Abort Flight Test Project Overview

RAF Cranwell Visit
May 2007
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

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

- 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

Execute Successful Abort Flight Tests
- Multiple Configurations
- Increasing Complexity
- Designing to most complex case: High Altitude Test
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

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- **Launch – 9/15/11 AA-4**

### AtB or Ares Option

**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