UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

SEISMIC-REFLECTION DATA COLLECTED IN THE WILMINGTON CANYON AREA DURING 1980, GYRE CRUISE 80-G-7B

by

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During 1980, geophysical data were collected seaward of New Jersey in the vicinity of Wilmington Canyon (Fig. 1) on three cruises, GYRE 80-G-7B (discussed here), GYRE 80-G-8B (McGregor, Hampson, and Ryan, 1982), and ENDEAVOR 80-EN-056 (McGregor, 1982). The objectives of these surveys of the Continental Slope and upper Rise, including Wilmington Canyon and the adjacent margin, were to extend existing geophysical coverage (McGregor and Bennett, 1981) to the south of Wilmington Canyon and to provide detailed geologic and geophysical data on the possible origin and evolution of submarine canyons and on sediment transport and other processes within the canyon domain. The geology of this area near Wilmington Canyon was discussed by McGregor, Stubblefield, and others (1982) and Stubblefield and others (1982).

On GYRE Cruise 80-G-7B, during August 19-22, 1980, a survey was conducted on the slope and upper rise using a 40-in^3 (640 x $10^{-6}m^3$) airgun, minisparker, and 3.5-kHz profiler. Navigation control for the cruise was based on Loran C. All times given on the data and navigation plots are in Greenwich mean time (GMT or Z). The tracklines were oriented parallel to the shelf edge and to the trend of the slope, and were approximately 3 km apart; data were also collected along a tie line up the slope (Fig. 2). Approximately 400 km of each type of single-channel data were collected at a ship speed of approximately 5 knots (9 km/hr). The seismic-reflection profiles collected using a 40-in^3 (640 x $10^{-6}m^3$) airgun sound source and a 200-element hydrophone were recorded on strip charts at both 2-and 4-second rates. The 4-second-sweep data were filtered at 40 to 150 Hz; the 2-second data were filtered at 60 or 70 to 150 Hz. Data from the 800-joule minisparker were filtered at 150 to 600 Hz and were recorded on a strip chart using a 1-second sweep. The profiles from a 3.5-kHz, shallow-penetration, seismic-reflection system with a hull-mounted transducer were also recorded on a strip chart with a 1-second sweep. These three types of profile data provide resolution of reflectors from the sea floor to a penetration of approximately 0.5 seconds.

The quality of the records is generally good; however, rough seas reduced the depth of penetration achieved on the airgun profiles on the rise.

Original records may be viewed at the U.S. Geological Survey, Woods Hole, MA 02543. Microfilms of the data and 1:40,000 scale trackcharts can be purchased only from the National Geophysical and Solar-Terrestrial Data Center, NOAA/EDIS/NGSDC, Code D621, 325 Broadway, Boulder, Colorado, 80303 (303-497-6338).

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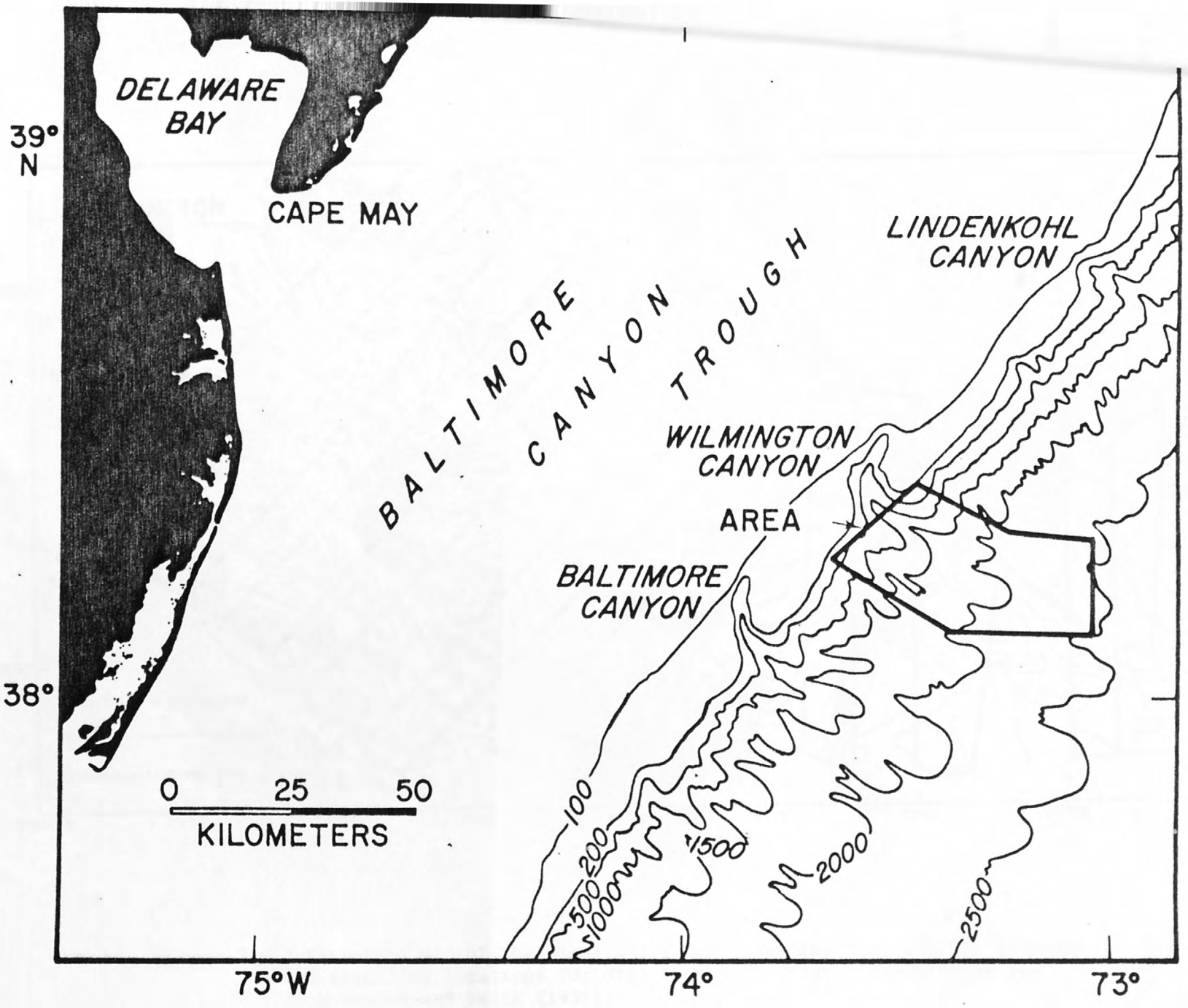

Figure 1. Index map showing location of study area in the vicinity of Wilmington Canyon. Contours are in meters.

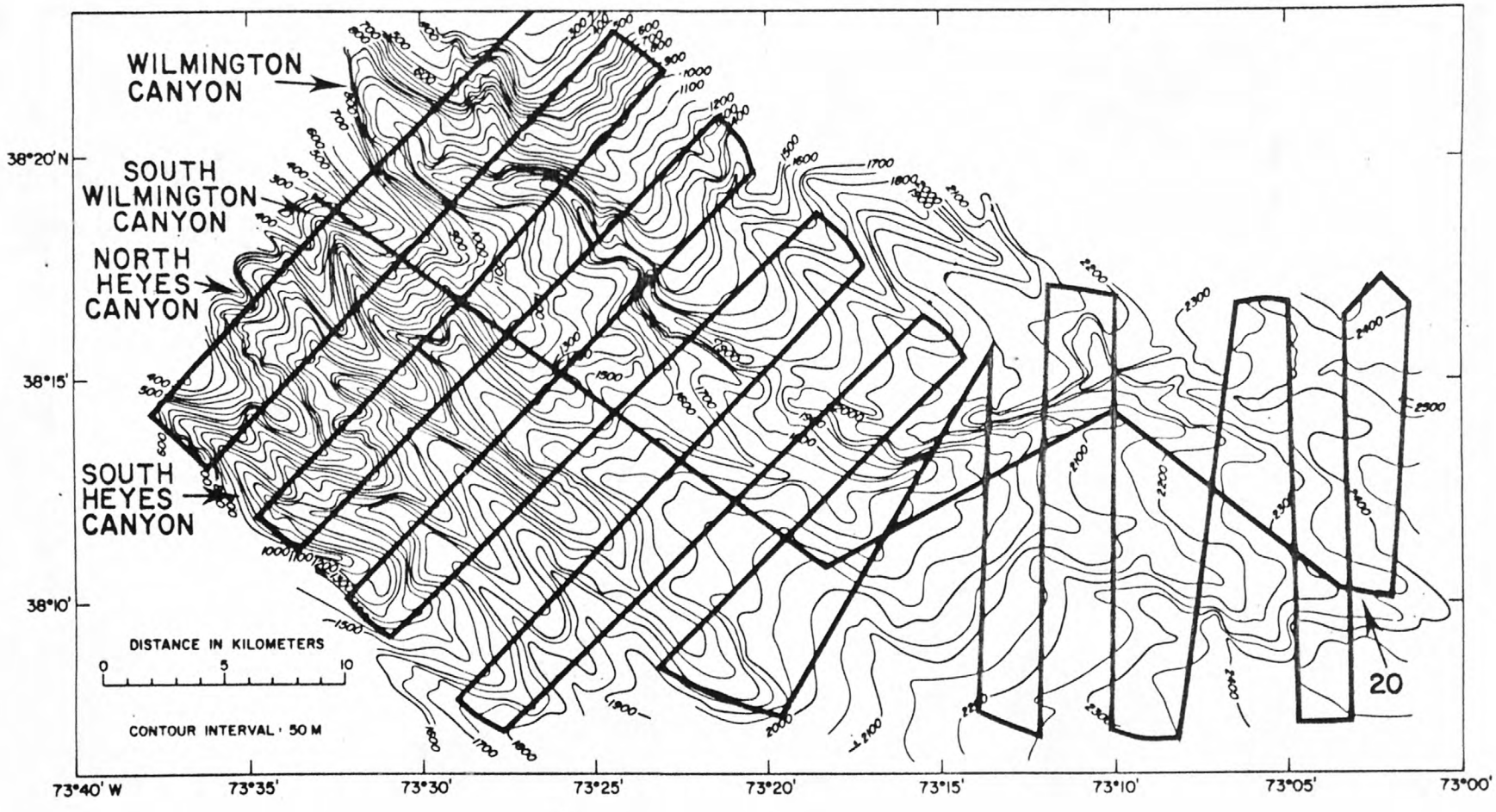

Figure 2. Bathymetric map of the slope and upper rise (see Fig. 1. for location) and trackline locations for GYRE Cruise 80-G-7B. Canyon names are from Veatch and Smith (1939).