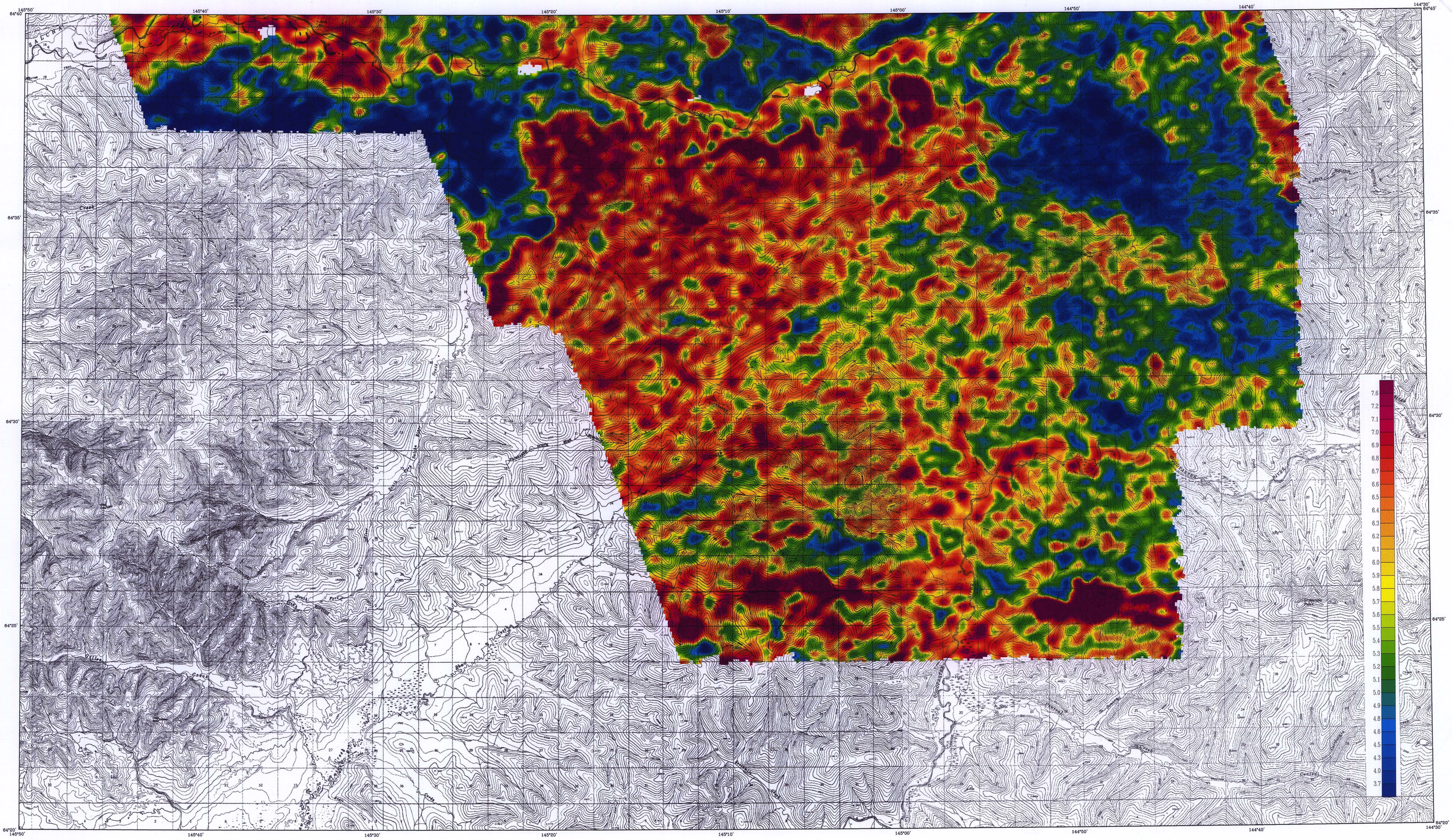


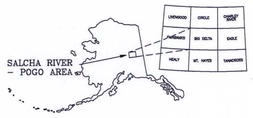
Base from U.S. Geological Survey Big Delta B-2, 1950; B-3, 1950; B-4, 1950; C-2, 1950; C-3, 1950; C-4, 1950; Quadrangles, Alaska

SCALE 1:63,360

1 0 1 2 3 4 MILES

1 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 200 FEET
DATUM MEAN SEA LEVEL



THORIUM / POTASSIUM (eTh/K) OF THE SALCHA RIVER - POGO MINING AREA, CENTRAL ALASKA

BIG DELTA QUADRANGLE

2000

DESCRIPTIVE NOTES

The geophysical data were acquired with a DIGHEM^{V} Electromagnetic (EM) system, Exploranium GR-820 gamma-ray spectrometer and a Scintrex cesium magnetometer. The EM and magnetic sensors were flown at a height of 100 feet. The gamma-ray spectrometer was flown at a height of 200 feet. In addition the survey recorded data from a radar altimeter, GPS navigation system, 50/60 Hz monitors and video camera. Flights were performed with an AS350B-2 Squirrel helicopter at a mean terrain clearance of 200 feet along NW-SE (340°) survey flight lines with a spacing of a quarter of a mile. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

An Ashtech GG24 NAVSTAR / GLONASS Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using post-flight differential positioning to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 6) spheroid, 1927 North American datum using a central meridian (CM) of 147°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m. with respect to the UTM grid.

RADIOMETRICS

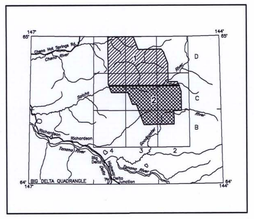
The gamma-ray spectrometry data were recorded at a 1.0 second sample rate into 256 channel main and radon spectra using an Exploranium GR820 gamma-ray spectrometer. The volume of NaI in the two detectors comprising the system were; main detector, 16.7L; radon detector 4.2L. After application of Noise Adjusted Singular Value Decomposition to the spectra, counts from the main detector were recorded in five windows corresponding to thorium (2410–2810 kev), uranium (1660–1860 kev), potassium (1370–1570 kev), total radioactivity (400–2815 kev) and cosmic radiation (3000->6000 kev). Counts from the radon detector were recorded in the radon window (1660–1860 kev). The radon detection system was calibrated following methods outlined in IAEA Report 323. After removal of the background, the data were corrected for spectral interferences, changes in temperature, pressure, and departures from the planned survey elevation of 200 feet. The data were then converted to standard concentration units which were interpolated to a 100 m grid using a modified Akima (1970) technique.

Akima, H., 1970, A new method of interpolation and smooth curve fitting based on local procedures: Journal of the Association of Computing Machinery, v. 17, no. 4, p. 589–602.
International Atomic Energy Agency, 1991, Airborne Gamma Ray Spectrometer Surveying, Technical Report 323, International Atomic Energy Agency, Vienna.

TRUE NORTH
MAGNETIC N
26.5°

APPROXIMATE MEAN DECLINATION, 1999

LOCATION INDEX



THORIUM / POTASSIUM (eTh/K)

Measured radioelement concentrations for potassium and thorium will vary sympathetically with variations in soil thickness and moisture content. The ratio parameter isolates areas of enrichment of one radioelement relative to another.
A blank region indicates an area where the summed concentrations fall below thresholds required for a meaningful calculation of the ratio. Equivalent thorium/potassium concentration ratio results have been multiplied by 10^{4} for clarity in presentation.

SURVEY HISTORY

This map has been compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and Stevens Exploration Management Corp. Airborne geophysical data for the area were acquired by Geoterrex-Dighem, a division of CGG Canada Ltd., in 1999. Laurel Burns was the contract manager for DGGS.

This map and other products from this survey are available by mail order or in person from DGGS, 794 University Ave., Suite 200, Fairbanks, Alaska, 99709.