Technical Specifications for Acoustic Monitoring Sensor

The USGS Volcano Science Center (VSC) requires infrasound acoustic monitors for the purposes of volcano monitoring. These sensors must meet the following specifications:

Deliver:

- Must be delivered by September 30, 2026

General:

- Individual sensor calibration must be within +-5% of acceptable nominal values
- Nominal calibration values must be traceable to a nationally accredited external laboratory calibration chamber and shown to meet requirements
- Sensor must be in current production and have an established, proven, and acceptable performance history
    - This acquisition is directed at existing products only, not at product design and development
    - Units that have been modified or developed solely to meet the requirements of this acquisition are not acceptable

Signal Characteristics:

- Nominal Sensitivity: .0275V/Pa@1Hz or greater
- Full Scale Range: 720Pa peak to peak full scale input range or greater

Sensor Output Specifications:

- Output type: Differential
- Maximum signal output: 20VPP

Operational frequency band and self-noise

- Frequency response: Flat to within +-3dB from .02Hz to 240Hz or wider band
- Band-limited Self Noise: 5mPa RMS from 0.05 to 200Hz or less
- Dynamic Range: 110dB or greater

Power requirements:

- DC supply range: 11.5V to 18V or wider with reverse polarity protection
- DC current consumption: 150mW or less

Physical Characteristics:

- 4” diameter or smaller
- 3.5” tall or shorter
- Acoustic entry points: minimum of three
- Operating temperature: -40C to +65C
- Humidity tolerance: 90% or greater immunity to humidity
- Housing must be of corrosion resistant material(s) that are isolated from ground.