Operation Duties on the F-15B Research Testbed

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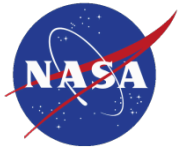


Overview

- Background of F-15B Research Testbed
- Project
  - Background
  - Tasks & Objectives
  - Conclusions
  - Relation to Strategic Plan
- Other Activities
- SWOT Analysis
- Questions

Background of the Program

- Goal of the F-15B Research Testbed is to provide NASA, the industry, and educators with a long-term facility for flight testing of various research experiments.
  - Aerodynamics
  - Instrumentation
  - Propulsion

- Experiments have flown since 1994, including…
  - SuperSonic Natural Laminar Flow (SS-NLF)
  - Aerostructures Test Wing (ATW)
  - Lifting Insulating Foam Trajectory (LIFT)
  - Supersonic Boundary Layer Transition (SBLT)
  - Channeled Centerbody Inlet Experiment (CCIE)

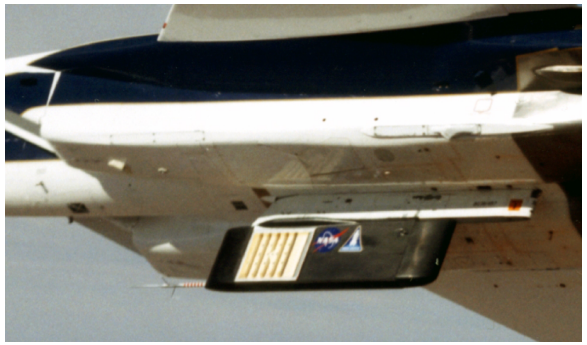
Tasks & Objectives

- Create an experimenter's guide for flight test fixtures used on the 836:
  - Currently no existing single convenient document
  - To include information on the following test fixtures:
    - Advanced Flight Test Fixture (AFTF)
    - Propulsion Flight Test Fixture (PFTF)
    - Centerline Instrumented Pylon (CLIP)
- F-15D Support
  - Gun Port Modification
- Other design work to support other projects
- Understand and familiarize with other duties in operations

Experimenter's Guide

- **PURPOSE**:
  - To provide useful information to the experimenters about the three test articles
  - Guide will serve as a reference for those who want to create an experiment to be mounted on the test articles.

AFTF



PFTF

CLIP

Contents of the Guide

- **Background**
  - Brief history of test article and projects it was involved in
- **Description**
- **Design Features**
  - Design criteria
- **Dimensions**
  - Overall dimensions
  - Instrumentation Bays
- **Weight & CG Limits**
- **Instrumentation**
  - What's onboard the test fixture that could aid the experiment
    - Acclerometers
    - Strain Gages
    - Temperature Sensors
    - Data Collection Capabilities
- **Flight Operating Limits**

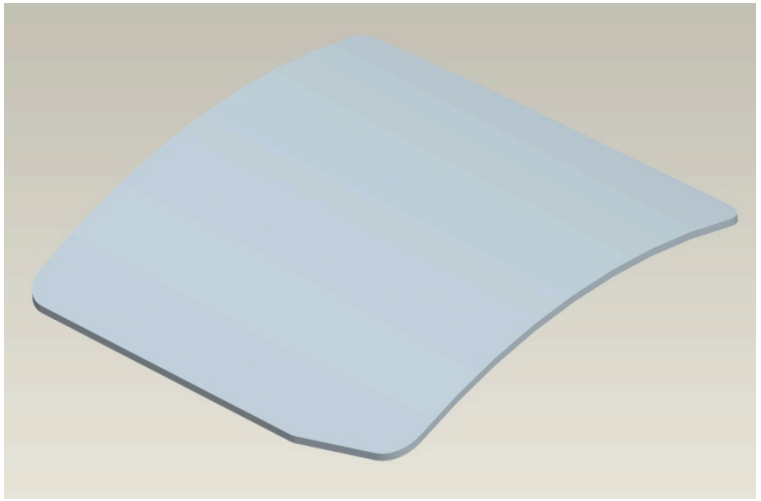
Resulting Documentation

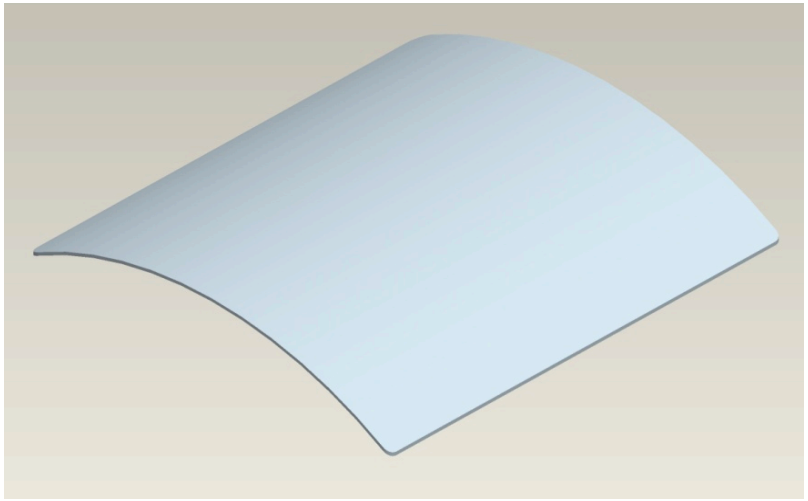
- Experimenter's Guide Project\F-15B Experimenter's Guide to Flight Test Fixtures.pdf

- To be continually added with new information as deemed necessary.

F-15D Support

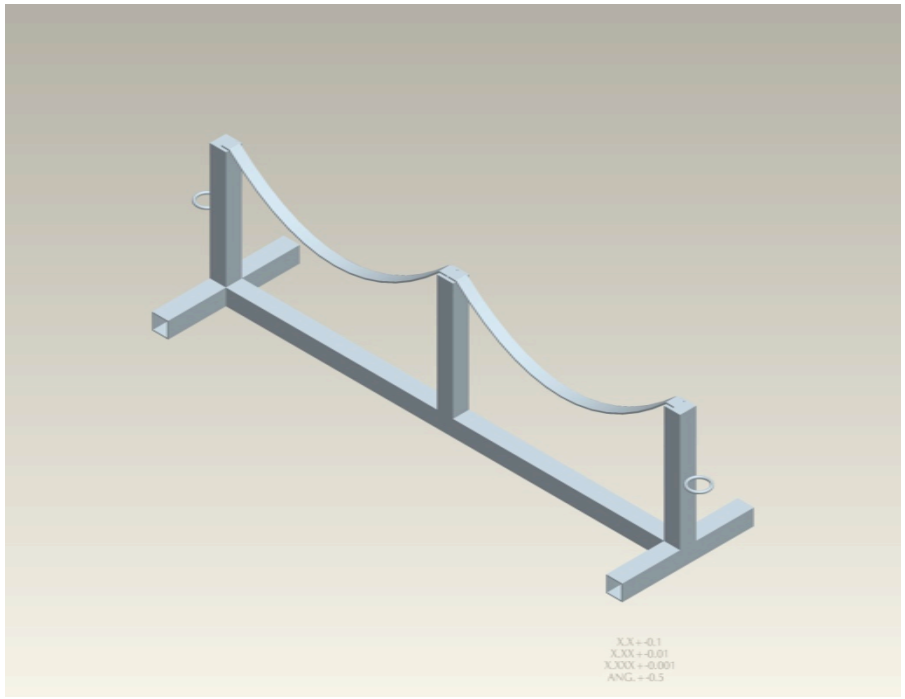
- **Gun Port Modification**
  - Panels need to be fabricated to replace the existing panels on the incoming F-15D models.





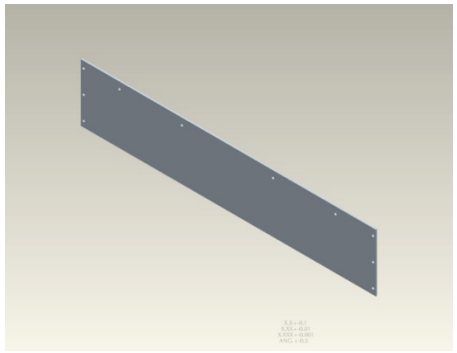
F-15D Support

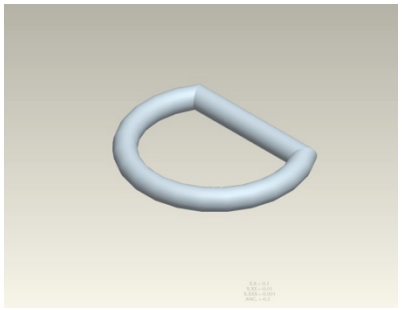
- **External Tank Stands**
  - Incoming F-15D models will need a storage place for their external fuel drop tanks
  - Need to work around limited budget, which is needed for upcoming flights

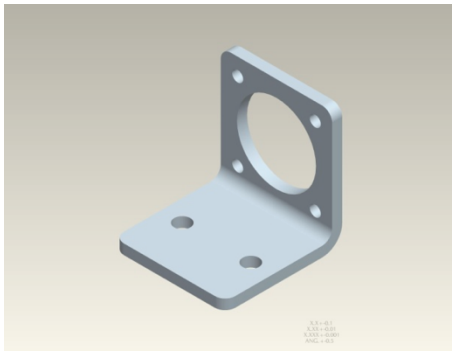


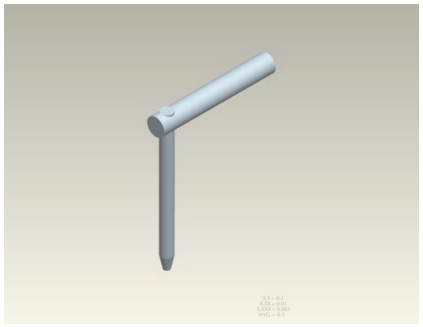
Other Design Work

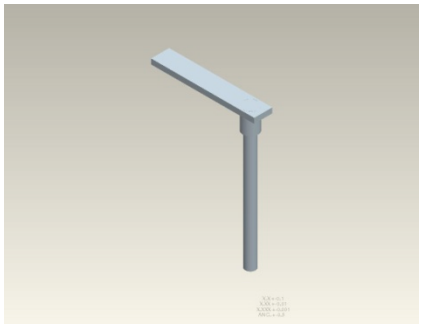
•Contribute to other small needs needed for maintenance crew or other engineers.











Other Activities

- **Daily Crew Meetings**
  - Discussion with avionics and maintenance crew as well as other engineers about tasks for the day, what is upcoming for
- **Weekly Monday CCB/Project Meetings**
  - Open/Close CCRs and DRs, making changes as necessary
  - Discuss status of ongoing projects
    - What needs to be done
    - Who's doing what

Other Activities

- **Mission Control**
  - Crew Brief
    - Objectives
    - Safety of Flight Parameters
    - Mission Rules
    - Go over flight cards
  - Day of Flight Procedures
    - Power up/Power down of instrumentation & video
    - Air data checks
    - Instrumentation checks
  - Takeoff & Flight
    - Monitor A/C parameters and run through of flight cards
    - Alert pilot consistently of parameter status and give warnings if aircraft exceeds defined flight operating limits

Being Assistant Ops Engineer

- Backup support for my mentor
  - Underwent extensive training of what an ops engineer does
- Taking over when needed
- Monitor progress of projects, troubleshootings, work orders, etc.

Relation to Strategic Plan

- ***Goal S.1.1 – "Improve existing systems and processes for high value to our customers."***

  ➢ Providing outside corporations and researcher with information that may assist them in carrying out their research experiment.

- ***Goal S.4.2 – "Improve integration and communication to optimize organizational effectiveness."***

  ➢ It is the duty of an operations engineer to facilitate, coordinate, and assign tasks necessary to get a vehicle ready to perform its mission.

  ➢ Discuss and identify with project team of any issues that may arise that could impact the mission and scheduling.

Self-SWOT Analysis

Strengths	Weaknesses
•Ability to handle multiple tasks •Learning new tools and processes quickly along the way •Time management and scheduling to get the work done on time	•Miscommunication amongst others could have negative impacts
Opportunities	**Threats**
•Gained experience as an Operations Engineer •Understanding the role operations play in flight support	•Not being able to get the work done in one sitting

Acknowledgements

- *Callie Holland* – Project Mentor
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  - *CONGRATS AGAIN ON 400TH FLIGHT!!!*
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  - Thanks to everyone who made my stay an enjoyable & an educational one!


Questions?
836
NASA