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Magnetic and bathymetric data from R/V FARNELLA
cruises FRNL85-1, 85-2, and 85-3
in the U.S. Gulf of Mexico EEZ

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During the summer and early fall of 1985, the U.S. Geological Survey in cooperation with the Institute for Oceanographic Sciences of the United Kingdom collected approximately 23,700 line kilometers (km) of magnetic and bathymetric data in the U.S. Gulf of Mexico Exclusive Economic Zone (EEZ). In water depths exceeding 3,000 meters (m) survey line spacing was about 25 km and gradually decreased to 5 km in 400 m water depths. No areas were surveyed with depths shallower than 400 m. Orientation of the tracklines is in general parallel to the trend of the bathymetric contours (Figs. 1, 2, and 3).

Three cruises were conducted aboard R/V FARNELLA during 67 days at sea between 7 August and 22 October 1985. Leg 1 (7 August-3 September) covered the western Gulf, acquiring 8,504 line km of bathymetric and 7,548 line km of magnetic data (Fig. 1). Effort switched to the central Gulf for leg 2 (5 September-24 September) where 8,504 line km of both bathymetric and magnetic data were collected (Fig. 2). The final leg, leg 3 (2 October-22 October), surveyed the eastern Gulf, accumulating 6,738 line km of bathymetry and 6,712 line km of magnetic data (Fig. 3).

Primary navigation for legs 1 and 2 was Loran-C, while leg 3 navigation utilized a combination of Loran-C, transit satellite, and global positioning system (GPS) fixes.

The magnetic data were collected using a proton-precession magnetometer towed approximately 200 m astern of the ship. The total magnetic field values were recorded in nanoteslas at two-minute (min) intervals. The residual magnetic anomalies were later calculated using 1985 values of the International Geophysical Reference Field (IGRF).

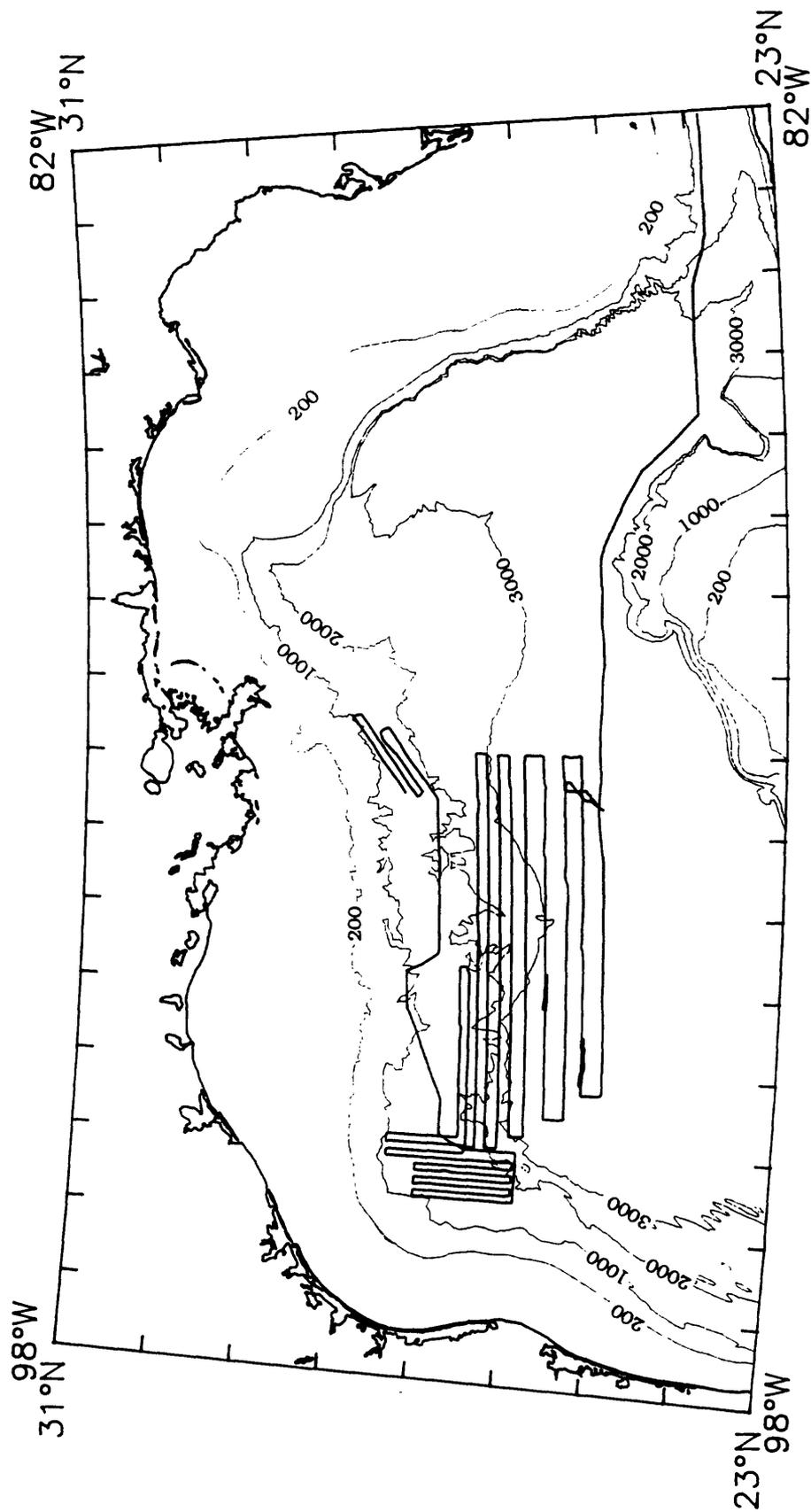
A towed 10-kHz echo-sounder and a wet-paper display were used to record bathymetric information. Echo travel times were read from the graphic display at six-min intervals and at significant changes in slope. Additional values at two-min intervals have been interpolated between measured values. Assuming a sound velocity in water of 1500 m/s, conversion of echo travel time to uncorrected depth was made. Corrected depths were subsequently calculated using the Carter table/Carter area method.

The magnetic tape data format is explained in Table 1. The original data may be examined at the U.S. Geological Survey, Woods Hole, MA 02543. Magnetic tapes of the navigation, magnetic data, and digitized bathymetry can be purchased only from the National Geophysical Data Center, 325 Broadway, Boulder, CO 80303, telephone (303) 497-6542.

Field Location	Field Description
1-11	Ship and Cruise Identification
15-16	Year
17-18	Month
19-20	Day
22-23	Hour (Greenwich Mean Time)
24-25	Minutes
27-33	Latitude (decimal degrees: xx.xxxxx) north latitude is positive
35-42	Longitude (decimal degrees: -xx.xxxxx) west longitude is negative
53-57	Uncorrected Depth (meters)
58-62	Corrected Depth (meters)
63-65	Carter Area
66-70	Total Magnetic Intensity (nanoteslas)
71-75	Residual Magnetic Intensity (nanoteslas)

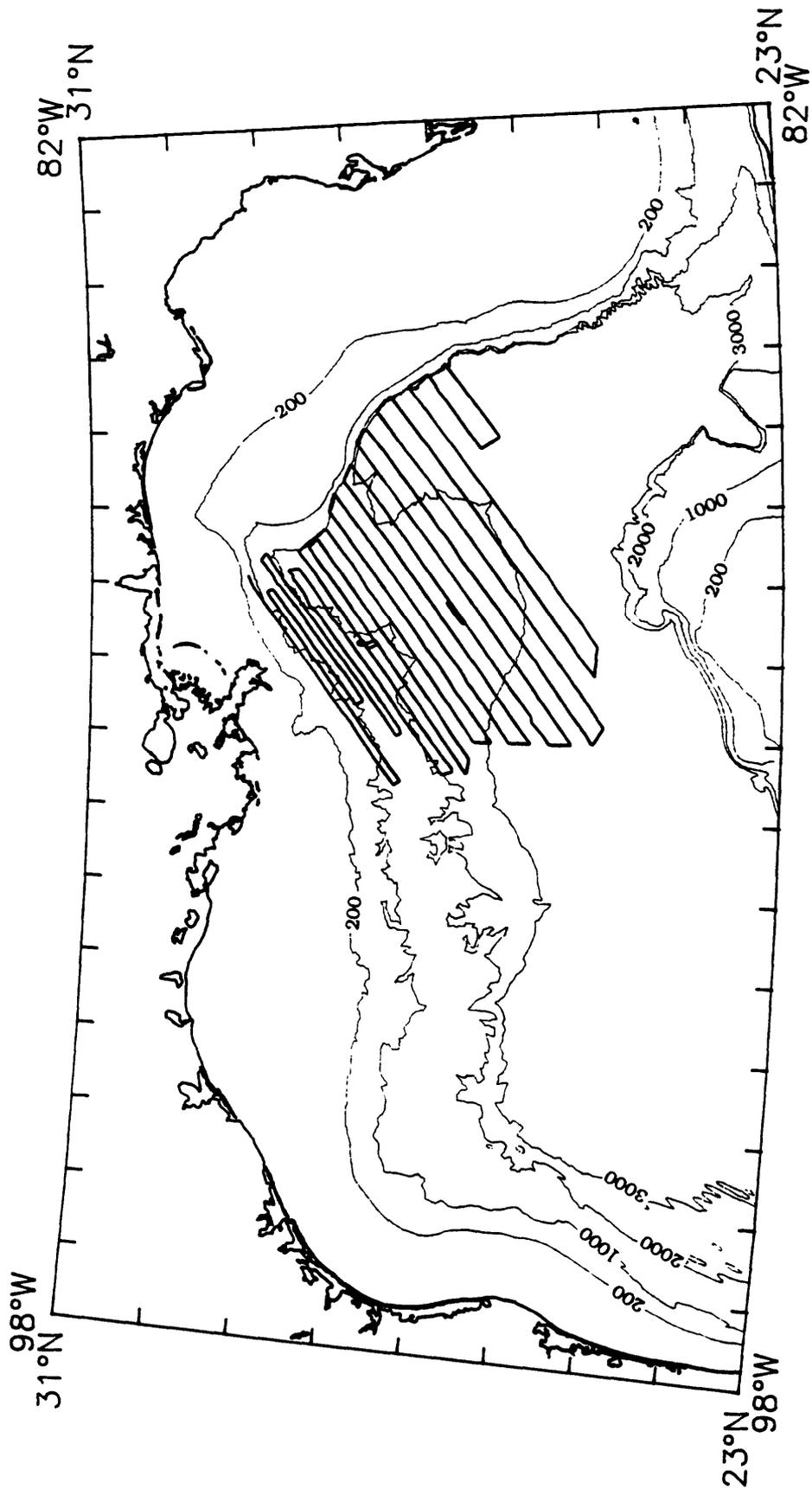
TABLE 1 Data format on magnetic tape for R/V FARNELLA cruises FRNL85-1, 85-2, and 85-3 (USGS Branch of Atlantic Marine Geology MERGED-MERGED3 format).

Numbers are character spaces for each data field in a single record. Space between fields is occupied by whitespace or dashes and is not consistent throughout file.



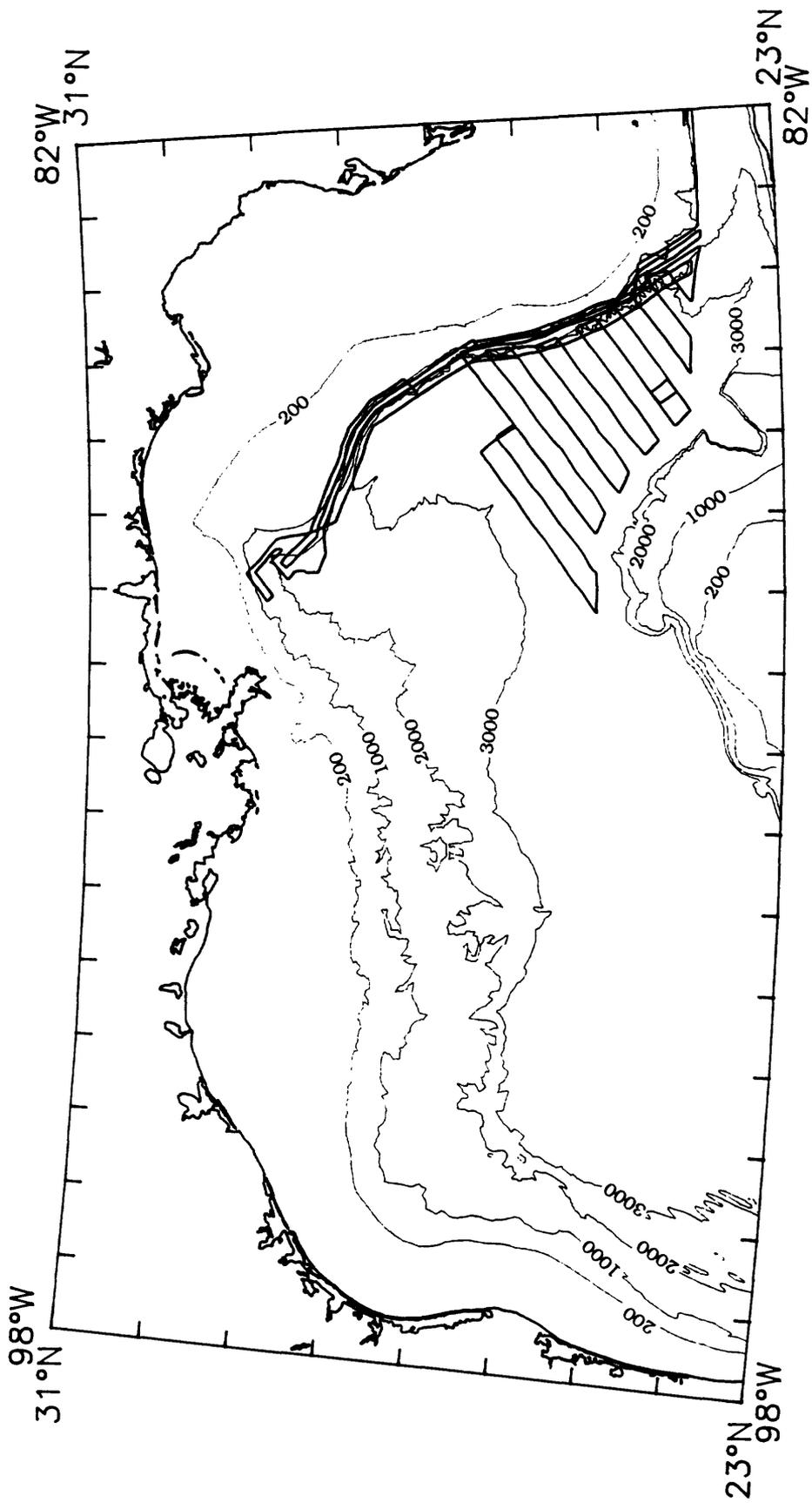
FARNELLA 1985 GULF OF MEXICO
LEG 1

FIGURE 1 Trackline map for R/V FARNELLA cruise FRNL85-1. Thick lines represent the ship's track along which magnetic and bathymetric data were collected. Thin lines are bathymetric contours in meters.



**FARNELLA 1985 GULF OF MEXICO
LEG 2**

FIGURE 2 Trackline map for R/V FARNELLA cruise FRNL85-2. Thick lines represent the ship's track along which magnetic and bathymetric data were collected. Thin lines are bathymetric contours in meters.



FARNELLA 1985 GULF OF MEXICO
LEG 3

FIGURE 3 Trackline map for R/V FARNELLA cruise FRNL85-3. Thick lines represent the ship's track along which magnetic and bathymetric data were collected. Thin lines are bathymetric contours in meters.