

# **FINAL REPORT**

on

**Data Acquisition and Processing**

for the

**Aeromagnetic Survey**

of

**Dillingham, Nushagak Bay  
and Naknek, Alaska, U.S.A.**

for

**US Geological Survey**

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Figure 6: GEM GSM-19 Magnetometer and all components.

5.2.5 Altimeters

A King KP-10 radar altimeter system was used to record the aircraft terrain clearance to an accuracy of less than 1 metre (approximately 3 ft), over a range of 40 ft to 2,500 ft.

A Setra 276 barometric altimeter/pressure transducer measured the barometric pressure, from which the elevation of the aircraft above sea level was calculated.

This barometric altimeter has an accuracy of  $\pm 0.02\%$  and a resolution of 0.5 meters.

The altimeters were interfaced to the data acquisition system with an output repetition rate of 0.1 second, and were digitally recorded.

The Altimeters are further described in Appendix 3.

5.2.6 The GPS NAVSTAR Satellite Navigation System

A NovAtel high-performance navigation/positioning system was used on the aircraft. This system consisted of a NovAtel Millennium GPS receiver and NovAtel L1/L2 GPS Antenna.



Figure 7: Koliganek base station console at Larry Lee's residence.

A pilot steering indicator, providing steering instructions to the pilot in three dimensions, was installed on top of the cockpit dashboard. This indicator was connected to the AGIS-100 data acquisition system receiving information from the GPS system and the radar altimeter.



Figure 8: Base station magnetometer in Koliganek.

Survey co-ordinates were set-up prior to commencement of the survey and the information loaded into the airborne navigation system. The co-ordinate system employed in the survey design and digital recording was WGS-84 latitude and longitude. The GPS positional data was recorded at one second intervals and used with data obtained from three different differential services: Space Based Augmentation Systems (SBAS), Omni STAR, and DGPS beacon stations, to calculate real-time differentially corrected locations.

















