S042013EW
Update the Launch Dates

NASA / JSC-MO / Coggeshall

SPACE SHUTTLE PROGRAM
Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Change Request S042013EW	Presenter MO/Coggeshall
	Date October 14, 2004

Change NSTS 07700, Volume III, Table 4.1 as described :

		IS	WAS
STS-114 / LF1	Launch	NET 5/12/05	NET 3/6/05
STS-300 / None	Launch	NET 6/16/05	NET 5/5/05
STS-121 / ULF1.1	Launch	NET 7/10/05	NET 5/5/05
STS-301 / None	Launch	NET 9/6/05	NET 7/1/05
STS-115 / 12A	Launch	NET 12/8/05	NET 9/29/05

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SPACE SHUTTLE PROGRAM
Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Evaluations	Presenter MO/Coggeshall
	Date October 14, 2004

KSC-PH : Approve with change

-Recommend a change in the launch date for STS-300 from NET 6/16/05 to NET 6/14/05

-The approval of the recommended launch dates is contingent upon the Program Flight Elements meeting the flight hardware delivery dates as shown on the attached Milestone Interface Charts for each flight."

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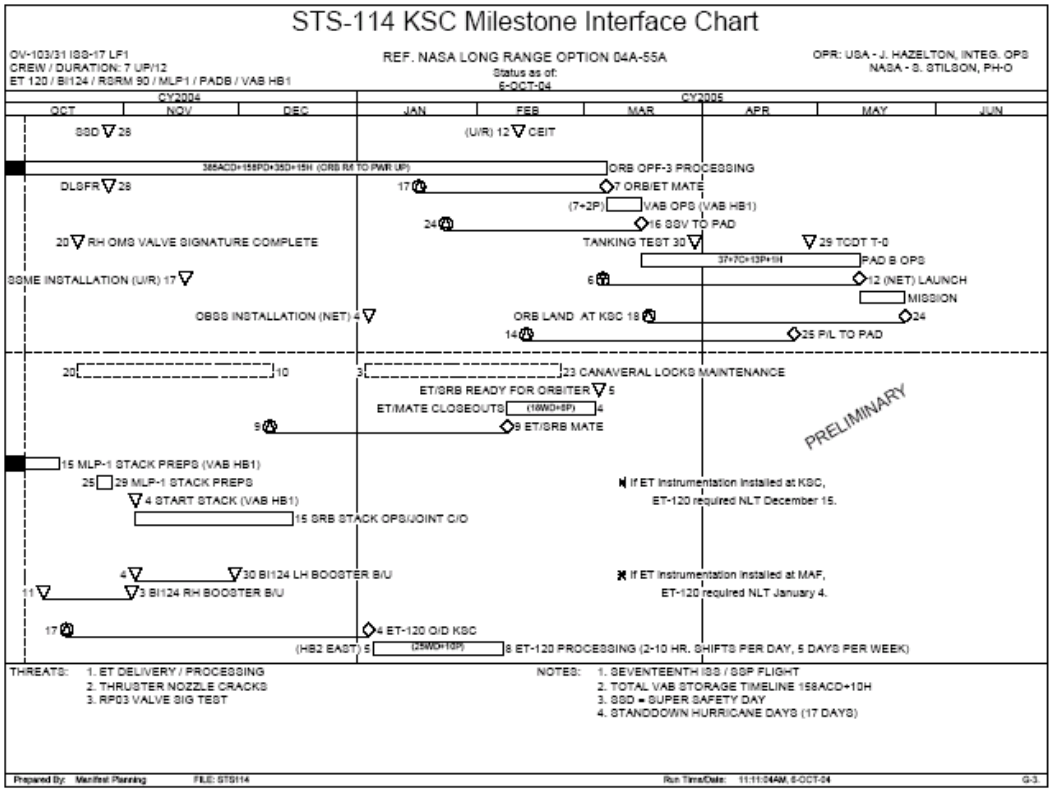

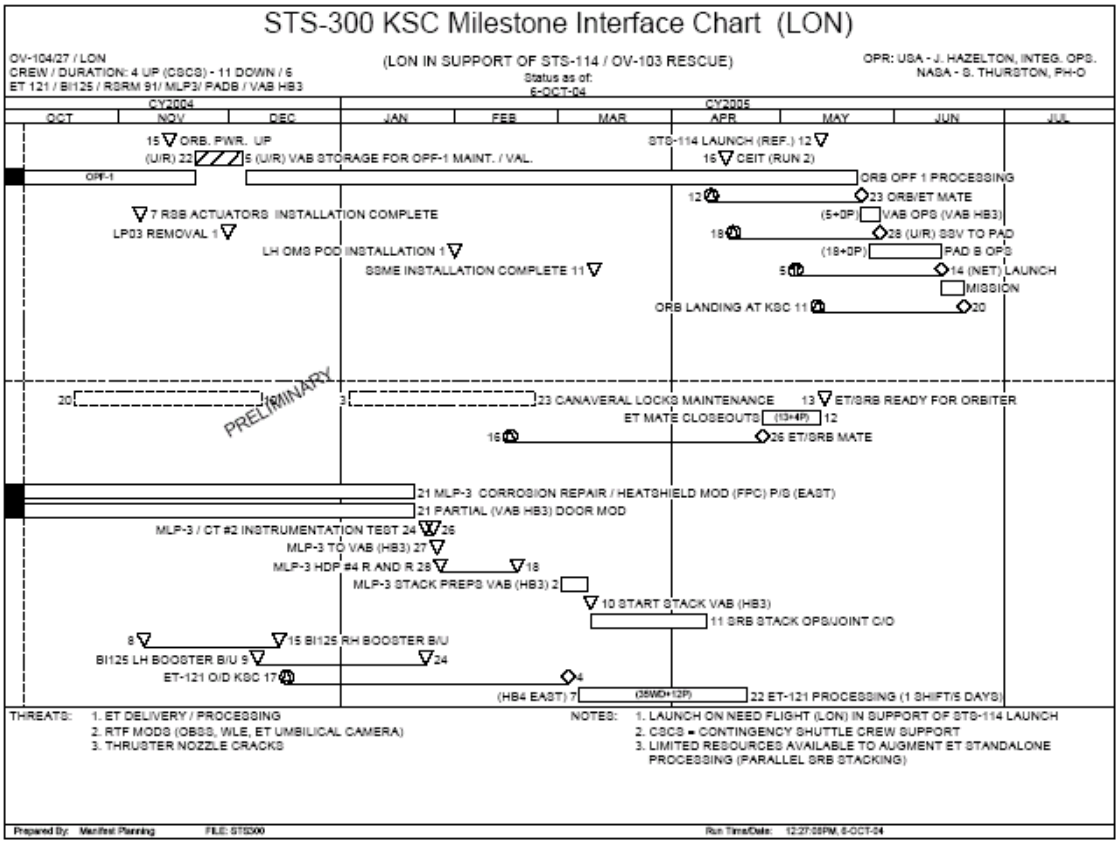
STS-300 KSC Milestone Interface Chart (LON)
OV-104/27 / LON
CREW / DURATION: 4 UP (CSCS) - 11 DOWN / 6
ET 121 / BI125 / RSRM 91/ MLP3/ PADB / VAB HB3
(LON IN SUPPORT OF STS-114 / OV-103 RESCUE)
Status as of: 6-OCT-04
OPR: USA - J. HAZELTON, INTEG. OPS.
NASA - S. THURSTON, PH-O
CY2004
CY2005
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
15 ORB. PWR. UP
(U/R) 22
5 (U/R) VAB STORAGE FOR OPF-1 MAINT. / VAL.
STS-114 LAUNCH (REF.) 12
16 CEIT (RUN 2)
OPF-1
ORB OPF 1 PROCESSING
12
23 ORB/ET MATE
(5+0P)
VAB OPS (VAB HB3)
7 RSB ACTUATORS INSTALLATION COMPLETE
LP03 REMOVAL 1
19
28 (U/R) SSV TO PAD
LH OMS POD INSTALLATION 1
(18+0P)
PAD B OPS
SSME INSTALLATION COMPLETE 11
5
14 (NET) LAUNCH
MISSION
ORB LANDING AT KSC 11
20
PRELIMINARY
20
3
23 CANAVERAL LOCKS MAINTENANCE
13 ET/SRB READY FOR ORBITER
ET MATE CLOSEOUTS
(13+4P)
12
16
26 ET/SRB MATE
21 MLP-3 CORROSION REPAIR / HEATSHIELD MOD (FPC) P/S (EAST)
21 PARTIAL (VAB HB3) DOOR MOD
MLP-3 / CT #2 INSTRUMENTATION TEST 24
26
MLP-3 TO VAB (HB3) 27
MLP-3 HDP #4 R AND R 28
18
MLP-3 STACK PREPS VAB (HB3) 2
10 START STACK VAB (HB3)
11 SRB STACK OPS/JOINT C/O
8
15 BI125 RH BOOSTER B/U
BI125 LH BOOSTER B/U 9
24
ET-121 O/D KSC 17
4
(HB4 EAST) 7
(35WD+12P)
22 ET-121 PROCESSING (1 SHIFT/5 DAYS)
THREATS:
1. ET DELIVERY / PROCESSING
2. RTF MODS (OBSS, WLE, ET UMBILICAL CAMERA)
3. THRUSTER NOZZLE CRACKS
NOTES:
1. LAUNCH ON NEED FLIGHT (LON) IN SUPPORT OF STS-114 LAUNCH
2. CSCS = CONTINGENCY SHUTTLE CREW SUPPORT
3. LIMITED RESOURCES AVAILABLE TO AUGMENT ET STANDALONE PROCESSING (PARALLEL SRB STACKING)
Prepared By: Manifest Planning
FILE: STS300
Run Time/Date: 12:27:08PM, 6-OCT-04

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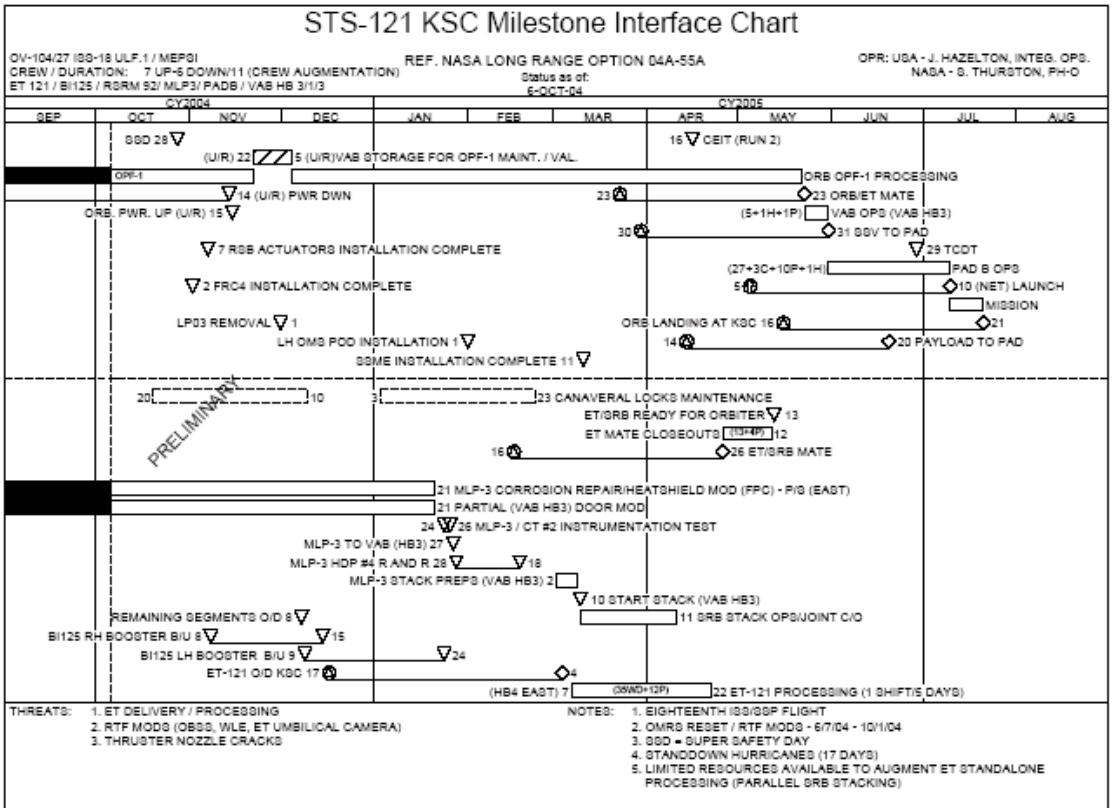

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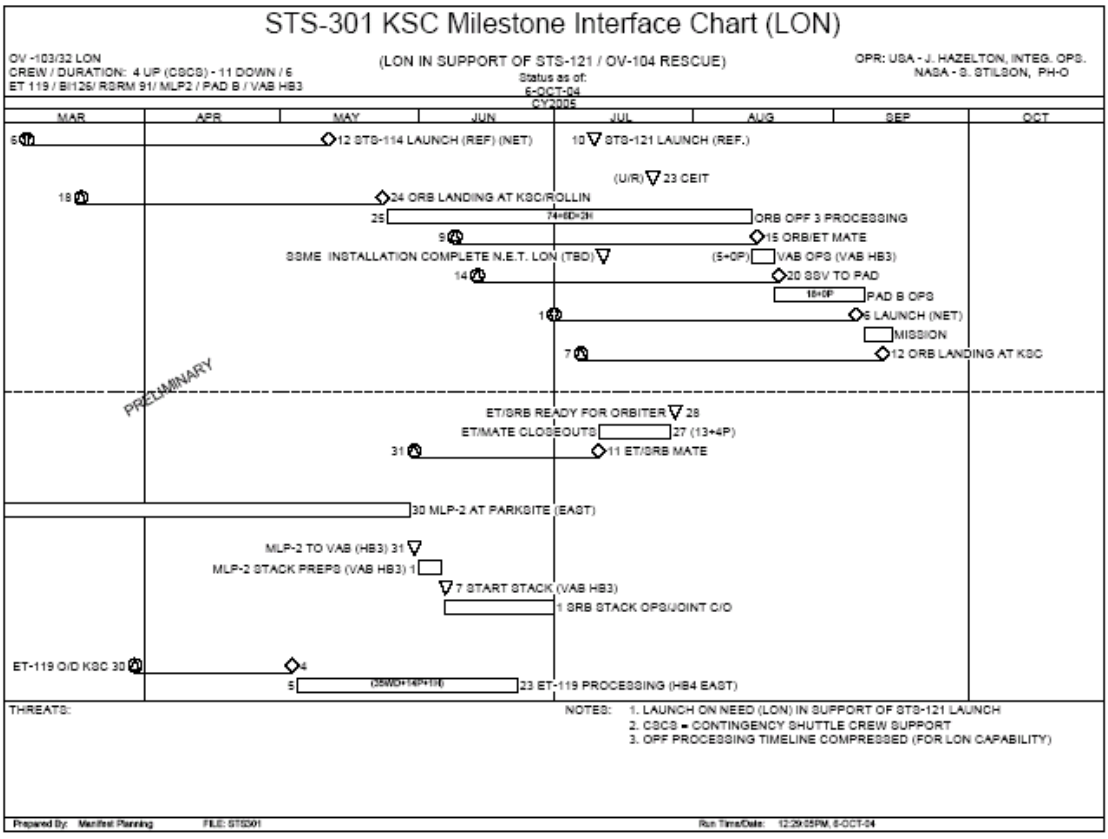

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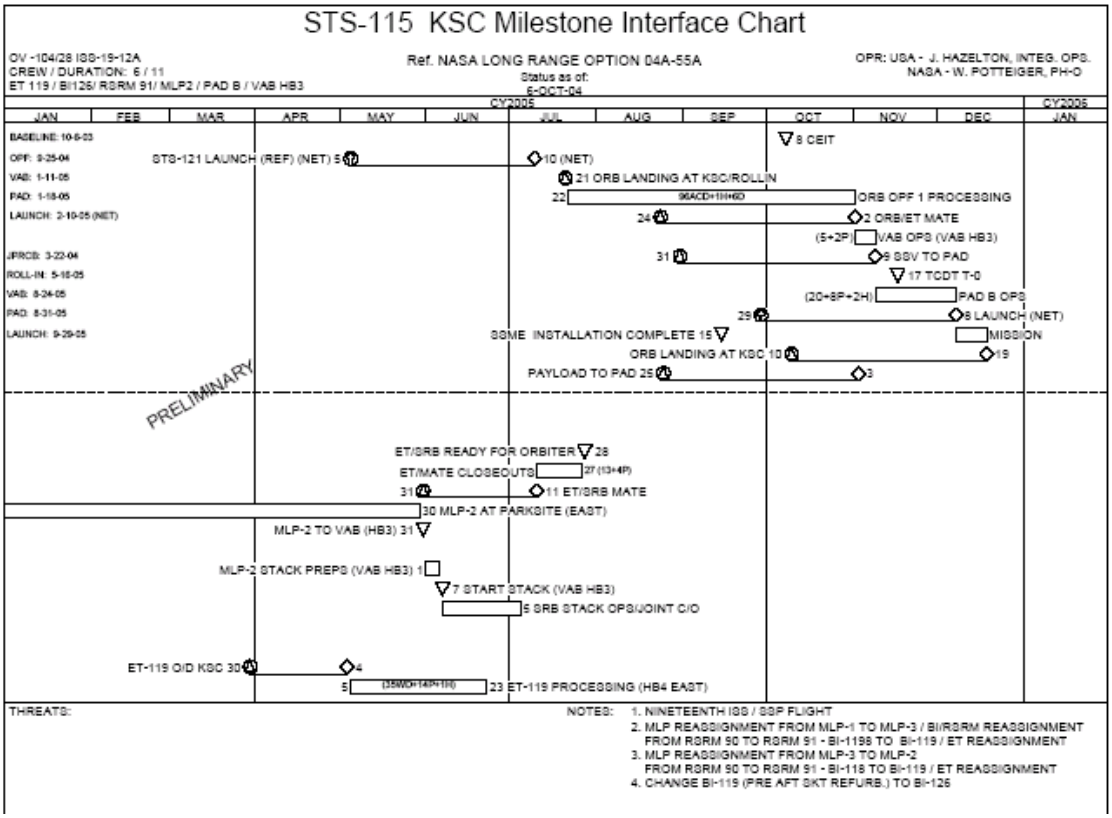

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SPACE SHUTTLE PROGRAM
Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

	Presenter: MO/Coggeshall
	Date: October 14, 2004

ET : Approve

The window of on-dock KSC delivery for the STS-114/ET-120 External Tank is December 29, 2004 (without contingency) to January 31, 2005 (with contingency).

- See Attached chart

RSRM : Approve

Launch manifest slips to the right cause hardware-aging concerns for the RSRM, which continue to be monitored.

{RSRM Lifetime matrix goes here}

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EXTERNAL TANK - SHIP, O/D KSC & LAUNCH DATES

ET: W. Ondocsin

FY 2005 — FY 2006

STS ET AGE*	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
114 120 32 DD250 - 07/22/02	10/11 ⇧⇧ 10/17			01/26 △△ 01/31		(NET) 03/06 ▲		(NET) 05/12 △							
121 121 32 DD250 - 09/24/02			12/11 ⇧⇧ 12/17			03/06 △△ 03/11		(NET) 5/06 ▲		(NET) 7/10 △					
115 119 39 DD250 - 06/28/02						03/24 ⇧⇧ 03/30		05/05 △△ 05/11				(NET) 9/28 ▲			(NET) 12/08 △

STATUS AS OF: 10/12/04 | ⇧ ⇧ Ship On Dock | ▲ BASELINED LAUNCH DATE | *Age in months at launch

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SPACE SHUTTLE PROGRAM
Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Evaluations

Presenter: MO/Coggeshall
Date: October 14, 2004

SSME : Approve

- HPOTPs currently may not support STS-301 launch date (assuming conservative schedule estimates don't improve)
  - HPOTP mitigation plan is in work and the schedule issue is expected to be resolved

Requires 9 engines ready by 7/11/05
- Engine installation for STS-301 on 7/11/05
- Ten engines currently at KSC, require hardware replacements by 6/11/05
  - HPOTP, controller, and speed sensor recycles in work
  - HPOTP recycle plan to support 9 engines by TBD
    - Supports 7 engines by 2/09/05
    - Recycle and test plans are in work for final two units
  - Controller recycle plan to support 9 engines by 4/03/05
  - Speed sensor plan to support 9 engines by 12/31/04

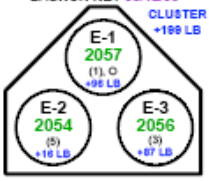
BOEING

SSME PLANNED ASSIGNMENTS INCLUDING PERFORMANCE IMPACTS

CREATED BY: Helen Lewis, ROCKETDYNE (818-586-8624) Sheet on the Web @ http://rkdn.ksc.nasa.gov/

DATE: 10/07/04

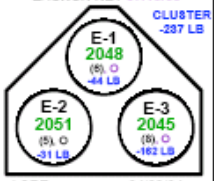
OV103/31 (PLANNED)
STS-114 (ISS LF1)
LAUNCH NET 05/12/05



LSRR: 04/09/04
LSFR: 07/15/04
DELTA LSFR: 10/28/04

INSTALLATION: 11/17/04

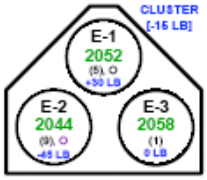
OV104/27 (PLANNED)
STS-121 (ISS ULF1.1)/300 (LON)
LAUNCH NET 07/10/05



LSRR: 04/09/04
LSFR: 11/18/04
DELTA LSFR: 01/27/05

INSTALLATION: 03/11/05

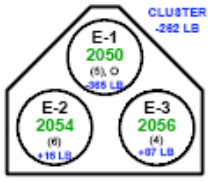
OV104/28 (PLANNED)
STS-115 (ISS 12A)/301 (LON)
LAUNCH NET 12/08/05



LSRR: 03/24/05
LSFR: 04/21/05
DELTA LSFR: 05/26/05

INSTALLATION 09/15/05

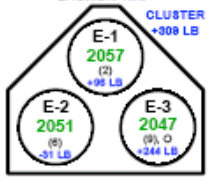
OV 103/32 (PLANNED)
STS-116 (ISS 12A.1)
LAUNCH TBD



LSRR: TBD
LSFR: TBD
DELTA LSFR: TBD

INSTALLATION: TBD

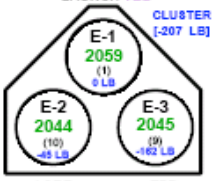
OV 105/20 (PLANNED)
STS-117 (ISS 13A)
LAUNCH TBD



LSRR: TBD
LSFR: TBD
DELTA LSFR: TBD

INSTALLATION: TBD

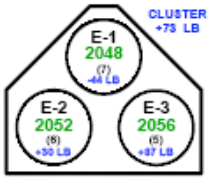
OV 104/29 (PLANNED)
STS-118 (ISS 13A.1)
LAUNCH TBD



LSRR: TBD
LSFR: TBD
DELTA LSFR: TBD

INSTALLATION: TBD

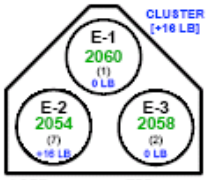
OV 103/33 (PLANNED)
STS-119 (ISS 15A)
LAUNCH TBD



LSRR: TBD
LSFR: TBD
DELTA LSFR: TBD

INSTALLATION: TBD

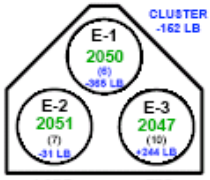
OV 105/21 (PLANNED)
STS-120 (ISS 10A)
LAUNCH TBD



LSRR: TBD
LSFR: TBD
DELTA LSFR: TBD

INSTALLATION: TBD

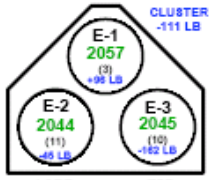
OV 104/30 (PLANNED)
STS-122 (ISS)
LAUNCH TBD



LSRR: TBD
LSFR: TBD
DELTA LSFR: TBD

INSTALLATION: TBD

OV 103/34 (PLANNED)
STS-123 (ISS)
LAUNCH TBD



LSRR: TBD
LSFR: TBD
DELTA LSFR: TBD

INSTALLATION: TBD

NOMINAL ISP (06/30/2000)
(0 LB Impact)
Block II: 452.07 SEC
Note:
1 SEC=400 LBS/Engine

NOMINAL THRUST
Block II: 491058 LBF

Future Flight

E2058
ON DOCK KSC
3/23/06

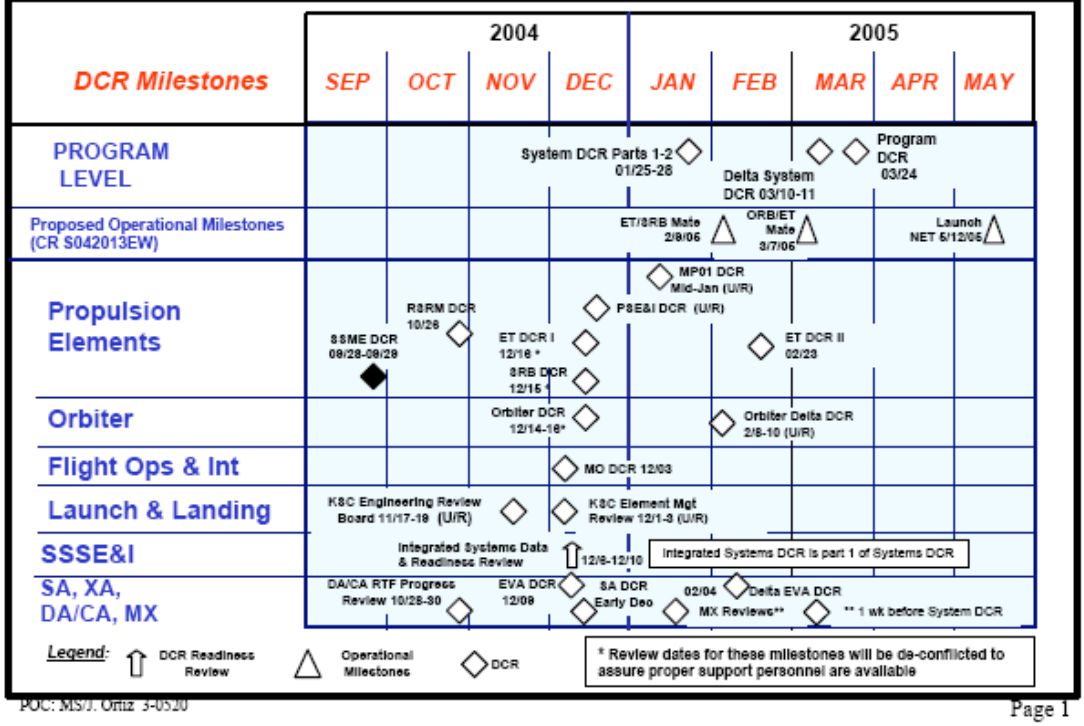
2058
0 LB

KEY

X LB	Performance Impact (Thrust + ISP Impact) [pending engine test]
	Refer to Greenbook for official performance
F	HPFTP Replacement
O	HPOTP Replacement
(x)	Total # of Flights

All Engines are Block II
Changes shown in purple

SSP-level DCR Planning (as of 10-13-04)



POC: MS/J. Ortiz 3-0520

SPACE SHUTTLE PROGRAM
Space Shuttle Systems Engineering and Integration Office
NASA Johnson Space Center, Houston, Texas

STS-114 Launch Date Assessment

Presenter: MS/R. A. Schmidgall
Date: Oct. 14, 2004 Page: 1

- **Assessment of the May/June 05 launch window is achievable, but significant risks exist from unknowns:**
  - Element level DCRs support launch date, but resource and schedule conflicts may impact review dates
    - Stafford Covey and other independent team reviews
    - MMT Sims
    - SICBs, PRCBs, etc. necessary to close RTF actions
    - Many DCR dates still under-review and/or the stack-up/overlap is too aggressive
  - Debris closure is critical path for RTF and integrated plan/schedule is still in development
    - 4 to 6 weeks required by SE&I after critical element work completed to generate RTF analysis/rationale (End-to-End Margin, PRA, Integrated Hazard) and conduct delta DCR
      - Orbiter impact/damage tolerance (late Jan / early Feb 05)
      - Liberation testing / distribution model (TBD)
      - Final / validated DTA (late Jan 05)
    - System Delta/Debris DCR – NET Mar 10-11, 2005
  - Significant overlap between operational milestones and engineering closure
    - Some increased risk to Program by proceeding with hardware integration before engineering is closed/dispositioned
    - SE&I resources (perhaps other elements) unlikely able to support both System Debris DCR and flight readiness products/reviews inside launch minus 60 days

SPACE SHUTTLE PROGRAM
Space Shuttle Systems Engineering and Integration Office
NASA Johnson Space Center, Houston, Texas

STS-114 Launch Date Assessment (cont.)

Presenter: MS/R. A. Schmidgall
Date: Oct. 14, 2004 Page: 2

- **Mitigation strategy to ensure engineering closes and supports May/June 05 launch date:**
  - **Generate integrated schedule of critical path work at element level that must be closed to support the DCR milestones**
    - Proactively allocate resources and/or de-conflict DCR activities with other Program meetings or events that must be addressed in support of RTF
  - **Generate an integrated debris closure schedule and decision gates that identifies all critical path events for each debris source that must be dispositioned for RTF**
    - Expected debris that can be closed deterministically
    - Expected debris that will likely require probabilistic closure
    - Unexpected debris closure rationale
  - **Develop a sense of urgency and vigilance across the Program to generate and manage the schedules to close the engineering in support of the DCRs**
    - Activity must parallel the urgency and importance of the RAC w.r.t. vehicle processing at KSC
    - Other Program reviews/activities that aren't critical to DCR closure should be scheduled in "windows" that minimize impacts to DCR milestones

Significant Delivery Dates 1st Flight May 2005
2nd Flight July 2005
Study Only

ITEM	Proposed Need Date	Current EDD	Proposed Need Date	Current EDD	Proposed Need Date	Current EDD
BOOM Single Sensor Dual Wiring	12-13-04	11-24-04	02-24-05	01-28-05	N/A	N/A
Boom Avionics Box (Required for Dual Sensors)	12-20-04	01-20-05	02-28-05	02-22-05	N/A	N/A
Sensor Package/RMS Test	12/08/2004*	12-08-04	TBD	TBD	TBD	TBD
Sensor Package Fit Check & Functional	1-8-05*	01-08-05	TBD	TBD	TBD	TBD
Sensor Installation	4-13-05*	04-13-05	TBD	04-13-05	TBD	TBD
J-Box (Sneak Circuit)	12-15-04	12-15-04	02-25-05	02-07-05	09-01-05	03-07-05
BOOM MPM's	11-08-04	10-20-04	01-17-05	01-12-05	09-01-05	12-01-05
MPM Over-Center Bench Rigging 600 Spec	10-08-04	10-15-04	N/A	N/A	N/A	N/A
MPM Over-Center Bench Rigging 650 Spec	10-08-04	10-22-04	N/A	N/A	N/A	N/A
MPM Installation - Rigging 505 Spec	11-01-04	10-29-04	N/A	N/A	N/A	N/A
MPM RCN (OBSS STBD/MRL Baseline)	11-12-04	10-20-04	N/A	N/A	N/A	N/A
RMS	Delivered	08-20-04 A	01-05-05	09-30-04	07-13-05	TBD
RMS End Effector	Delivered	9/30/04A	11-15-04	10-15-04	07-10-05	TBD
RMS MPM's	Installed	Installed	Installed	Installed	07-15-05	07-26-05

*Dates are preliminary

OBSS - Current Delivery Challenges

- **OV-103 challenge to meet need dates**
  - **ATP requirement pushes the 200 Upper Shoulder assembly delivery to (Was: 10/8; Is: 10/20)**
    - **Resolution of "Golden Issues" (Lug/contact torque issue; gold plating adhesion – resolved; contact probe nodule) results in delivery slip to 10/20 (ref. Attached charts)**
    - **200 assembly passed ATP random vibration without interruption to electrical circuit and passed post-vib functional test of MRL**
      - However, subsequent removal of simulated Boom section and x-guide revealed a change in the condition of both mating surfaces
        - Galling of bond strips; dents in contact pads; black "soot" in internal panel pockets
        - Boom delivery for STS-114 is yellow due to MDR changing out contact pads on Boeing X-guide per NASA direction
        - No opportunity to expedite – schedule is already at full press
- **Both OV-104 and OV-105 MPM hardware deliveries are experiencing schedule difficulties**
  - **Supplier MRL schedule does not support due to long lead bearings and motors**
  - **Working with suppliers sub-tier vendors to expedite schedule – opportunity to improve schedule some, but not enough to meet GO's need dates**
- **Only the delivery dates of the sensors have been shifted to the right due to the new launch dates.**

OBSS

Status/Ground Ops Concerns

- **Current deliveries of Boom/MPM hardware for OV-103 Single Sensor, OV-104 Dual Sensor support with the following threats:**
  - Box delivery/retest (Sneak Circuit)
  - Boeing HB Engineer release:
  - MPM Over-Center Bench Rigging 600 & 650 Specs
  - MPM Installation – Rigging 505 Spec

- **Current deliveries of Dual Boom hardware for OV-103 do not support integrated processing for a May 2005 Launch capability. Both KSC and OBSS team will be examining schedule to try and make improvements.**

- **H.B.production office expedite/mitigation efforts have greatly improved OV-105/s MPM deliveries, but still under support depending on what the "New" OV-105 manifest target is.**

SPACE SHUTTLE PROGRAM
Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Evaluations	Presenter: MO/Coggeshall
	Date: October 14, 2004

ISS : Approve with Change

Impacts to Increment 11:
- 118 hours of Expedition crew time for the additional Shuttle in the Increment (LF1)
- Loss of 240 hours of available Expedition crew time due to the delay of the 3rd crew member (ULF1.1)
- EMU Waiver Extension required to maintain EMU capability past Mar 05
- EMU redundancy deviation period may be increased from 1 month to 3-5 months
- All on board LiOH will have expired by LF1 arrival
- CSCS requirements and Shuttle turnaround for ULF1.1 questionable

Impacts to Increment 12:
- Due to planned 19Progress undock date, ISSP needs 12A launch accelerated to Dec 3, 2005

This protects for 12A having 4 days of launch scrub/turnaround, 7 days docked, an additional docked day to perform an unplanned assembly EVA, a "failure to undock" contingency day, and an ISS trajectory measurement day as well as protecting the GGR&C open days between Shuttle undock and next Vehicle undock/dock.

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Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Evaluations	Presenter MO/Coggeshall
	Date October 14, 2004

MOD Approve

Comments: In evaluating the MOD impacts associated with this CR, it was assumed that the RTF Project requirements and schedules remain as currently defined. The schedule relief that results from this CR actually reduces the overall risk and this CRs Risk is therefore **GREEN.**

Note: CR shows the STS-301 launch approximately 2 months after STS-121. The Elecktron failure CSCS assessment may not support this.

Important Note: Immaturity of TPS Repair Techniques/Procedures means that these RTF items are expected to remain YELLOW for MOD (some of these procedures were not available for review at the STS-114 FOR). These technical issues exist independent of the specific launch date chosen. The TPS Repair Project is the primary schedule driver and will feed these procedures.

-Procedure availability for TPS repair crew training is a concern (potential crew loading impact)

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Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Evaluations	Presenter MO/Coggeshall
	Date October 14, 2004

USA : Approve

Comments : :
• Dual Sensor OBSS impacts are still being evaluated by Ground Ops for a May launch.
• ET deliveries are required by the negotiated dates to maintain green Ground Ops schedules. ET-120 (STS-114)is required on 1/4/05. ET-121 is required on dock at KSC NLT 54 days before STS-114 launch to preserve STS-300 LON capability.
• The STS-114 Flight Ops Review was conducted Oct 4-8 with incomplete TPS inspection and Tile Repair procedures and no RCC procedures. Late availability of these procedures will likely result in high crew loading in support of a May launch.
• Significant risk with completion of the Debris Transport Analysis & Damage Tolerance Assessment will exist until successful completion of impact testing, probability assessments, and debris liberation verification.
•A significant amount of work associated with the paper burn down, Design Certification Review, and the Certification of Flight Readiness process is still open and dates are still pending.

SPACE SHUTTLE PROGRAM
Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Summary	Presenter: MO/Coggeshall Date: October 14, 2004

CSCS Assessment :

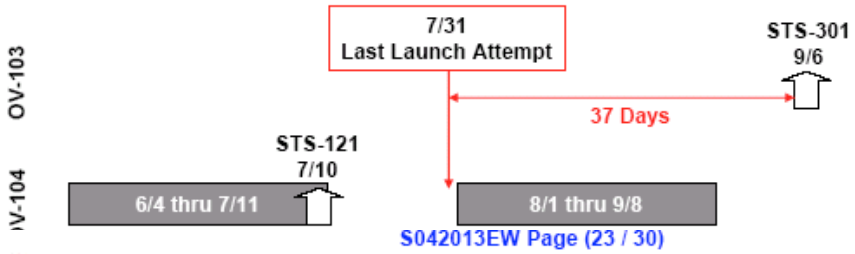
Launch to Launch spacing of STS-114 and STS-300 : 33 days

STS-114 (5/12) & STS-300 (6/14)

Launch to Launch spacing of STS-121 and STS-301 : 58 days

STS-121 (7/10) & STS-301 (9/6)

PROJECTED Station CSCS numbers are 30-45(TBR) days for the first 2 flights.



SPACE SHUTTLE PROGRAM
Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Summary	Presenter: MO/Coggeshall Date: October 14, 2004

New Launch Windows :

Imagery group (DM,SX,SF) has completed the assessment of the near term launch windows

- The imagery tool has not been approved yet, awaiting the SA CCB on 10/19
  - Projected Windows have gotten 1 day smaller since the June assessment
  - We will defer the 10/18 JPRCB window assessment 1 week to await approval of the imagery tool and selected launch dates.

Restricting launches so that mated OPS must be under 45 degree beta will impact the September launch window

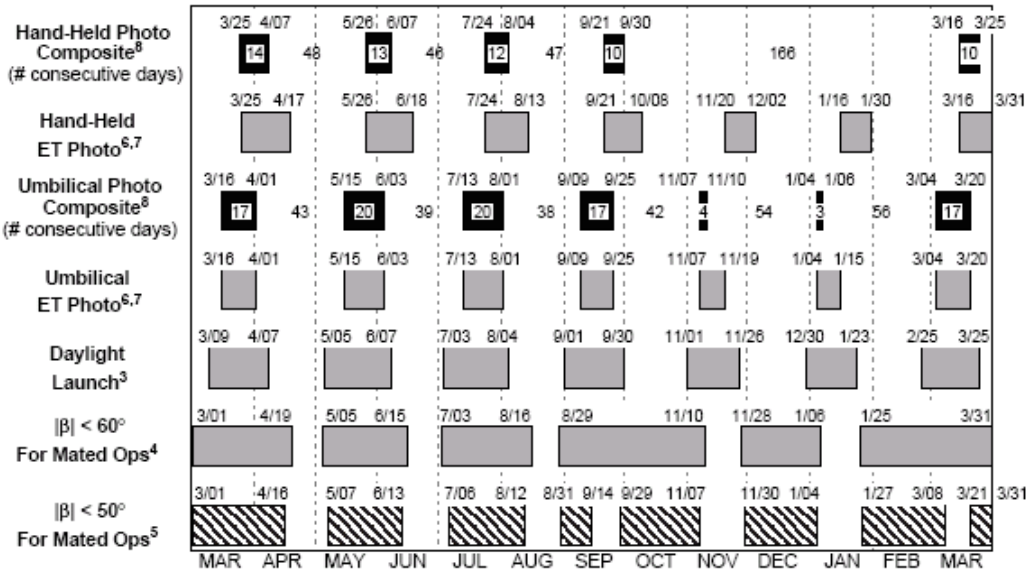
- 10/4 JPRCB (http://sspweb.jsc.nasa.gov/webdata/mss/JPRCB/10042004JPRCB_SR2028B.pdf)
- **Inadvertent thruster firing issue**

September window for imagery and 60 degree Beta (9/9 thru 9/25)
September window for imagery and 45 degree Beta (9/9 thru 9/12)

October 5, 2004

LAUNCH DATE SUMMARY FOR ISS MISSIONS

C. Oliver/USH-483L
P. Gentry/USH-483L



GMT LAUNCH DATES 2005-2006

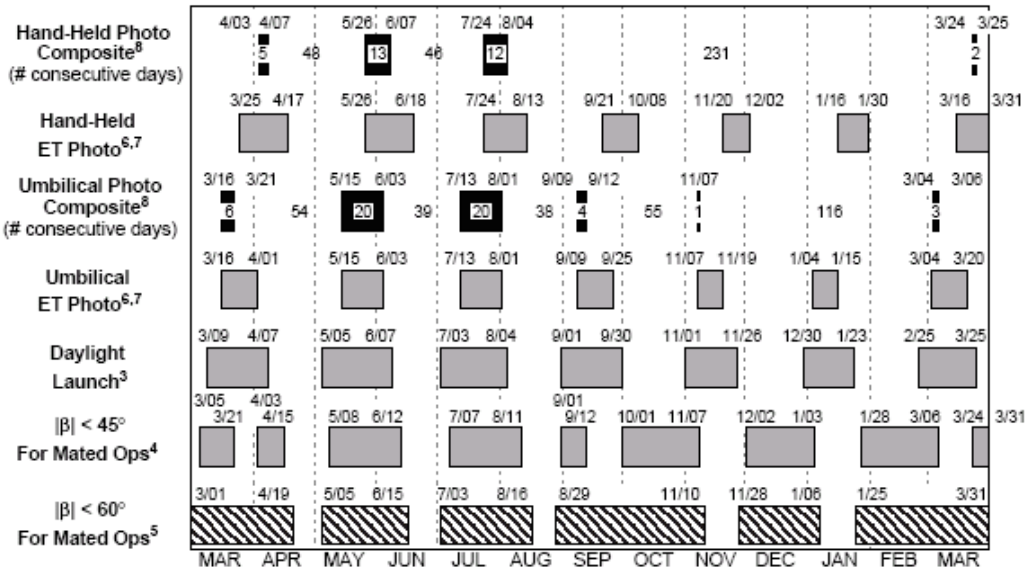
1. Launch times based on the September 2004 ISS reference trajectory.
2. For GMT dates with two launch opportunities 23.5 hours apart, only the second launch opportunity is considered (i.e., 5/05/05, 7/03/05, 8/31/05).
3. Daylight launch protects full 10 minute planar window from sunrise plus 3 minutes to sunset minus 3 minutes.
4. $|\beta| < 60°$ for 8 days of mated ops references the STS-114 OCFR4 design.
5. $|\beta| < 50°$ for 8 days of mated ops references the STS-116 OCFR1 design (12A and 12A.1 constraint).
6. Orbiter and ET ephemerides for image analysis of ET are initialized from the STS-114 OCFR4 design at inplane launch.
7. ET photo launch date predictions based on lighting analysis from SF/ Graphical Research and Analysis Facility (GRAF) lab and SX/Image Science and Analysis Group which meet requirements set forth by ET Project Office per STS-114 FRD sect. 3.1.a, and 3.1.m (CR# 112). Lighting is only one factor to ensure "good" ET photos.
8. Composite launch date periods protect the ET photo (Hand-Held or Umbilical camera), daylight launch, and $|\beta| < 60°$ for mated ops.

S042013EW Page (25 / 30)

October 7, 2004

LAUNCH DATE SUMMARY
FOR ISS MISSIONS
45 DEG BETA ASSESSMENT

C. Oliver/USH-483L
N.Wortham/USH-483L
P. Gentry/USH-483L



GMT LAUNCH DATES 2005-2006

1. Launch times based on the September 2004 ISS reference trajectory.
2. For GMT dates with two launch opportunities 23.5 hours apart, only the second launch opportunity is considered (i.e., 5/05/05, 7/03/05, 8/31/05).
3. Daylight launch protects full 10 minute planar window from sunrise plus 3 minutes to sunset minus 3 minutes.
4. |β| < 45° for 8 days of mated ops references the STS-114 OCFR4 design.
5. |β| < 60° for 8 days of mated ops references the STS-114 OCFR4 design.
6. Orbiter and ET ephemerides for image analysis of ET are initialized from the STS-114 OCFR4 design at inplane launch.
7. ET photo launch date predictions based on lighting analysis from SF/ Graphical Research and Analysis Facility (GRAF) lab and SX/Image Science and Analysis Group which meet requirements set forth by ET Project Office per STS-114 FRD sect. 3.1.a, and 3.1.m (CR# 112). Lighting is only one factor to ensure "good" ET photos.
8. Composite launch date periods protect the ET photo (Hand-Held or Umbilical camera), daylight launch, and |β| < 45° for mated ops.

S042013EW Page (26 / 30)

SPACE SHUTTLE PROGRAM
Flight Operations & Integration Office
NASA Johnson Space Center, Houston, Texas

Recommendations	Presenter: MO/Coggeshall
	Date: October 14, 2004

Approve S042013EW with Changes
- •STS-114 : 5/12/05
- •STS-300 : 6/14/05 (KSC suggested change)
- •STS-121 : 7/10/05
- •STS-301 : 9/6/05
- •STS-115 : 12/8/05

- Address the STS-121 launch date moving to September after a assessment and mitigation plan on CSCS has been done
  - • Target the 1/24/05 JPRCB
    - • Driven by CSCS L-6 month report

S042013EW MOD Evaluation

- STS-114
  - The launch slip from March to May increases the APM by about 330 lbs. The projected APM is acceptable (~870 lbs).
  - The earliest proposed launch date (NET 5/12/05) does not provide acceptable lighting for ET photography based on the requirements defined in the FRD section 3.1.a.2 (CR FRD17462-114-0112). Based on the special Orbit product delivered on September 30, 2004:
    - Acceptable lighting for launch and umbilical well camera photography occurs from May 15 through June 3.
    - Acceptable lighting for launch and crew hand-held photography lighting occurs from May 26 through June 7.
  - The proposed date results in acceptable beta angles during mated operations. The magnitude of the beta angle during mated operations will be less than 60 degrees for launch dates from May 12 through June 15.
    - More consumables will be required due to higher beta angle

BACKUP : S042013EW MOD Evaluation

- STS-300
  - The "WAS" launch date listed in the CR should be NET 5/5/05 instead of NET 3/6/05
  - The launch slip from May to June increases the APM by about 30 lbs. The projected APM for June is acceptable (~22075 lbs).
  - The mated beta angle does not exceed 60 degrees for the proposed date but may exceed 60 degree for later dates through July 3; however, a beta angle constraint has **not** been imposed for this flight.
  - The proposed launch date (NET 6/16/05) will not provide a daylight launch or lit ET umbilical photography opportunities; however, lighting is **not** a constraint for this flight. Lit crew hand-held photography opportunities are available from June 16 through June 18.

BACKUP : S042013EW MOD Evaluation

- STS-121
  - The launch slip from May to July will decrease the APM by about 80 lbs. The projected APM for July is acceptable (~1800 lbs).
  - The earliest proposed launch date (NET 7/10/05) does not provide acceptable lighting for ET photography based on the proposed requirements defined in the FRD section 3.1.a.2 (CR FRD17462-121-0030). Based on the special Orbit product delivered on September 30, 2004:
    - Acceptable lighting for launch and umbilical well camera photography occurs from July 13 through August 1.
    - Acceptable lighting for launch and crew hand-held photography lighting occurs from July 24 through August 4.
  - The proposed date results in acceptable beta angles during mated operations. The magnitude of the beta angle during mated operations will be less than 60 degrees for launch dates from July 10 through August 16.
  - Information: The Ascent/Entry design cycle and the FOR scheduling are on hold and will be rescheduled when this CR is dispositioned (per FIDP Advisory 121-BASE-12 approved on 10/5).
    - TDDP and FOR notification letter were both due the week of October 8
  - Information: Crew Loading is borderline GREEN/YELLOW and still in work

BACKUP : S042013EW MOD Evaluation

- STS-301
  - The launch slip from July to September increases the APM by about 260 lbs. The projected APM for September is acceptable (~20900 lbs).
  - The mated beta angle does not exceed 60 degrees for launch dates through November 10; however, a beta angle constraint has **not** been imposed for this flight.
  - The proposed launch date (NET 9/6/05) results in a daylight launch but will not provide lit ET photography opportunities; however, lighting is **not** a constraint for this flight.

- STS-115
  - The launch slip from September to December will decrease the APM by about 170 lbs.; however, this delta is already covered by protecting for the worst-case launch month in the IPT projections.
  - The proposed launch date (NET 12/08/05) will not provide a daylight launch or lit ET photography opportunities.
  - The proposed date results in acceptable beta angles during mated operations. The magnitude of the beta angle during mated operations will be less than 50 degrees for launch dates from December 8 through January 4, 2006.