

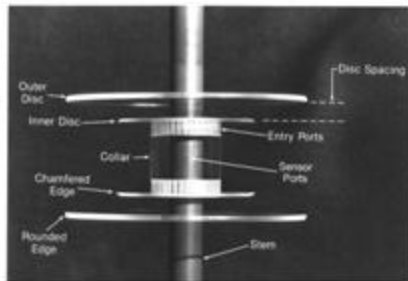
# Design and Testing of Airborne Infrasonic Probes for Geophysical Monitoring Application

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## Airborne Infrasonic Measurement Capability WHY?

- Large infrasonic levels near source regions indicate airborne detection is feasible
- Some source mechanisms can radiate infrasound vertically reducing distant surface detectability
- Knowledge about the areal distribution of near-source infrasonic energy and spectral content can help define generation mechanisms
- Potential new tool for detection and tracking



•Designed to Study Pressure Fluctuations in the atmospheric Boundary Layer

•Applied in Several Major Field Programs

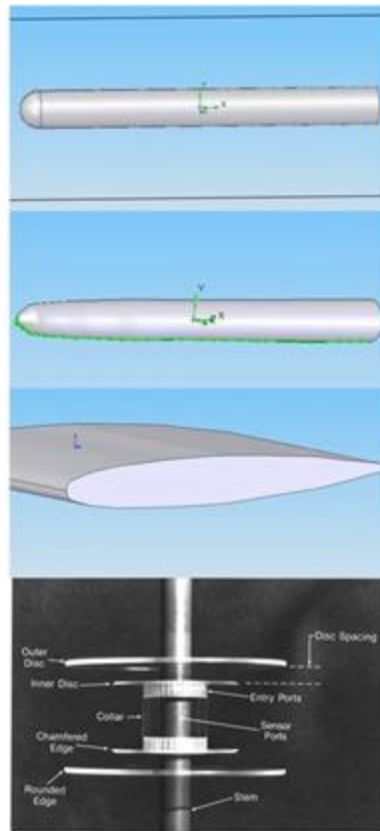
•Applied in Several Trials to Study Tonal Signals

•Installed at All Instrumented USA General Aviation Airports

•Currently manufactured by 2 Instrument Companies



First Page of Quad Disk Pressure Probe Patent



### Hemispherical Fore body

40 cm long, ports 10 to 30 cm from leading edge error < 1Pa higher speed use

10 m/s

### Tapered Fore Body

40 cm long, port ~18 cm from leading edge, error < 1Pa

10 m/s

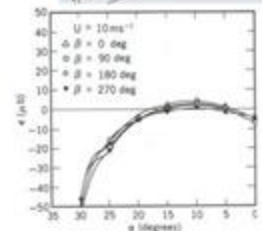
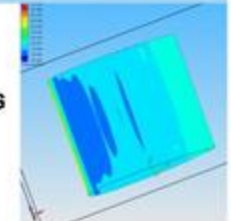
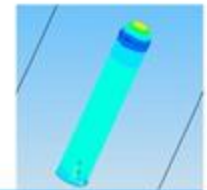
### NACA 0012-64 Airfoil

For 10cm cord port ~1.8 cm from leading edge, set at angle-of-attack ~ 20° error < 1Pa, higher speed use

10 m/s

### Quad-Disk

Dynamic pressure error < 0.1Pa at 10 m/s. Ideal for slow speed or drifting applications



## Possible Applications of Airborne Infrasonic Probes

### Measure Infrasound:

- Radiation Levels and Directional Patterns above Ocean Waves in Hurricane Environments
- Above Fires
- Above Earthquake Preparation Zones
- Associated with Sprite Activity
- In the Vicinity of Tornadoes