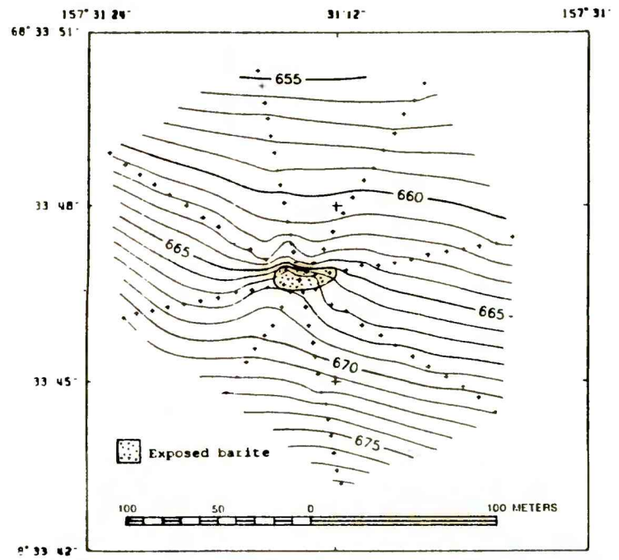
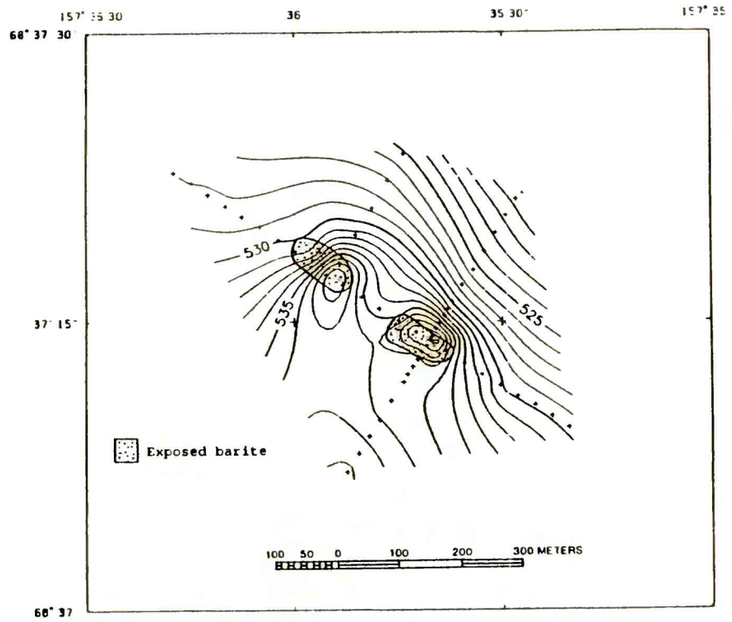


-Topographic map in the vicinity of the Abby Creek barite deposit. The data were gridded with a 4-meter spacing in a polygon surrounding the data points; contour interval, 1m; +, gravity station.



-Topographic map in the vicinity of the Bion barite deposit. The data were gridded with a 20-meter spacing in a polygon surrounding the data points; contour interval, 1m; +, gravity station.

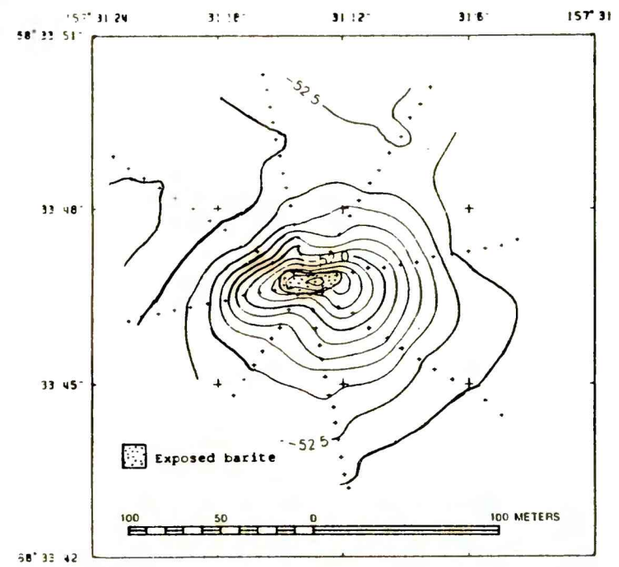
Data collection and reduction methods:

Detailed gravity surveys using a LaCoste and Romberg gravity meter were made over the Abby Creek and Bion barite deposits in June 1991. Gravity base control consisted of two indirect ties to the gravity base at FBKK at the Fairbanks International Airport. A base station was established at each of the deposits.

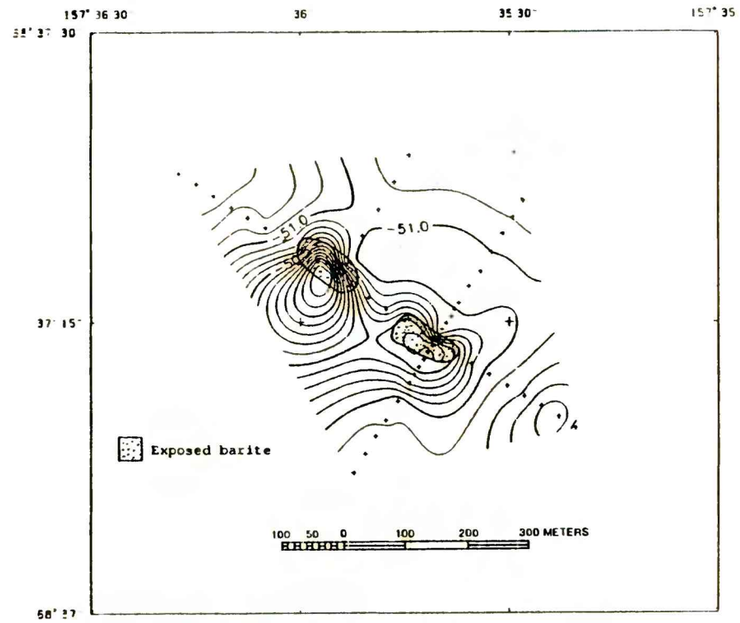
Conversion to milligals was made with factory calibration constants. Observed gravity values were based on an assumed linear drift between succesive base readings. Elevation control was made with a laser surveying instrument which can measure accurately to 0.01 m, but because tundra cover makes the ground surface rather vague, accuracies of 0.1 m seem more realistic. Because a reliable elevation was not available at either locality, contour interpolation was used for the base station elevations, with the relative elevations of each of the gravity stations over each deposit reliable to 0.1 m.

At each gravity station, a field terrain correction was made. Tfhe effect of the local terrain was estimated from the station to 0.053 km. Hand terrain corrections were made using topographic maps and calculating the effect from 0.053 km to a radial distance of 0.39 km. Because station spacing was so small, only a few hand terrain corrections were made and interpolated for the remaining stations. Terrain corrections were computed for the area from a radial distance of 0.39 km from the station to a radial distance of 166.7 km with a FORTRAN program (Plouff, 1977).

Theoretical gravity is based on the "Geodetic Reference System of 1967" (GRS 67; International Association of Geodesy, 1971. p.58) for the shape of the spheroid. The datum for the observed gravity is the "International Gravity Standardization Net 1971" (IGSN 71; Morelli, 1974. p.18). Free-air anomalies are calculated by subtracting the theoretical from the observed gravity and adding the free-air correction as defined by Swick (1942, p.65). Simple Bouguer anomalies are calculated by subtracting the Bouguer correction using a density of 2.67g/cm3 and adding the earth-tide correction to the free-air anomaly. Complete Bouguer anomalies are calculated by adding the terrain correction to the simple Bouguer anomaly.



- Complete Bouguer gravity map in the vicinity of the Abby Creek barite deposit. The date were gridded with a 4-meter spacing in a polygon surrounding the data points; contour interval, 0.1 mGal; +, gravity station.



-Complete Bouguer gravity map in the vicinity of the Bion barite deposit. The data were gridded with a 5-meter spacing in a polygon surrounding the data points; contour interval, 0.1 mGal; +, gravity station.

FIGURE 3. Topographic and complete Bouguer gravity maps of the Abby Creek and Bion barite deposits.