR 23422	S115122 2006-11-20	OPTY 034
019546R1	AUTH KSC	VK70-100048-001	0103 000	INBOARD ELEVON TILE ENHANCEMENT - STRUCTURES MOD KIT ADDED PER MCR R1. PAR'D FROM J3 TO J4 BY K1871. MOVED TO ENG FLT 34 PER V070-100008 B49	S115122 2006-11-20	OPTY 034
019735	AUTH KSC	TCTIV1019735REF	0103 003	WLE FRONT SPAR PROTECTION FOR SNEAK FLOW - STR (PNLS 1-4) SEE SEQ 0 FOR PANELS 5-13, SEQ 1 FOR PNLS 14-22 OV -103/32; PNLS 1-4 DEFERRED	S115122 2006-11-20	OPTY 034
	AUTH KSC	TCTIV1919735REF	0103 003	FRONT SPAR PROTECT FOR SNEAK FLOW (TPS/RCC), PNLS 1-4 SEE SEQ 0 FOR PANELS 5-13, STS-114. PNLS 14-22 OV-103/32. PNLS 1-4 DEFERRED - OPPORTUNITY MOD	S115122 2006-11-20	OPTY 034
019763	AUTH	TCTIV1919763REF	0103 003	WING LEADING EDGE HORSE COLLAR REDESIGN, (PNLS 1-4)	S115122	OPTY

	KSC		SEE SEQ 0 FOR PNLs 5-13, SEQ 1 FOR PNLs 14-22 OV-1 03/32. PNLS 1-4 REMAINING- OPPORTUNITY MOD	2006-11-20	034
019789R3	AUTH	VK70-347413-001 0103 000	OV-103 MID FUSELAGE SSPTS MOD	S115122	MAND
	KSC		ADDED PER R1 OF MCR/R2 CHGD TO 35, MCR/R3 CHGD TO 34. OBTAIN PARTS FROM MISSION KIT MV0766A E/I 1	2006-11-20	034

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
-----	SITE	TCTI NUMBER	EISN NO.	-----	-----	-----
019789R3	PLND KSC	VK70-360312-001	0103 000	TCS KIT-STATION TO SHUTTLE POWER TRANSFER SYSTEM, W/W -2 KIT ADDED PER R1 OF MCR/R2 CHGD EFF TO 35. MUST BE WORKED W/-2 KIT, MCR/R3 CHGD EFF TO 34	S115122 2006-11-20	MAND 034
019789	AUTH KSC	VK70-360312-002	0103 000	KIT, TCS SSPTS UPGRADE, OV-103, (W/W -1 KIT) ADDED BY EDS I/F & VK70-360312 A01 MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122 2006-11-20	MAND 034
019789R3	AUTH KSC	VK70-704022-001	0103 000	SSPTS MAIN DISTRIBUTION CNTRL ASSY (MDCA) MOD KIT ADDED BY EDS I/F & V070-329331 D01. KIT EO A04 MOVED TO 34, R1 OF MCR OV-103/34 R2MCR CHGD TO FLT 35	S115122 2006-11-20	MAND 034
	AUTH KSC	VK70-730481-001	0103 000	(VAX)BUS-MAIN D.C. POWER DISTRIBUTION - SSPTS ADDED BY EDS I/F & V070-730001 AE13 & -730033 F11 (REPLS VK70-730841-001, MCR R3 TO FLT 34 FROM 35	S115122 2006-11-20	MAND 034
019789	AUTH KSC	VK70-773363-001	0103 000	CREW MODULE SSPTS IMPLEMENTATION ADDED BY EDS I/F & VK70-773363 NEW	S115122 2006-11-20	MAND 034
019789R3	AUTH KSC	VK70-774353-001	0103 000	SSPTS MID FUSELAGE WIRING KIT ADDED PER R1 OF MCR/R2 CHGD EFF TO 35, CHGD EFF TO FLT 34 PER KIT EO A03, MCR/43 CHGD EFF TO 34	S115122 2006-11-20	MAND 034
019789	AUTH KSC	VK70-775373-001	0103 000	AFT FUS STATION/SHUTTLE POWER TRANSFER SYSTEM IMPLEMENTATION ADDED BY EDS I/F & VK70-775373 NEW MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122 2006-11-20	MAND 034
019810	COMP KSC	TCTIV7019810REF	0103 000	MEC SMIA MOUNTING NUTS ADDED BY EDS I/F & V070-705004 C01 & V070-705134 C 08. OV-103/34 (STS-122) MOVED TO STS-120 PER REMAN	S115122 2006-11-20	MAND 034
023227R1	AUTH KSC	VK70-795153-001	0103 002	CONNECTOR SAVER REDESIGN, (KU-BAND) ADDED PER R1 OF MCR. OBTAIN PARTS FROM K598-430013 , -430014, VK70-795153 KITS. REPL 023227,0103,0	S115122 2006-11-20	OPTY 034
023411	AUTH KSC	VK70-635308-001	0103 000	FREON AFT COLDPLATE NETWORK FILTER-MOD KIT ADDED BY EDS I/F & KIT EO NEW MOVED STS-120 FROM STS-122 PER REMANIFEST	S115122 2006-11-20	OPTY 034
	AUTH KSC	VK70-854103-001	0103 000	MOD KIT PROVISIONS FOR FREON AFT COLDPLATE NETWORK FILTERS ADDED BY EDS I/F & V070-852424 NEW MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122 2006-11-20	OPTY 034
023420	AUTH KSC	TCTIV3423420REF	0103 000	ELIMINATE "0" GAGE WIRE DAMAGE IN LOWER MIDBODY WIRE TRAYS ADDED BY EDS I/F & V070-340446 A06- MOVED TO STS-120 FROM STS-122 PER REMANIFEST REF. A042013GH	S115122 2006-11-20	MAND 034

AUTH	VK70-794137-001	0103	000	ELIM OF "O" GAGE WIRE DAMAGE IN UPPER MIDBODY KIT, W/W -002	S115122	MAND
KSC	NOT REQUIRED			ADDED BY EDS I/F & VK70-794137 NEW, W/W -002 KIT MOVED TO	2006-11-20	034
				STS-120 PER REMANF - REF. A042013GH		
AUTH	VK70-794137-002	0103	000	ELIM OF "O" GAGE WIRE DAMAGE IN LOWER MDBY MOD KIT, W/W -001	S115122	MAND
KSC	NOT REQUIRED			ADDED BY EDS I/F & KIT EO A01 MOVED TO STS-120 FROM STS-122	2006-11-20	034
				PER REMANIFEST		

MCR/ECP	STAT	ITEM/KIT NUMBER	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
-----	SITE	TCTI NUMBER	EISN NO.	-----	-----	-----
023448	AUTH KSC	TCTIV3523448REF	0103 000	ECO SENSOR SYSTEM INSTRUMENTATION, BAYS 5&6 RE-WIRING ADDED BY EDS I/F PER EO V070-775361#E14 & 351#E19 MOVED TO STS-120 PER REMANIFEST (A042013GH)	S115122 2006-11-20	MAND 034
	COMP KSC	TCTIV7023448REF	0103 000	ECO SENSOR SYSTEM INSTRUMENTATION, DSC OA-C CARD ADDED BY EDS I/F & V070-755262 D04 - MOVED TO STS-120 FROM STS-122 PER REMANIFEST (A042013GH)	S115122 2006-11-20	MAND 034
	PLND KSC	TCTIV7723448REF	0103 000	ECO SENSOR SYSTEM INSTRUMENTATION, INTER-BAY WIRING, BAY 5&6 ADDED PER EO V070-775007#B26 MOVED TO STS-120 FROM STS-122 PER REMANIFEST	S115122 2006-11-20	MAND 034
023467	AUTH KSC	TCTIV6223467REF	0103 000	WASTE COLLECTOR SUBSYSTEM ADDED BY EDS I/F & V070-623002 G07. REPLACES PLHLD ER 023467,0103,0-MOVED TO STS-120 PER REMANIFEST	S115122 2006-11-20	OPTY 034
030001	AUTH KSC	TCTIV7930001REF	0103 000	ET UMBILICAL CAMERA FLASH GFE CABLE INSTALLATION ADDED BY EDS I/F & V070-795451 J22 & 795471 J25 REPLACES 030001,0103,0	S115122R4 2007-03-21	MAND 034
030005	AUTH KSC	TCTIV3930005REF	0103 001	BOND FRSI PLUGS INTO TPS PANEL ON EMER EGRESS ACCESS DOOR ADDED BY EDS I/F & V070-391001 E02, -391014 C08. R EPLACES 030005,0103,1	S115122R4 2007-03-21	MAND 034
	AUTH KSC	TCTIV3930005REF	0103 000	ARROWHEAD BLANKET STITCH MOD ADDED BY EDS I/F & V070-391104 C04 & 391105 B04. REPLACES 030005,0103,0	S115122R3 2007-02-14	MAND 034
	AUTH KSC	TCTIV3930005REF	0103 002	CONVERT TO BONDED FRSI PLUGS ON TILES AT FWD EDGE ADDED BY EDS I/F & V070-395027 B11. REPLACES 0300 05,0103, 2.MOVED TO STS-120 PER REMANIFEST	S115122F 2007-04-30	MAND 034
030070	AUTH KSC	030070	0103 000 CONTR	ECO SENSOR SYSTEM INSTRUMENTATION REDESIGN ADDED PER D. CLINE/B. WAGSTER REQUEST FOR NOON BD MOVED TO STS-120 PER REMANIFEST (REF. A042013GH)	S115122E 2007-04-06	MAND 034

TOTAL MODS = 73

MCR/ECP	STAT	ITEM/KIT NUMBER	EISN	SEQ	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIO FLT
008828	APPD KSC	K845-710009-001	0001	000	SHUTTLE POWER DISTRIBUTION UNIT (SPDU) - MOD KIT ADDED PER K845-710009 NEW & V845-714008 A03	NOT REQD	MAND 034

TOTAL MODS = 1

MCR/ECP	STAT SITE	ITEM/KIT NUMBER TCTI NUMBER	SEQ EISN NO.	DESCRIPTION / GENERAL REMARKS	PRCB AUTHDATE	PRIOR FLT
	PLND	B470ECP3789R000	B131 000	RSRM AFT SEGMENT STIFFENER RING FOAM APPLICATION TCTI KAS	S170809R2 2006-08-15	
	PLND	B470ECP3789R000	B131 001	RSRM AFT SEGMENT STIFFENER RING FOAM APPLICATION TCTI KAS	S170809C 2007-04-06	

TOTAL MODS = 2

Approved STS-120 OMRS Waivers and Exceptions

WVR EXC	ELEMENT PROJECT	PRCBD NUMBER WAIVER# (STAT) (INITIAL STS)		ABSTRACT RAS REQUIREMENTS	EISN PAYLOAD	STS BEG END	
+	E	ET	S053297QG ET10431R1 (A)	OMRSD EXCEPTION REQUEST - BIPOD YOKE TO STRUT BOLT TORQUE INCREA SE(ET10431R1)	ET	120	120
		OMS	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
			S053298NW EK10532 (A)	OMRSD EXCEPTION REQUEST - LEFT AND RIGHT POD BI- PROPELLANT VALVE DRAIN(EK10532)	0023 0011	035	035 037
			S053298NY EK10533 (A)	OMRSD EXCEPTION REQUEST - OMS HELIUM OFFLOAD TIME EXTENSION (EK1 0533)	0011 0023	037	037 035
		ORB	S053298MF EK10524 (A)	OMRSD EXCEPTION REQUEST - FCP2 (S/N120) SUBSTACK 3 DELTA VOLTAGE(EK10524)	103	033	034
			S053298MFR1 EK10524 (A)	OMRSD EXCEPTION REQUEST - FCP2 (S/N120) SUBSTACK 3 DELTA VOLTAGE(EK10524R1)	103	033	034
		RCS	S053298NZ EK10534 (A)	OMRSD EXCEPTION REQUEST - RCS HELIUM OFFLOAD TIME EXTENSION (EK1 0534)	0011 103 0023	037	037 034 035

W	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

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Approved STS-120 OMRS Waivers and Exceptions

	Waivers	Except	Deviat	Cannib	Total
Total Extracted	2	8	0	0	10

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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. ***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****	OV-103, Flight 31 OV-103, Flight 32 WAIVER for STS-121	INS-3-28-279 (installed Tech Order)
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. ***** SEE NSTS 07700 VOLUME IV BOOK 2 FOR COMPLETE DETAILS *****	OV-103, Flight 31 OV-103, Flight 32 WAIVER for STS-121	OEL-3-31-304 PTL OEL-3-31-4432 PTL

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

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	

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	

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	

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	