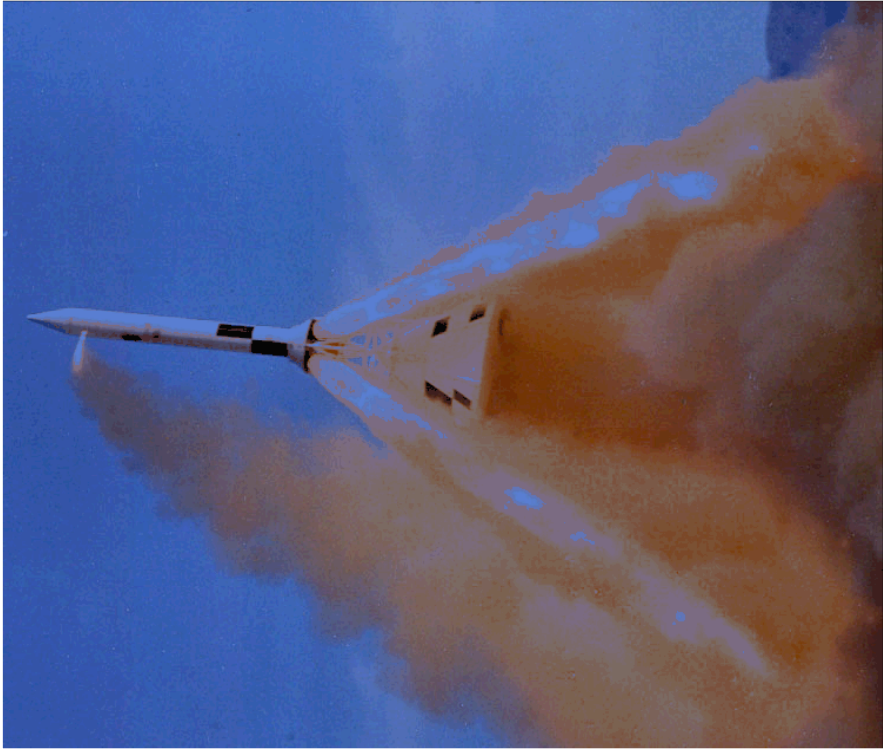
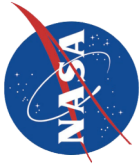


Abort Flight Test Project Overview



RAF Cranwell Visit
May 2007



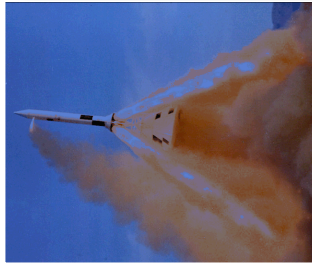
DFRC Exploration Mission Directorate



Mission Director: Joel Sitz
Deputy: Vicki Regenie

Program Planning & Control

**CEV
Abort Flight Test**



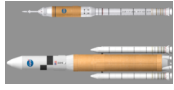
**PAD Abort
Flights**



**Ascent Abort
Flights**

**SE&I
Support**

**Test and
Verification
Support**



**Integrated
Flight Test
Strategy**



**Test and
Verification
Development**

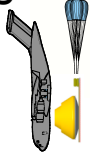
**Shuttle
Transition
Support**



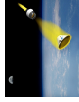
**Shuttle Assets
Transition**

**Projects
Formulation**

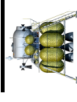
Chute Tests



TPS/Skip re-entry



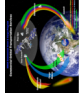
Lunar Lander

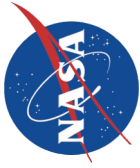


**West Coast
Landing Recovery**

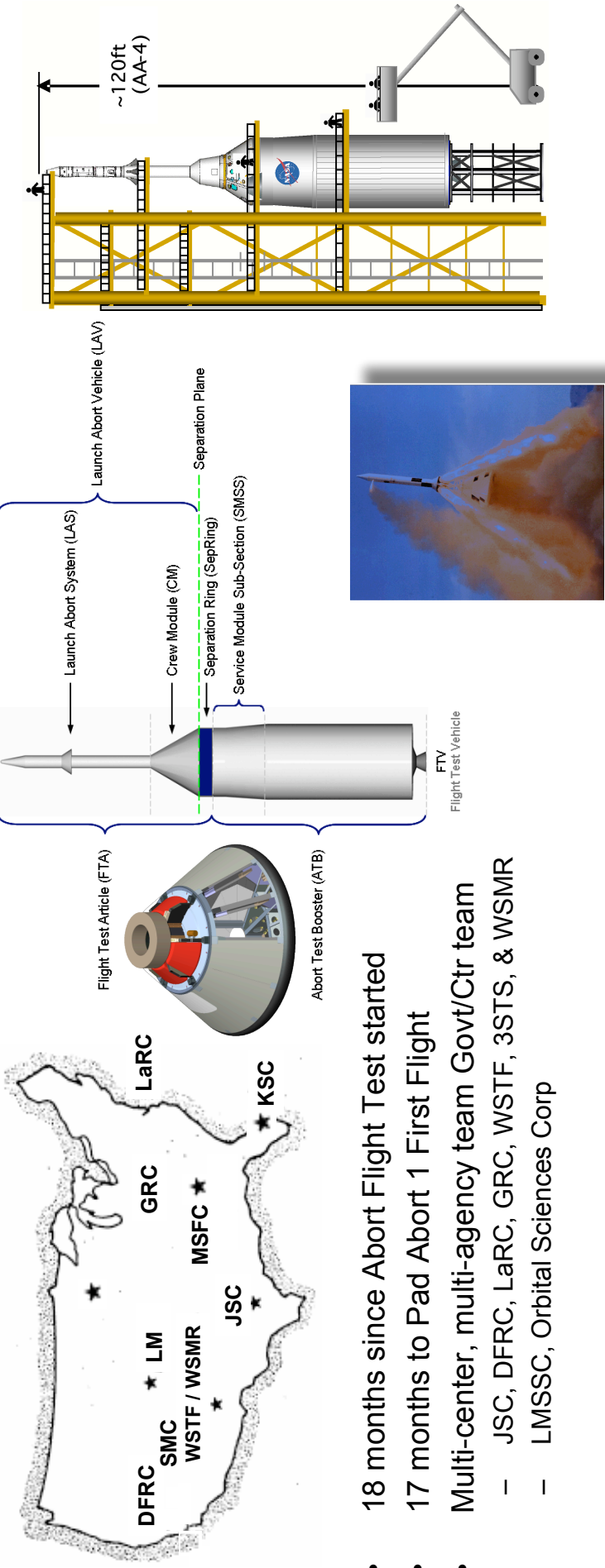


C3PO Support



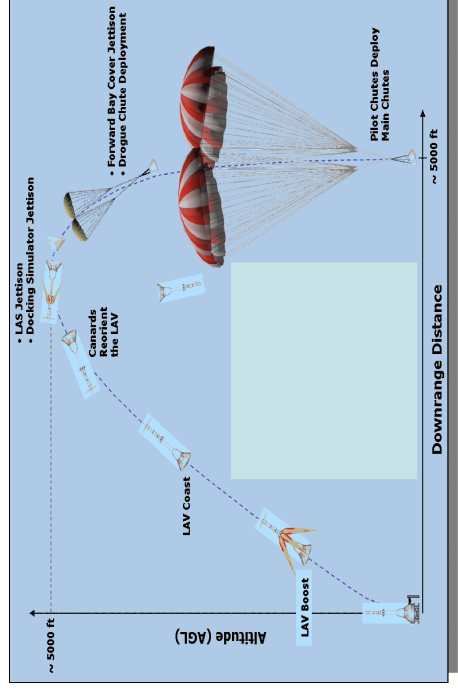


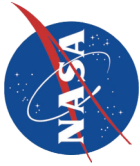
Abort Flight Test



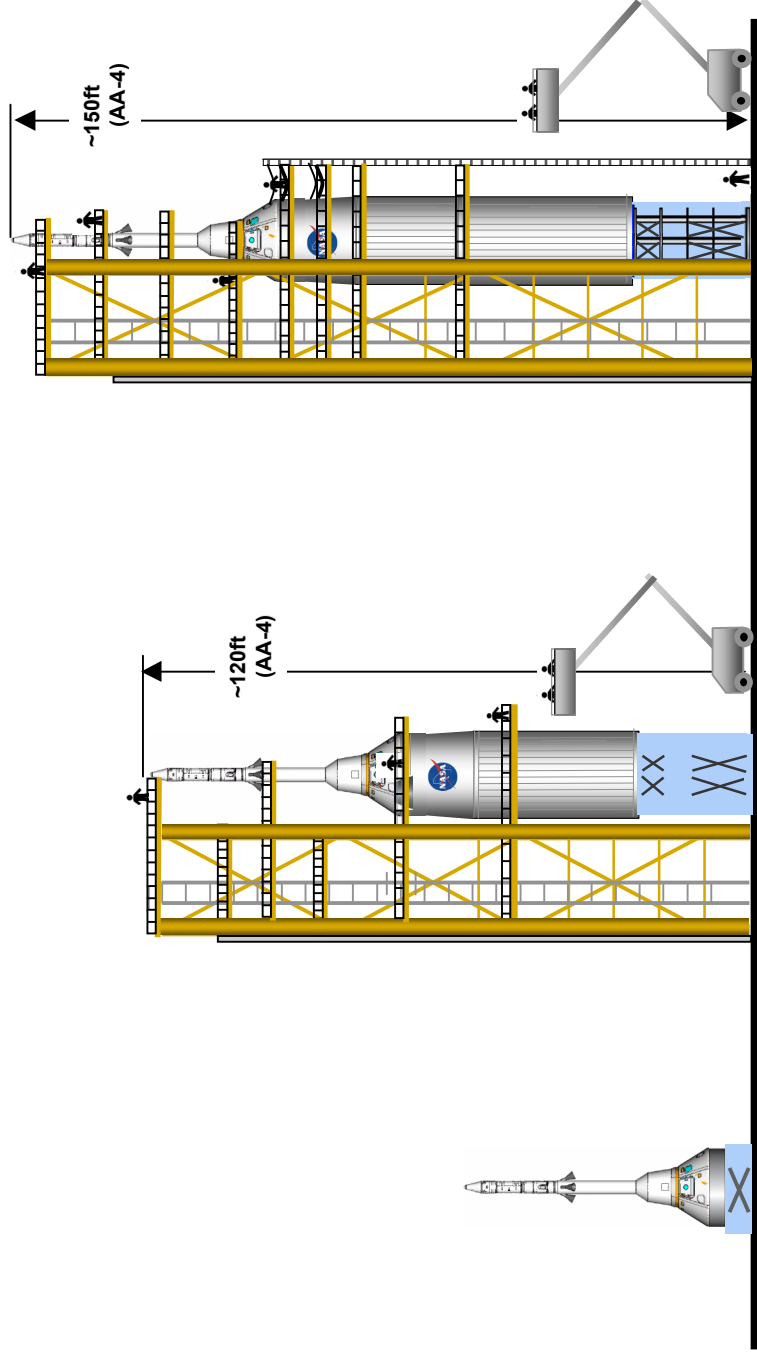
- 18 months since Abort Flight Test started
- 17 months to Pad Abort 1 First Flight
- Multi-center, multi-agency team Govt/Ctr team
 - JSC, DFRC, LaRC, GRC, WSTF, 3STS, & WSMR
 - LMSSC, Orbital Sciences Corp

- DFRC Role:
 - Flight Test Mgmt and Systems Engineering
 - Abort Test Booster Acquisition
 - Flight Test Article Management/Engineering
 - Lead Developmental Flight Instrumentation
 - Avionics, Structures, GN&C
 - Test and Launch Operations/Facilities
 - Ground Systems, Range and Safety Support
 - Mission Monitoring, Data Reporting





Flight Test Configurations



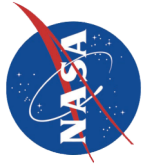
High Altitude Test at WSMR drives Launch Complex Cost

- Taller Stack
- Taller Gantry

Ascent Abort
Low/Medium
Altitude

Pad Abort

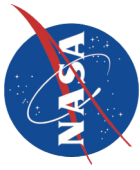
ATB configurations notional



Flight Test Vehicle Engineering Office



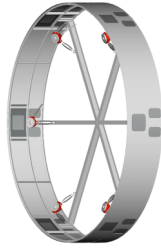
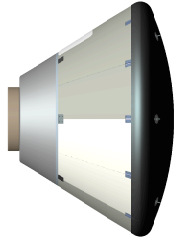
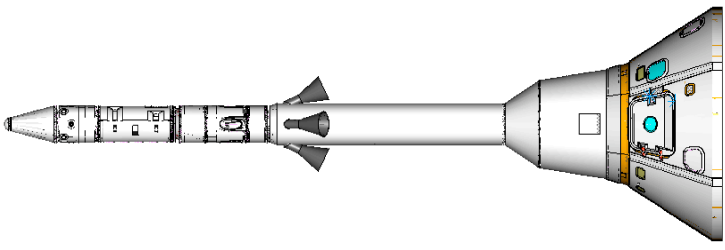
- Manage the project Mission and Flight Test Objectives
- Lead the engineering technical effort
- Manage integrated and detailed analysis
- Perform “tiger-team” analysis and allocate additional work, if required

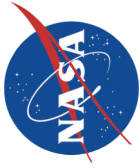


DFRC FTA Scope



- Support FTA requirements development
- Developmental Flight Instrumentation
- Subsystem assembly, integration & test
- Flight test preparation and support
 - Participate in system level tests, training, and control room activities
- Provide technical mission assurance
- Lead the Hazard Analysis Effort
- Lead the Working Group schedule efforts





Flight Test Operations

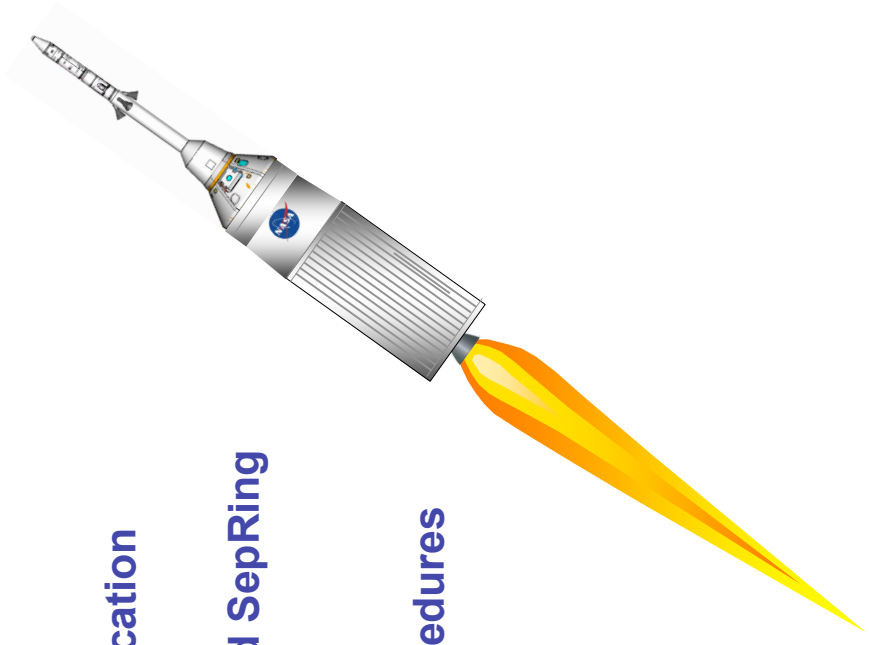
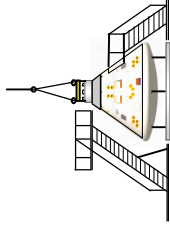
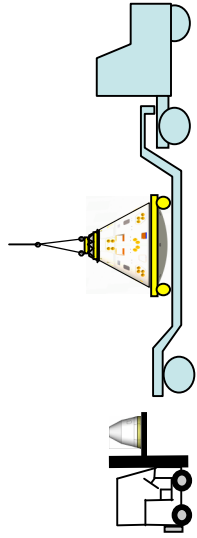


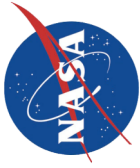
Execute Successful Abort Flight Tests

- Multiple Configurations
- Increasing Complexity
- Designing to most complex case:
High Altitude Test

- DFRC Responsibilities:

- Assembly, Integration, and Test
- FTA Secondary Structure Design and Fabrication
- Facilities Design and Fabrication
- Transportation: Large Items: CM, LAS, and SepRing
- Range Architecture
- Ground and Range Safety
- Ground Ops and Flight Ops Plans and Procedures
- Flight Test Operations
- Recovery Ops

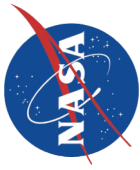




DFRC Ops Support



- **Machine Shop, Weld Shop, and Sheetmetal Shop**
 - FTA Secondary Structures
 - FTA Modification and Repair Support
 - DFRC MGSE Fabrication
- **Avionics Technicians**
 - Avionics Installation
 - Instrumentation Fabrication, Installation, Calibration and Checkout
 - Troubleshooting
 - Systems Checks and Preflights
 - Flight Support
- **Mechanics**
 - Secondary Structure Installation
 - Final CM Assembly
 - Mechanical Stacking/Mating
 - Transportation and Handling
 - Flight Support
- **AGE Support**
 - Ground Support Equipment Maintenance
 - Vehicle Maintenance
 - Critical Lift Certifications
- **Range Support**
 - DFRC Range Systems Installation and Checkout
 - DFRC Data Collection and Processing



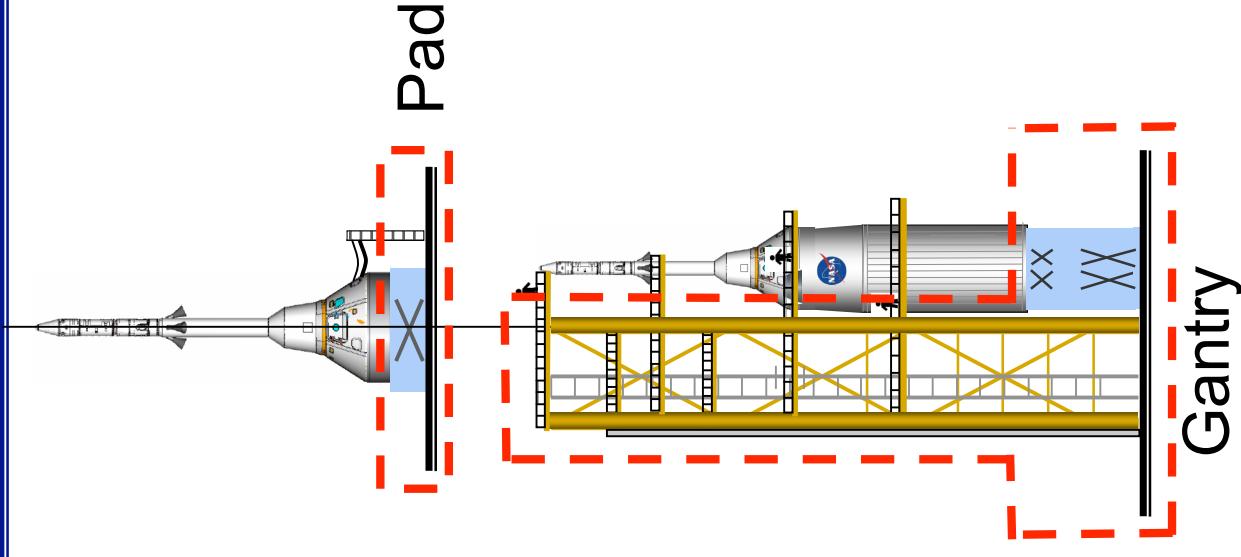
Launch Facilities

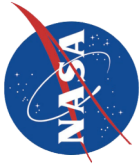


- Abort Flight Test Launch Facilities
 - Pad Abort Launch Pad
 - Ascent Abort Launch Pad
 - Ascent Abort Gantry
 - Final Integration and Test Facility (FITF)
 - Other Existing WSMR Facilities Supporting Abort Flight Test



Notional FITF

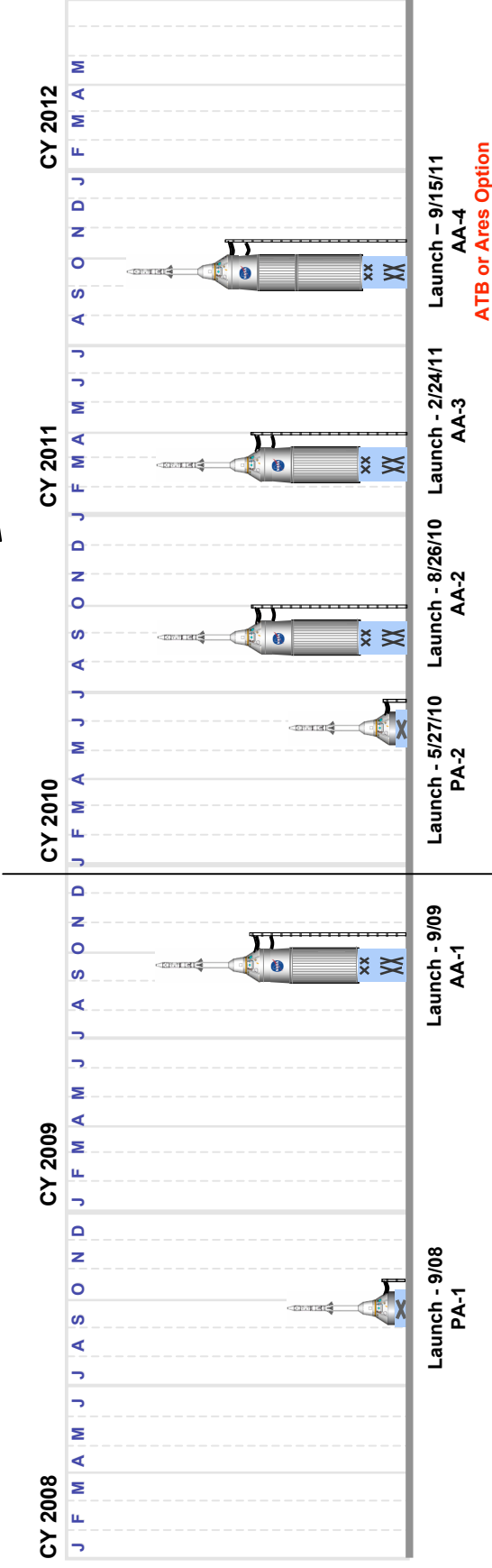




Scope of Launch Abort Flight Test



Increasing Maturity of Crew Module and Launch Abort System



Inform the Design

Gov't Provided Test Article

Integrate and Test at DFRC

Launch at WSMR

Flight Certify the LAS

Prime Provided Test Article

Integrate and Test at KSC (O&C)
Launch at WSMR