ASU FLIGHT RESEARCH CENTER

William S. Saric
Mechanical and Aerospace Engineering
Arizona State University
Tempe AZ 85287-6106

480-965-2822
saric@asu.edu
http://frc.asu.edu
ASU FLIGHT RESEARCH CENTER

- Basic Proposal
- Operations
ASU FRC

- Three aircraft and research instrumentation
- Operate out of Chandler Municipal Airport
- Hanger facility and Control Center (ASU East)
  - Summer 2005
- Satellite Control Center (Tempe-ERC)
  - Summer 2005
- Mesa Air Group pilots and occasionally pilots from USAF Test Pilot School (Major R. Adelgren)
- Eventually have an ASU pilot
EDUCATIONAL BENEFITS

• Undergraduate Involvement
  – “Classroom in the sky”
  – Hands-on research experience
  – Systems engineering
  – Recruiting
  – Outreach (K-12)

• Graduate Student Involvement
RESEARCH

• **Unique niche**
  – Dedicated program
  – Boundary-layer, atmospheric, and flow-control studies under flight conditions

• **Cooperative with ASU Environmental Fluid Dynamics (Calhoun) and with UA (Wygnanski)**

• **ASU/UA recognized experts in diagnostics, flow physics, and computational fluid dynamics**
RESEARCH

• Utilize models mounted on wings or fuselage
• FRC will not be testing aircraft
• Remain within the flight envelope of the aircraft
NASA-DFRC F-15B
ASU MODEL BENEATH F-15B
F-15B with ASU model
Cessna O-2 with hung model
Stemme S-10 with dorsal model
Velocity with dorsal model
S-10 with hung model
OPERATIONS

- Safety is primary concern
- No flying through rain
- VFR conditions only (no IFR flying)
- No requirement to fly on any day
- Stay within the flight envelope of the aircraft
TYPICAL OPERATION

• Pre-Flight Briefing (Pilot, Flight Director, Aircrew, Ground crew)
  – Weather
  – Flight plan
  – Abort options
  – Objectives
  – Instrumentation
  – Pilot-directed consensus

• Flight

• Post-Flight Briefing (all)
CHASE PLANE OPERATIONS

• Initial flights with Stemme and Velocity will have the O-2 as a chase plane
  – Establish operational plan with two pilots
    • Safety signals
    • Emergency reactions
    • Air-to-air communication
  – Follow general operational standards
Chandler Airport Hangar Layout (West End)

West End: 2400 sq ft

- O2: b = 38', L = 30'
- Stemme: b = 76' or 38'
  - L = 28'
- Velocity: b = 31'
  - L = 20'

FRC – Briefing 11 Mar 04
Phoenix Sky Harbor Restrictions
Alternate Airports for Emergency Landings
Airspace Restrictions

[Map showing airspace restrictions]