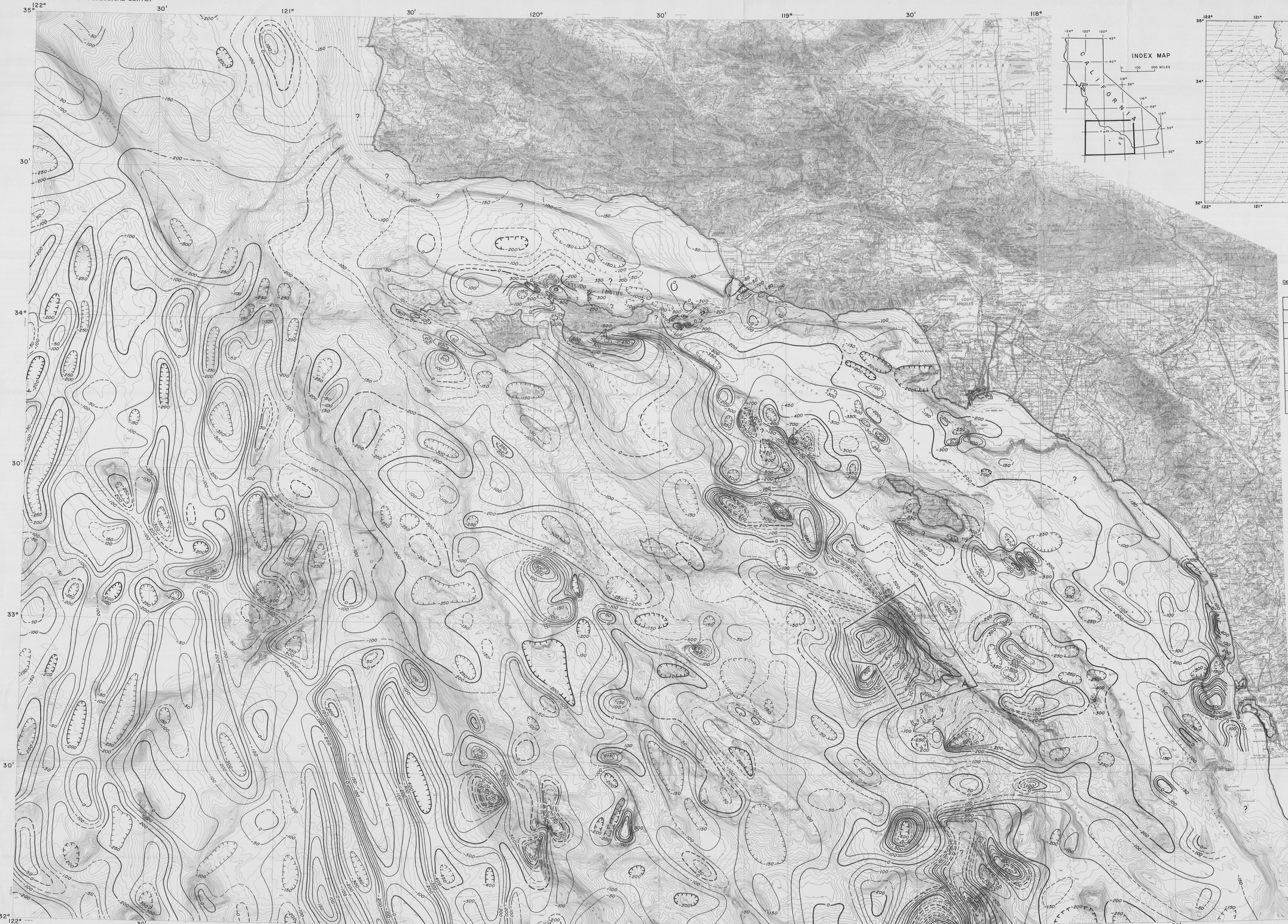
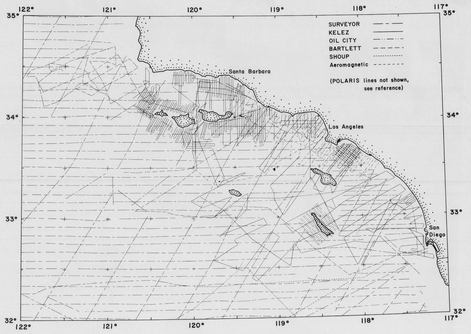
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-624
SHEET 8 OF 9





MAGNETIC TRACK LINES

MARINE MAGNETIC SURVEYS

Organization	Ship	Year	Navigation Systems	Published Reference
USGS	OIL CITY	1969	Hirex	
NAVOCEANO	SHOUP	1969	Satellite, DR	
USGS	POLARIS	1970	Shoran	Greene and others (1974)
NOAA & NAVOCEANO	SURVEYOR	1970	Decca Lambda Lorac B HiFix Satellite, radar	Theberge (1971)
USGS	BARTLETT	1972	Satellite, radar	
USGS	KELEZ	1973	Motorola RPS Raydist radar	

NAVOCEANO: Navy Oceanographic Office
NOAA: National Oceanic and Atmospheric Administration
USGS: United States Geological Survey

COMPILATION NOTES

The total field magnetic values contoured on this map were obtained by removing the predicted main dipole field and secular components from observed values (IGRF-1965, see Fabiano and Peddie (1969)). Formal corrections were not made for diurnal variations or minor magnetic storms. These effects together with navigation and instrument errors caused discrepancies at line crossings that averaged about 30 gammas. Where feasible these discrepancies were minimized by adjustment of line values prior to contouring. Measurements made during periods of intense magnetic storms were not used.

Individual surveys used to prepare this map are summarized in the above table. All measurements were made with ship-towed proton precession magnetometers except for the data over San Clemente Island (Inset A).

Ship navigation included precision land-based range-range systems, satellite and radar control. Position uncertainty for USGS cruises is about 100 to 200 feet. Theberge (1971, p. 2) states that "overall navigation accuracy is 0.25 nautical mile" for SURVEYOR data. We believe position uncertainties for SURVEYOR data may exceed Theberge's estimate where satellite or radar navigation was used exclusively.

A- Inset A is aeromagnetic data flown in 1967 at an elevation of 3000 feet. The residual values shown in this inset were obtained by "graphic subtraction of the earth's smoothed magnetic field from the measured field based on the interpretation of the smoothed total intensity for this region (Krause, 1965)" (Ridlon, 1970, p. 242).

REFERENCES

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

Greene, H. G., Wolf, S. C., and Blom, K. G., 1974, The marine geology of the eastern Santa Barbara Channel with particular emphasis on the ground water basins offshore from the Oxnard Plain, southern California: U.S. Geol. Survey open-file rept.

Harrison, J. C., von Huene, R. E., and Corbató, C. E., 1966, Bouguer gravity anomalies and magnetic anomalies off the coast of southern California: Jour. Geophys. Research, v. 71, no. 20, p. 4921-4941.

Krause, D. C., 1965, Tectonics, bathymetry, and geomagnetism of the southern Continental Borderland west of Baja California, Mexico: Geol. Soc. America Bull., v. 76, p. 617-650.

Ridlon, J. B., 1970, Bathymetry and structure of San Clemente Island, California, and tectonic implications for the southern California Borderland: Oregon State Univ., unpub. Ph.D. thesis, 246 p.

Theberge, A. E., Jr., 1971, Magnetic survey off southern California and Baja California: NOAA-NOS Operational Data Rept., NOS DR-12, 10 p.

Composite base map constructed from U.S. Coast and Geodetic Survey Charts 12008-15,-16 and 13008-19,-20 (offshore area) and U.S. Geological Survey 1:250,000 topographic series San Diego 1958, Santa Ana 1959, Long Beach 1957, Los Angeles 1959, Santa Maria 1962, and San Bernadino 1958 (onshore area).

Bathymetric contour intervals: 10 m interval from 0 to 200 m depth
50 m interval from 200 m to maximum depth

Onshore contour interval: 200 feet

Anomaly at 32° 18' N, 118° 32' W should be positive instead of negative.

Anomaly at 32° 04' N, 118° 32' W should be negative instead of positive.

Contour label -150 on closed contour at 33° 03.5' N, 119° 53.5' W should read 150.

Contour label -50 at 33° 7.9' N, 120° 54.3' W should read -100.

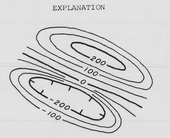
Closed contours labeled 200 and 250 on anomaly at 33° 18' N, 118° 53.5' W should be inferred (dashed) northward from the labels to points where they turn eastward.

Contour label -400 at 33° 41.4' N, 118° 57.1' W should read -350 and the associated contour line should be light weight instead of heavy weight.

Contour label -450 at 33° 43.4' N, 119° W should have a leader extending SW to the nearby closed (hachured) contour.

Contour labels 350 and 200 with leaders to anomaly at 34° 5.8' N, 119° 41.7' W should read -350 and -200 respectively.

EXPLANATION



Residual Magnetic Contours

Contour interval is 50 gammas except in areas of steep magnetic gradients where contour interval is larger. Hachures indicate closed areas of lower magnetic intensity. Dashed contours are used in areas of poor control.

RESIDUAL MAGNETIC MAP OF THE CALIFORNIA CONTINENTAL BORDERLAND

by
K. A. Pisciotto, N. B. Sasnett, and L. A. Beyer

1974

SCALE 1:500,000

10 0 10 20 30 40 50
NAUTICAL MILES

10 0 10 20 30 40
KILOMETERS

TRANSVERSE MERCATOR PROJECTION

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