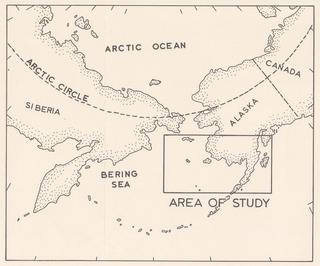
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-716



QUADRANGLE INDEX MAP

Base map by Scholl and others (1974)

SCALE 1:2 500 000

0 50 100 Nautical Miles

0 50 100 Kilometres

EXPLANATION

Residual magnetic contours

Contour interval is 100 γ offshore and 250 γ onshore. Contours are dashed where approximate, queried where inferred. Hachures indicate direction of decreasing magnetic intensity.

Ship tracklines and aeromagnetic flightlines

Land areas

200

Bathymetric contours in metres

Residual magnetic anomalies for the offshore data were calculated by subtracting the Earth's main dipole field, adjusted for secular variations (based on the International Geomagnetic Reference Field (IGRF), epoch 1965, Fabiano and Peddie, 1969), from the observed values of the surveys listed below. The effects of diurnal variations and magnetic storms have been ignored. Individual marine magnetic profiles have been upward continued to an elevation of 1 km (Robinson, 1970; Henderson, 1970) on the assumption that the magnetic sources are two-dimensional in a direction normal to the ship's track. The upward continued profiles were computed by convolving each profile with an optimum (7, 15 or 30 points) upward continuation operator. The resultant anomaly amplitudes are in error by approximately 2 percent because of the use of the discrete continuation operator. Additional errors of unknown magnitude result from the use of two-dimensional analytic techniques in a three-dimensional field. However, on the average, values at crossings differ by only 10 percent.

The onshore aeromagnetic surveys (Andreason and others, 1963; Dempsey and others, 1957; Henderson and others, 1963; Alaska Geol. Survey, 1971 a, b, c, d) were flown at different barometric elevations: Naknek quadrangle, 1000-1300 ft; Bethel Basin, 2000 and 3500 ft; Dillingham quadrangle, 1300-1500 ft; all others, 1000 ft above ground (see survey reference list below). The magnetic values for each survey are relative to an arbitrary datum. A constant, 4750 gamma, was added to the values in the Bethel Basin area for contouring purposes. No other survey was adjusted. Flight lines shown over western Alaska are for the Bethel Basin area; the original data display was in profile rather than contour form.

Also available in a magnetic contour map of the Bering Sea Basin and Kamchatka Peninsula (Cooper and others, 1975).

MARINE MAGNETIC SURVEYS

SHIP	ORGANIZATION	YEAR	NAVIGATION SYSTEMS
Vema	LGO	1964	Loran-C, radar
Vema	LGO	1965	Loran-C, radar
Conrad	LGO	1966	Loran-C, radar
Conrad	LGO	1967	Loran-C, radar
Thompson	UW	1967	Loran-C, radar
Bent	USN	1968	Loran-C, radar
Conrad	LGO	1968	Loran-C, radar
Conrad	LGO	1969	Loran-C, radar
Surveyor	NOAA	1969	Satellite
Storis	USGS (USCG)	1969	NAVSAT
Melville	SIO	1970	NAVSAT
Rainier	NOAA	1970	NAVSAT
Baffin	CGS	1970	NAVSAT
Hudson	CGS	1970	NAVSAT
Bartlett	USGS (USN)	1970	NAVSAT
Glomar Challenger	NSF (SIO)	1971	NAVSAT
Bent	USN	1972	NAVSAT
Parizeau	CGS	1973	NAVSAT

LGO: Lamont-Doherty Geological Observatory of Columbia University
UW: University of Washington
USN: United States Navy
NOAA: National Oceanic and Atmospheric Administration
USGS: United States Geological Survey
USCG: United States Coast Guard
SIO: Scripps Institution of Oceanography
CGS: Canadian Geological Survey
NSF: National Science Foundation

AEROMAGNETIC SURVEYS

Project Magnet	Line 302 B	1961

Misc. Magnetic Maps

Karta anomalnovo magnitonovo polya territorii SSSR	1968
NOS Subsea Series Map NOS 16048-14M	1973
NOS Subsea Series Map NOS 15248-14M	1973

REFERENCES

Andreason, G. E., Dempsey, W. J., Vargo, J. L., and others, 1963, Aeromagnetic map of part of the Naknek quadrangle, Alaska: U. S. Geological Survey, Geophys. Inv. Map GP-353, scale 1:125,000.

Cooper, A. K., Bailey, K. A., Howell, J. I., Marlow, M. S., Scholl, D. W., 1975, Preliminary residual map of the Bering Sea Basin and the Kamchatka Peninsula: U. S. Geol. Survey Misc. Field Map, MF-715, scale 1:2,500,000.

Dempsey, W. J., Meuschke, J. L., and Andreason, G. E., 1957, Profiles of Bethel Basin, Alaska: U. S. Geol. Survey, open file map, 3 sheets, scale 1:250,000.

Fabiano, E. G., and Peddie, N. W., 1969, Grid values of total magnetic intensity IGRF-1965: U.S. ESSA Tech. Rept. 38, 55 p.

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_____, 1971b, Aeromagnetic survey, Goodnews area, Goodnews, Alaska, scale 1:250,000.

_____, 1971c, Aeromagnetic survey, Goodnews area, Hagemeister Island, Alaska, scale 1:250,000.

_____, 1971d, Aeromagnetic survey, Goodnews area, Nushagak Bay, Alaska, scale 1:250,000.

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For sale by U. S. Geological Survey, price $.50

PRELIMINARY RESIDUAL MAGNETIC MAP OF THE EASTERN BERING SHELF AND PARTS OF WESTERN ALASKA

BY

KIMBERLY A. BAILEY, ALAN K. COOPER, MICHAEL S. MARLOW AND DAVID W. SCHOLL

1976

Alaska (Bering Shelf, east). 1:2,500,000. 1976.
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