

**MAGNETOMETER AND COMPENSATION SYSTEM
SPECIFICATIONS**

The contractor shall provide a cesium airborne magnetometer and compensation hardware and software systems for use on NRL aircraft such as the P-3 aircraft, meeting the following minimum specifications:

1. TECHNICAL REQUIREMENTS:

MAGNETOMETER

- 1) **Sensitivity** — 0.004 nT/%Hz RMS
- 2) **Range** – 20,000 – 100,000 nT
- 3) **Absolute Accuracy** - <3 nT over entire range
- 4) **Heading error** — ± 0.15 nT over 360° Equatorial and Polar spins
- 5) **Internal Larmor frequency counter** with RS-232 output
- 6) **Sample rate** of 1 Hz to 100 Hz
- 7) **Additional auxiliary data acquisition channels** - 6 channel 12 bit A to D converters for digitization of other analog signals, with digital data stream concatenation
- 8) **Frequency counter board** shall allow for multiple magnetometer gradiometer arrays for simultaneous operation of up to six separate magnetic sensors with internal data concatenation
- 9) **Operating Temp and Altitude** - -30F to 122 F and 0 to 30,000 feet

COMPENSATION SYSTEM

- 1) **3-axis fluxgate magnetometer** with 16-bit A/D conversion (lsb = 3 nT or less) and digital RS-232 output at rates of up to 250Hz/channel.
- 2) **range** of +- 100000nT
- 3) **accuracy and stability** of +-1% full scale and +-.05% full scale respectively

4) **axis orthogonality** of better than .5 degrees

5) **Software** to compensate the scalar magnetometer through aircraft attitudes determined from the fluxgate 3-axis magnetometer for induced, remanent and eddy current aircraft magnetic effects

6) **Software** to include power spectral analysis, high cut, low cut, and band-pass filter tools for compensation analysis.