

# **ET/SRB Processing Flow**

## **KSC Ground Operations**

**Tom Schaefer** 



- RPSF- 31-35 days to perform Aft Booster Build-up
  - Need Aft Skirts from USA SRBE and Aft Motors from ATK
  - Center and Forward segments are off-loaded from railcars toward the end of Aft Build-up prior to Stacking
- MLP- 7 days of preps once in VAB HB-1/3
  - Launch damage turnaround is performed at the Pad, Park site or VAB HB-2 prior to roll-in to HB-1/3 (Welding, painting, mods, etc.)
- SRB Stack- 19 days
  - Worked on three shifts, 5/6 days a week
  - Joint Closeouts take 5 days after stacking is completed



- Booster Integrated- 11 days
  - This is the work on the Boosters that can be performed prior to ET Mate or after ET Mate (Tunnel cable routing, cover installation, HDP ordnance, BSM ordnance) Plan to work most of this prior to ET Mate
    - ➤ Any Booster Integrated work carried after ET Mate becomes a resource/access problem
- ET Standalone- 26 days from ET on dock to SRB Mate
  - Can/have accelerated to 19 days
    - Work is carried over to Integration cell
  - This is done when ET is Critical Path

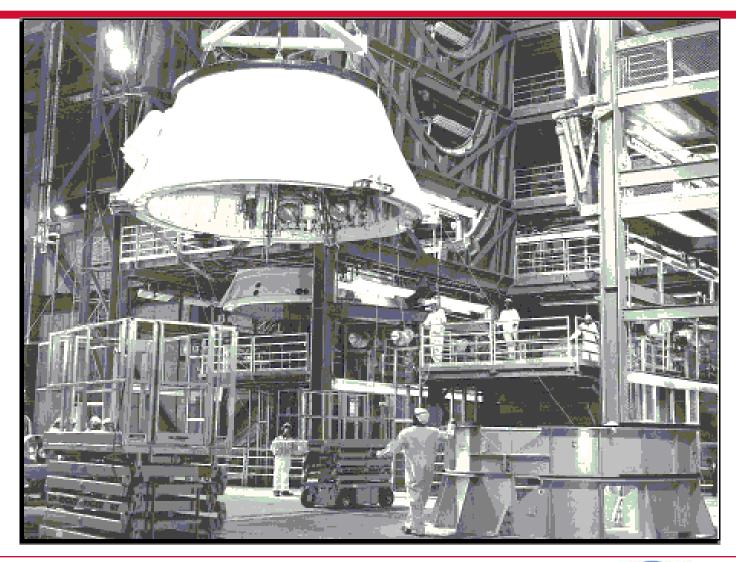


- ET/SRB Mate & Closeouts- 18 days
  - Can take up to 24 days if Booster Integrated work is carried over to after ET Mate
- Orbiter Mate- 7 days from Mate to Rollout



- Would like more then 84 days from ET on-dock to launch
- Will process in 60 days for LON

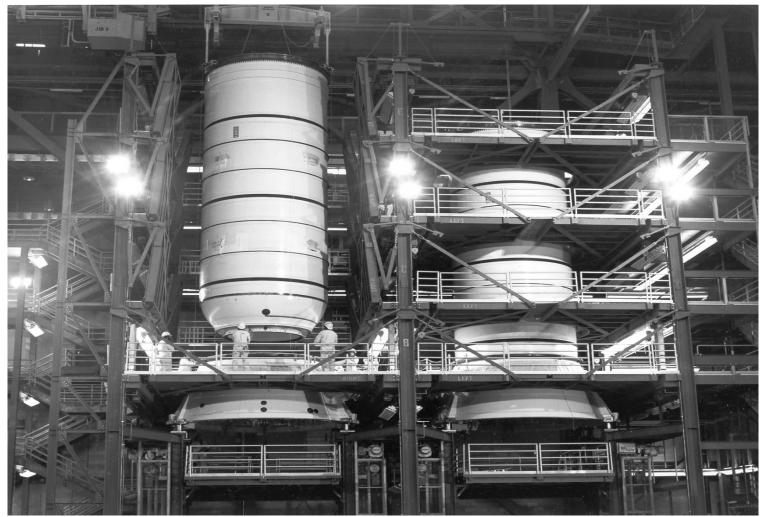










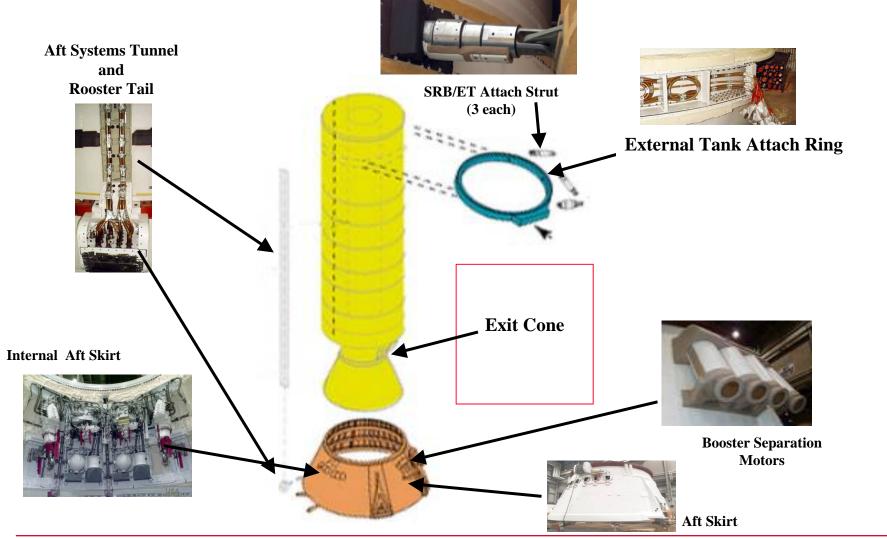


Aft Segment mate to Aft Skirt





## **Aft Booster Assembly**





**Mobile Launch Platform (MLP)** 





**Center Segment enroute from RPSF to VAB** 





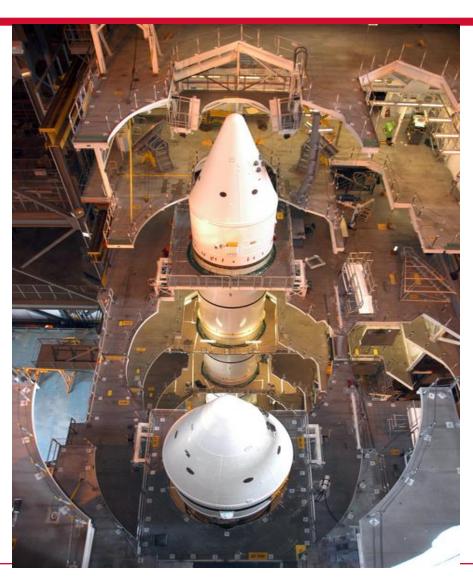


**Segments in VAB** 





### **Boosters After Stacking**



**Prior to ET Mate** 







ET "On-Dock". Move from Turn Basin to VAB

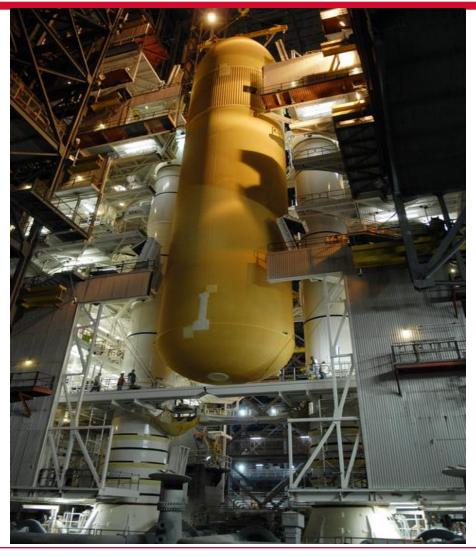




Lift to ET Cell (HB-2/4)



#### **ET Mate**







#### **Orbiter Mate**

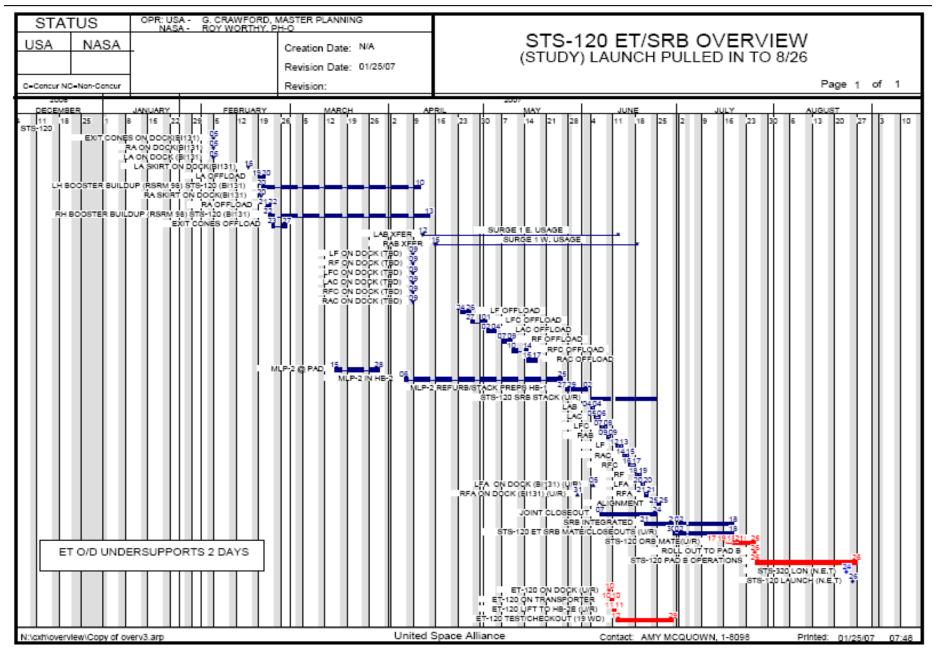






KSC MULTIFLOW ASSESSMENT - SRM/SRB/ET/MLP OPR: USA-MANIFEST PLANNING MASA: R. MORTHY, PH-O																					
REF STUDY 07A-7																					
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#### ET-124 ET PROCESSING FLOW Overview Schedule (As Run) AREA: VAB, H/B-2E IANUARY 29 30 31 12 13 ET on Dock T5001.001 B01 C23835 ET Offload and Secure T5001.002/.003/.004/.005 A01 C23836/7/8/9 ET Lift to HB-2E 5144.165 /.175 /.195 Platform OPS C23857 Receiving Inspection 6149.002 A03 T5001.005 A01 C23839 ET Post-Move Operations ET Processing Begins **■** T1102.003 A02 C23847 LO2 Tank Preps for Checkout T1103.003 A02 C23848 LH2 Tank Preps for Checkout ■ T5141.001 B01 C23855 AFT Hardpoint Closeout ■ T1147 AC02 C23851 Ground Umbilical Carrier Plate Installat $\boldsymbol{\square}$ T1101 003 A02 C23846 Vent Valve Actuation Flex-hose Installation T1104.003 A02 C23849 ET Quick Disconnect Leak & Flow Checks T1160.003 A03 C23852 All Systems Test T1108.003 A03 C23850 LH2/LO2 17" Disc Meas/ Adj -2 T5001,006 A01 C23493 ET Lift From Checkout Cell Preps ET Camera Batt Charge & Health Monitor T2409 A01 C23853 ET Camera Closed Loop Funct Test T1004.003 A02 C23844 LO2 Preps for Transfer T1005.003 A02 C23845 LH2 Preps for Transfer 6248 Q05 C23858 Pre-Move Inspections Platform OPS 5144 Ready for S0003 n:loxhlsts117letists117\_et124\_etflw.arp ORIGINAL SIGNATURES ON FILE PAGE: DATE: 01/19/07 TIME: 08:30 n:loxhlsts117letists117\_et124\_etflw.avf



	BEFORE RTF	NOW										
ET P	ROCESSING											
	35-40 DAYS	26 DAYS	26 DAYS									
		19 DAYS IF W	19 DAYS IF WORK IS DEFERRED									
STA	CKING											
	19 DAYS	19 DAYS										
		(5 MORE DAYS ADDED FOR JOINT CLOSEOUTS)										
ET/S	RB MATE AND CLOSEOUTS											
	13 DAYS	18 DAYS										
	(2 WEEKS OF CONTINGENTC	11 DAYS OF BOOSTER INTEGRATED WORK										
	BUILT IN)	AFTER JOINT	AFTER JOINT CLOSEOUTS PRIOR TO ORBITER MATE.									
		WILL IMPACT 18 DAY SCHEDULE IF MORE THAN 1/2										
		OF THIS WOR	OF THIS WORK IS CARRIED TO AFTER ET MATE									



# **Challenges**

- Have been working out of one VAB Integration cell because of door work
  - HB-1 finishing up
  - HB-3 just starting. ECD 11/07
- Have been using only two (out of three) MLP's because of INCS and low voltage mods
- Each ET/SRB flow is custom built
  - Based on ET delivery
  - Rollout of previous Stack. Need usually one week prior to MLP rollin for HB facility maintenance
  - Try to Stack early, take stacking out of the critical path. Also can work Booster Integrated tasks prior to ET Mate



## **Future**

- Will have two VAB Integration cells after 11/07
  - Will turn HB-3 over to Constellation after STS-126
- STS-122, STS-123, STS-124 & STS-119
  - MLP is critical path. STS-122, STS-124 and STS-119 use the same MLP (MLP-1). MLP-1 will be turned over to Constellation after STS-119 for use on Aries I-1



