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Seismic-reflection data collected in the Baltimore Canyon and Cape Hatteras areas during 1982 GYRE cruise 82-G-10B

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During GYRE cruise 82-G-10B, the U.S. Geological Survey collected geophysical data off Delaware in the Baltimore Canyon area and off North Carolina in the vicinity of an unnamed canyon on the Continental Slope north of Cape Hatteras (fig. 1). The objectives of the survey in the Baltimore Canyon area (Area A, fig. 1) were to extend to the south existing geophysical coverage (McGregor, 1982; McGregor and Hampson, 1982; and McGregor and others, 1982) and to extend to the adjacent slope and rise the bathymetric coverage collected earlier by Lamont-Doherty Geological Observatory. This survey allows a comparison of rise morphology seaward of Wilmington and Baltimore Canyons.

The survey north of Cape Hatteras (Area B, fig. 1) provides detailed bathymetric and seismic-reflection profile data of a canyon on the southern U.S. Atlantic margin that can be compared with previous canyon surveys on the U.S. Middle and North Atlantic margin. This data set will provide geologic background information for later measurements of water and sediment movement. Also, study of this canyon affords an opportunity to evaluate the influence of ocean circulation (Gulf Stream) on canyon processes.

On GYRE cruise 82-G-10B, September 2-13, 1982, a survey was conducted on the slope and upper rise using one, and in deep water two, 40-in^3 (640 x 10^{-6}m^3) airguns and a hull-mounted 3.5-kHz profiler. Navigational control for the cruise was based on LORAN-C updated with transit satellite data. All times given on the data and navigational plots are in Greenwich Mean Time (GMT or Z). The tracklines were oriented parallel to the trend of the slope and rise and were approximately 1 to 2 km apart; crossing dip lines were spaced between 6 and 10 km apart in Area A (fig. 2) and 3 km apart in Area B (fig. 3). Approximately 1,054 km and 1,014 km of each type of single-channel data (airgun and 3.5 kHz) were collected in the Baltimore Canyon and Cape Hatteras areas, respectively. The ship speed for the Baltimore Canyon survey was approximately 5 knots (9 km/hr); the ship speed during the survey at Cape Hatteras varied between 2 and 6 knots (4 and 12 km/hr) depending on trackline orientation relative to the Gulf Stream. 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 sweep rates. The 4-second sweep data were filtered at 58 to 150 Hz; the

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2-second data were filtered at 100 to 300 Hz. The profiles from the 3.5-kHz, shallow-penetration, seismic-reflection system (with a hull-mounted transducer) were recorded on a strip chart with a 1-second sweep. The profiles provide resolution of reflectors from the sea floor to a depth of penetration of approximately 0.8 second.

The quality of the records is generally good; however, rough seas reduced the depth of penetration achieved on the airgun profiles for approximately 24 hours during each of the surveys. The vertical exaggeration of the profiles during the survey in the Cape Hatteras area is highly variable depending on ship speed.

Original records may be viewed at the U.S. Geological Survey, Woods Hole, MA 02543. Microfilm or photo print copies of the data and track charts can be purchased only from the National Geophysical Data Center, NOAA/EDIS, NGDC, Code E64, 325 Broadway, Boulder, CO 80303.

References cited

McGregor, B. A., 1982, 3.5-kHz data collected in the Wilmington Canyon area, ENDEAVOR Cruise 80-EN-056: U.S. Geological Survey Open-File Report 82-498, 3 p.

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McGregor, B. A., Hampson, J. C., Jr., and Ryan, W. B. F., 1982, Sidescan data collected in the Wilmington Canyon area during 1980, GYRE Cruise 80-G-8B: U.S. Geological Survey Open-File Report 82-499, 4 p.

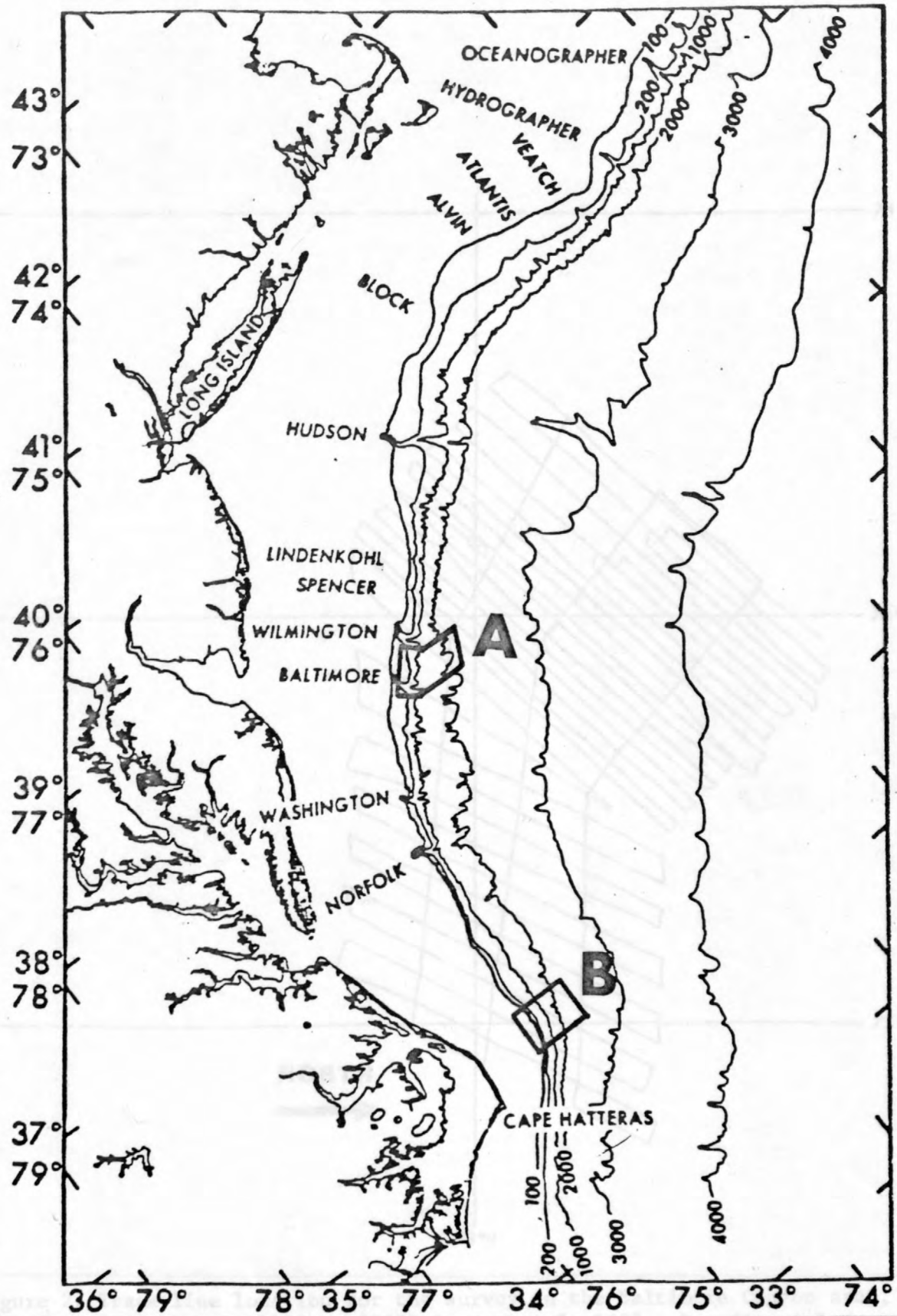

Figure 1. Index map of the U.S. Atlantic continental margin. Contours are in meters. Area A indicates the region surveyed in the Baltimore Canyon region. Area B indicates the region surveyed on the continental slope and upper rise north of Cape Hatteras.

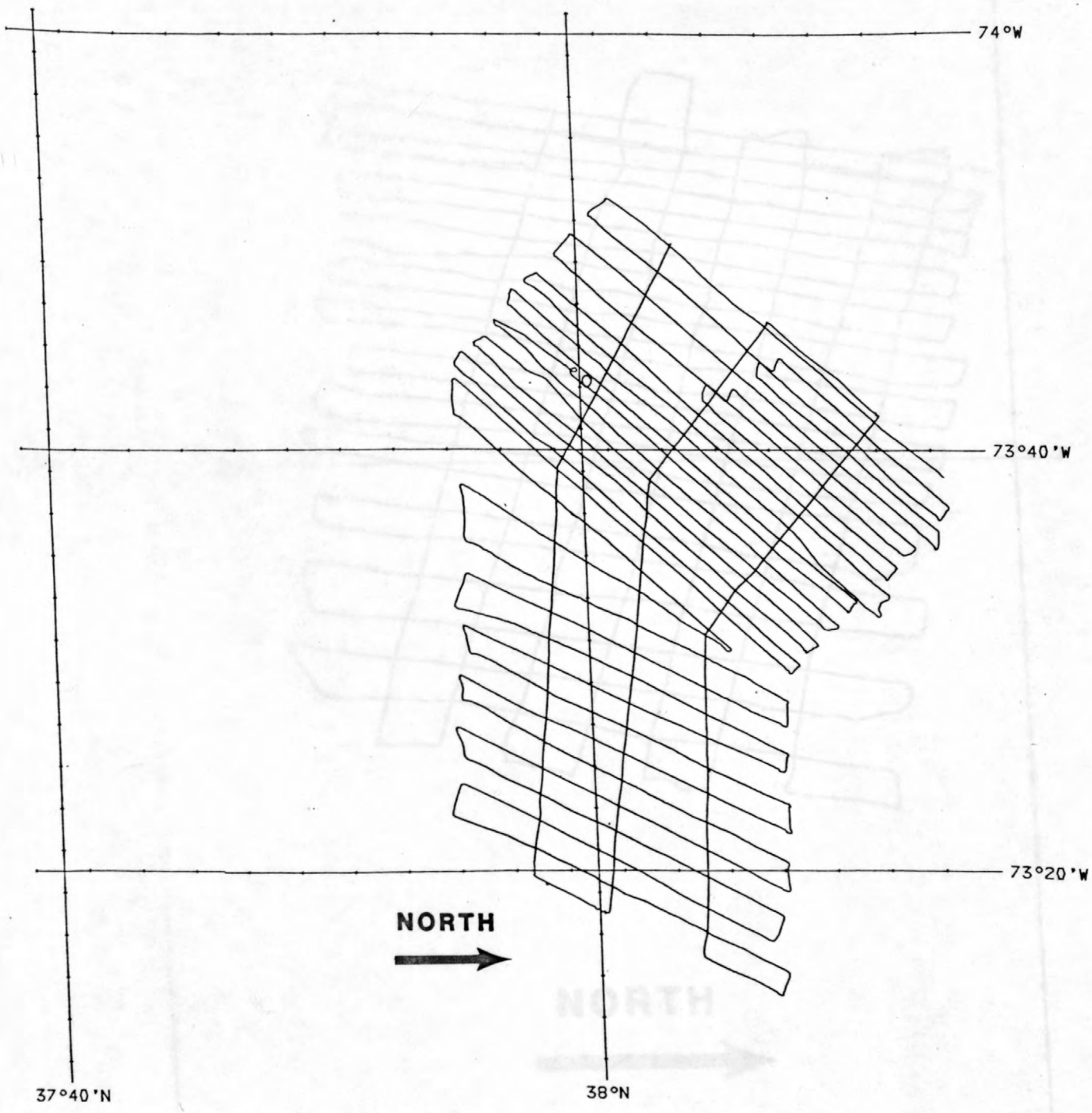

Figure 2. Track line location for the survey in the Baltimore Canyon area, 0810Z September 2, 1982 to 0825Z September 7, 1982. See figure 1 area A for location.

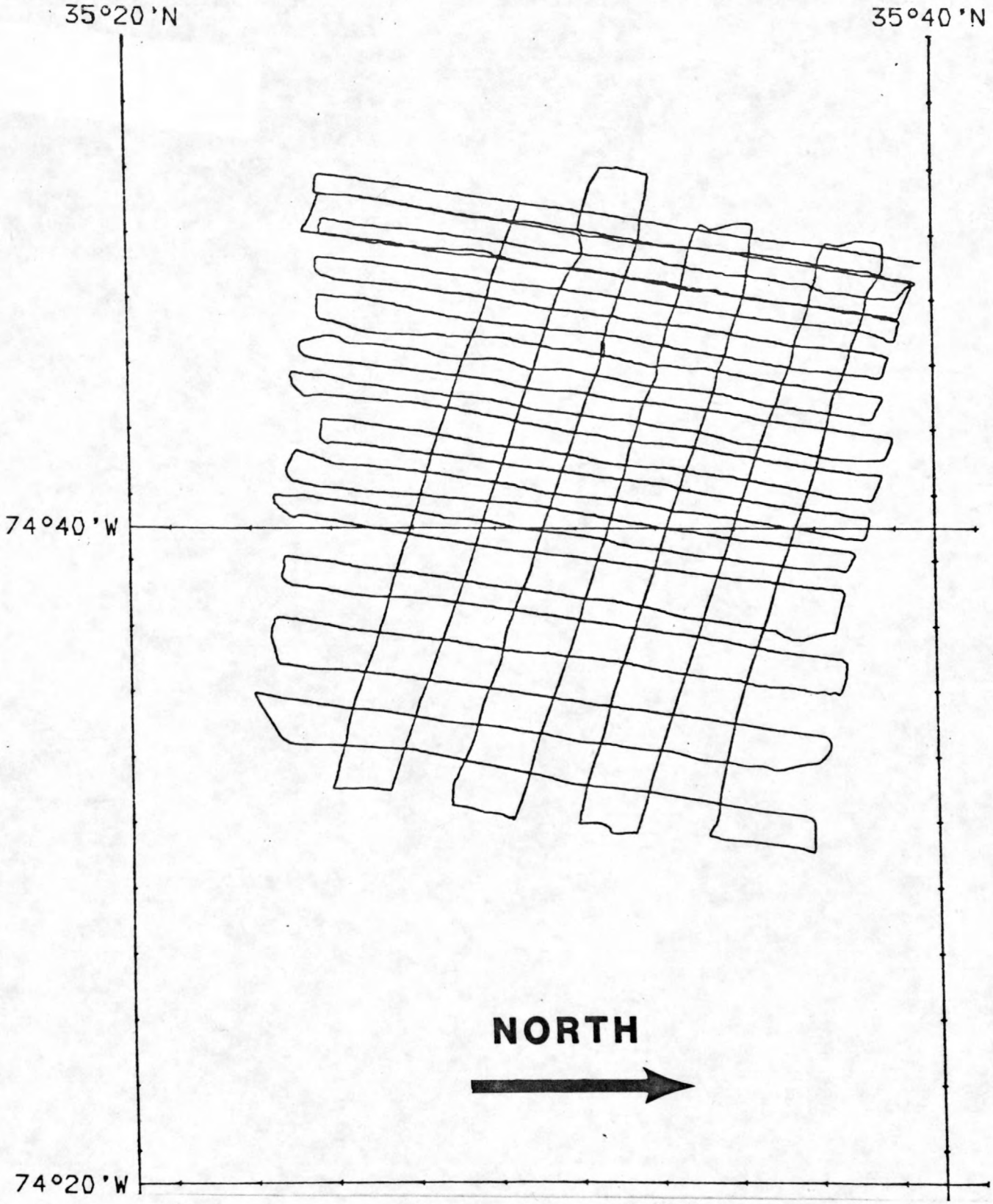

Figure 3. Track line location for the survey of a canyon on the Continental Slope and upper rise north of Cape Hatteras, 0000Z September 8, 1982 to 1750Z September 12, 1982. See figure 1 area B for location.