Aeromechanics Safety Support Team

Providing Aeromechanical Engineering Resources and Support for Aircraft Incidents and Mishap Investigations
Mission

- To provide efficient, high quality aeromechanical engineering support for aircraft incidents and mishap investigations
- To provide a clear entry point and path to the fleet for acquiring assistance in the fields of flight controls, flight dynamics, air vehicle performance and air vehicle simulation

Coordinating with Depots/Fleet Support Teams for Material and Component Evaluations
Organizational Chart

Naval Safety Center
Fleet Support Teams
AIRLANT/AIRPAC
NTSB

Aeromechanics Safety Support Team
NAVAIR 4.3.2

Flight Controls Branch
NAVAIR 4.3.2.6
• Data Retrieval/Processing
• Flight Control Failure Analysis
• Hardware-in-the-Loop Analysis
• Flight Control Software Assessment

Flight Dynamics Branch
NAVAIR 4.3.2.4
• Flying Qualities Assessment
• Stability and Control Analysis
• Offline Simulation Support
• Data Recording Standards

Flight Vehicle Modeling and Simulation Branch
NAVAIR 4.3.2.3
• Data Reconstruction
• Offline and Manned Simulation
• Hardware-in-the-Loop Simulation
• Visualization Tools

Air Vehicle Performance Branch
NAVAIR 4.3.2.2
• Aircraft Performance Databases
• Performance Data Analysis
External Components

Aeromechanics Safety Support Team
4.3.2

- Naval Safety Center
- AIRLANT / AIRPAC
- NTSB
- Flight Test
- Fleet Support Teams
- NAVAIR Safety/ PMA
- Aging Aircraft IPT
Available Resources

- Manned Flight Simulation Lab
- Flight Dynamics Lab
- Engineering Analysis Tools
  - Engineering Simulation
  - Flight Path Reconstruction
- Flight Control Failure Analysis
- Air Vehicle Performance Databases
Manned Flight Simulator Lab

6 DOF Motion Platform

- +/- 1.5 Gs
- Rediffusion WIDE display system
- 40° V x 200° H field-of-view
- Collimated
- 5 channels
- Projected HUD

- High fidelity Fixed Wing & Rotary Wing Simulation
- High fidelity visual databases
- High fidelity ship visual models
- High fidelity shipboard environment landing aids
- Real-time high fidelity airwake models
- FCC Hardware in the loop capability
- Standard NAVAIR airframe simulation host software (CASTLE)
- Test Team Crew Coordination Capability (MFS-Telemetry Station Link)
- 6 DOF cockpit motion base capability
- M2DART, SEOS Panorama Collimated Displays
- SEOS Prodas 22-ft partial dome
- Cockpit design, build and integration shops
- Roll-in/Roll-out cockpits
- Classified/Unclassified capabilities
Flight Dynamics Lab

- Fixed base generic fixed wing cockpit
  - EA-6B Prowler
  - F-18C/D Hornet
- EA-6B DFCS Hardware-in-the-Loop Capability
- Carrier approach analysis tool
- SCT stick & throttle control loaders
- Everest Digital strip chart recorders
- Simulink dials and gauges block set for cockpit displays
- Standard NAVAIR airframe host software (CASTLE)
- CASView OTW 3-Screen 180 deg Field Of View capability
- PC based architecture
Engineering Analysis Tools

- CASTLE airframe simulation software
  - Extensive plotting tool suite
  - Linear model extraction
  - Overdrive sim with flight data
  - Multi-Platform support
  - Portable/Desktop PC capability
  - Matlab/SimuLink Interfaces
  - FlightLab Interface (Planned)

- Flight Path Reconstruction
  - CASTLE/Matlab Tool Suite
    - Flight Data Recorder
    - Radar Data
  - CASView 3-D Visualization
    - Video Generation
    - Simultaneous Display
      - Trajectory/Dynamics
      - Pilot Controls/Surfaces
      - HUD/MFD Data
      - Cautions/Warnings
Flight Control Analysis

- Flight Control Computer Hardware Testing and Analysis - Hardware-In-the-Loop (HWIL) test stations
  - Software logic and BIT checks
  - Simulate Sensor/Actuator/FCC failures
  - Overdrive FCCs with actual flight data
  - Multi-Platform support (F-18, V-22, F-14)

- Portable/Desktop PC capability
  - Visualization tools for studying FCS displays
  - Control law analysis
  - CASView FCS plug-ins

- Maintenance/Subsystem Analysis
  - Review of FCS maintenance logs and files.
  - Searchable database for F/A-18E/F
  - FCS Data Retrieval tools
Air Vehicle Performance

- Source for Aerodynamic Performance Data for All Navy Aircraft
- Proven performance predictions methods
  - 2 and 3 Degree-of-Freedom Time Integration Prediction Codes for Takeoff, Landing and Launch and Recovery
  - Point Performance Codes for Climb Cruise, Maneuver and Descent
- Thermodynamic Engine Models
- Failure Mode Analysis Capability
If you are part of an AMB and believe that this type of support is what you need to assist in your investigation,

Contact NAVAIR by using the Toll Free "One Touch" Support for the Fleet phone number:
1-877-41-TOUCH or 1-877-418-6824
(them press option 2 for aviation support)

Ask to be put in contact with someone from NAVAIR AEROMECHANICS AIR-4.2.3