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leg 1

U.S. Geological Survey Open-File Report 81-554

Mid-range sidescan-sonar images covering parts of proposed tracts
for OCS Lease Sale 56 and contiguous areas, Manteo, Cape Fear, and
adjacent quadrangles off North Carolina

by

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The U.S. Geological Survey (USGS), in cooperation with the U.S. Bureau of Land Management (BLM) and the Lamont-Doherty Geological Observatory (LDGO), collected 335 km of mid-range sidescan-sonar data in some of the tracts proposed for inclusion in Federal OCS (Outer Continental Shelf) Oil and Gas Lease Sale 56 and in some contiguous areas (R.V. GYRE, September 18-25, 1980 [GYRE 80-9, leg 1]). The data were collected by use of the Sea Mark I mid-range sidescan-sonar system designed by International Submarine Technology, Ltd. (IST). This system surveys a swath having a width of approximately 2-1/2 km on each side of the deep-towed fish. Transducers were towed about 300 m above the bottom on a neutrally bouyant vehicle at a speed of 1-1/2 to 2 knots. Transducers were pulsed at 4-second intervals at a frequency of 27 kHz on one side and 30 kHz on the other. Data recorded on seven EPC recorders aboard ship included slant-range corrected port channel, starboard channel, and port and starboard channels; uncorrected port channel, starboard channel, and port and starboard channels, and a 3.5-kHz tuned-transducer record of the bottom. Fish height or the altitude above the bottom was recorded on a strip-chart recorder. Distance of the fish from the ship (slant range) was recorded by use of a sled-mounted 4.5-kHz transducer.

Data recorded on sonograms lagged the 3.5-kHz tuned-transducer record and ship navigational fix by as much as 1 hour (2 km) owing to tow-cable length (up to 5 km). Navigation of the ship was by Loran-C at a 5-minute fix interval, supplemented by satellite fixes.

Data are of excellent quality and bottom features several meters high and about 6-12 m wide can be identified. Figures 1 and 2 show the location of track lines in the Manteo (NI 18-2) quadrangle just east of Cape Hatteras where the upper slope within proposed lease tract areas was surveyed. Figures 3 and 4 show track lines in the Cape Fear (NI 18-7) and contiguous quadrangles where data were recorded over the outer Blake Plateau, the Continental Slope, and the upper Continental Rise.

The original records may be examined at the U.S. Geological

This report is preliminary and has not been reviewed for conformity with the U.S. Geological Survey editorial standards. The use of trade names is for the purposes of identification only and does not constitute endorsement by the U.S. Geological Survey or the U.S. Bureau of Land Management.

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Survey, Woods Hole, MA 02543. Microfilm copies of the data are available for purchase only from the National Geophysical and Solar-Terrestrial Data Center, NOAA/EDIS/NGSDC, Code D621, 325 Broadway, Boulder, CO 80303 (303-497-6338).

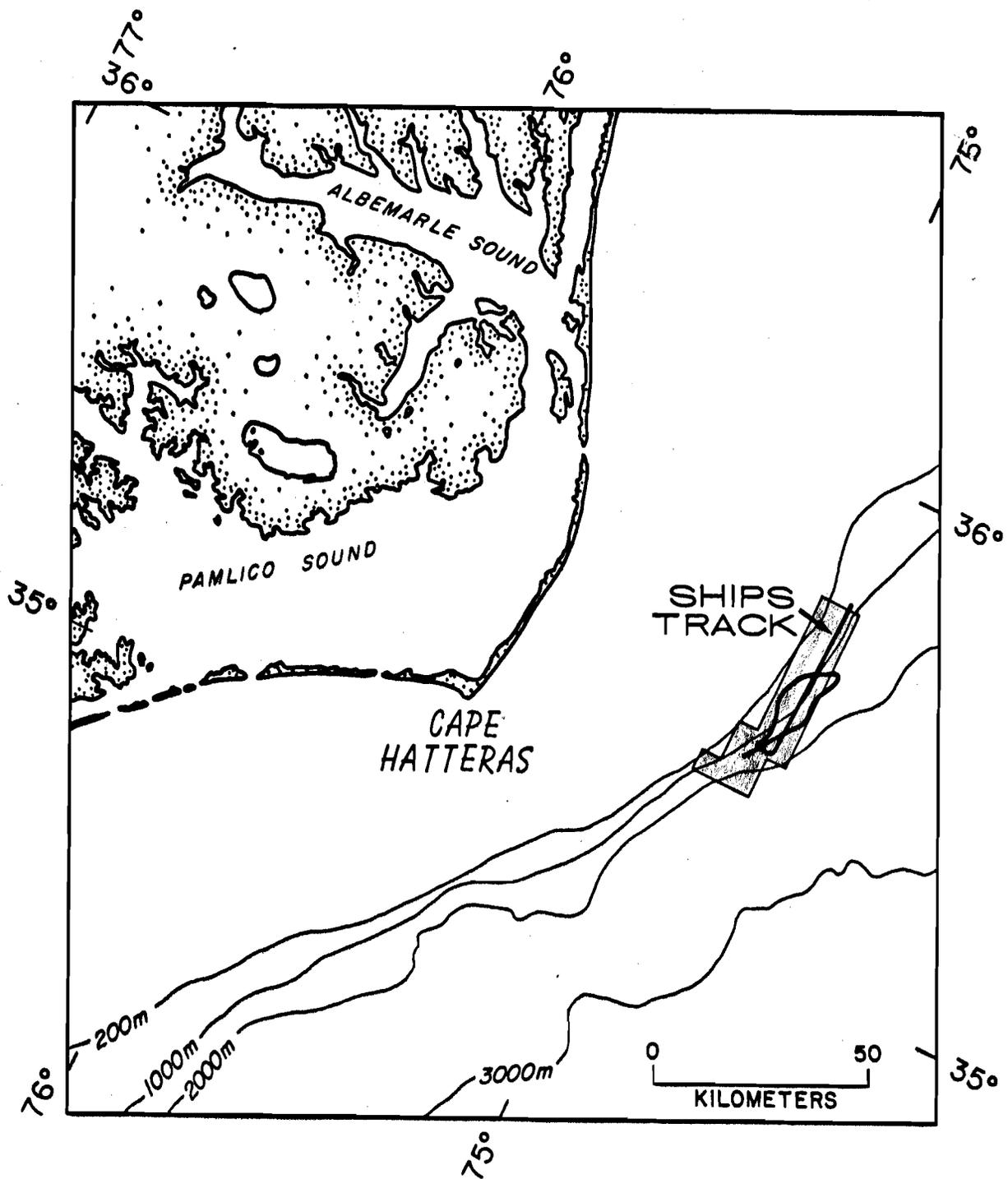


Figure 1. Location map showing ship's track line along which sidescan-sonar data were acquired and nominated lease blocks (shaded) in the Manteo quadrangle, Federal OCS Lease Sale 56.

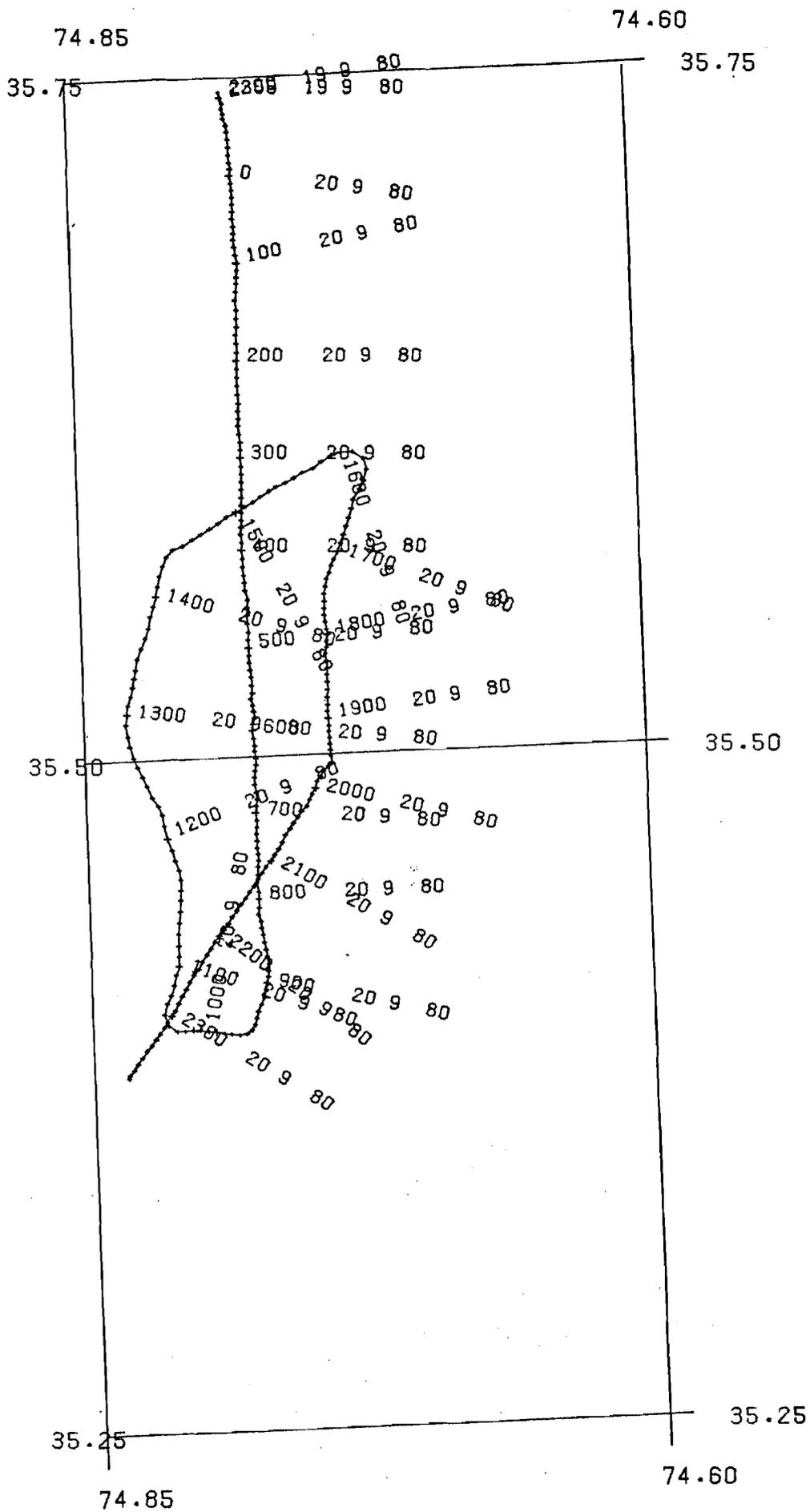


Figure 2. Track chart of R.V. GYRE 80-9 cruise, MANTEO OCS quadrangle (NOS NI 18-2). Track shows ship's position each hour on September 19 and 20, 1980, when mid-range sidescan-sonar data were acquired; ticks on track are at 5-minute intervals. Latitude and longitude markings are in hundredths of degrees.

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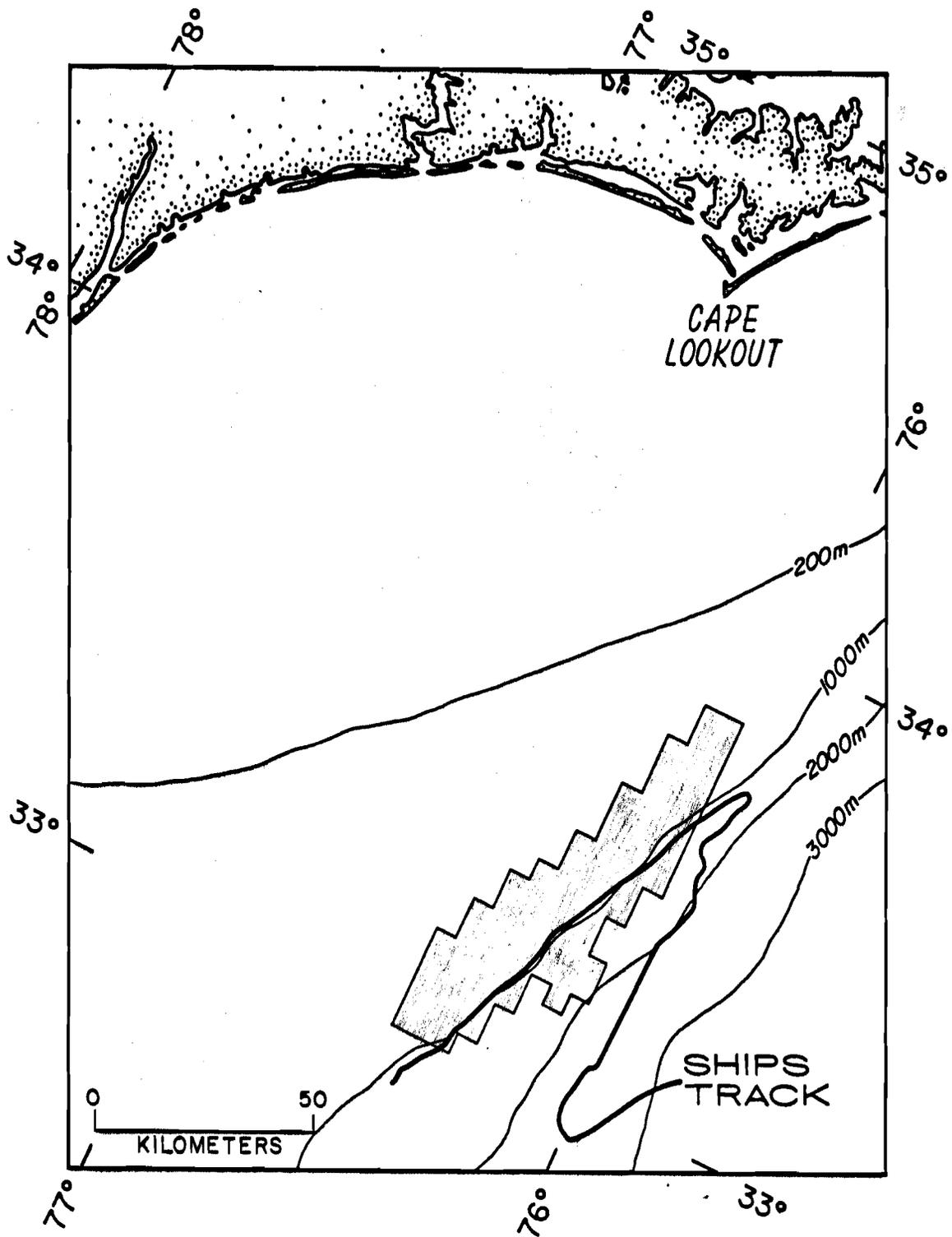
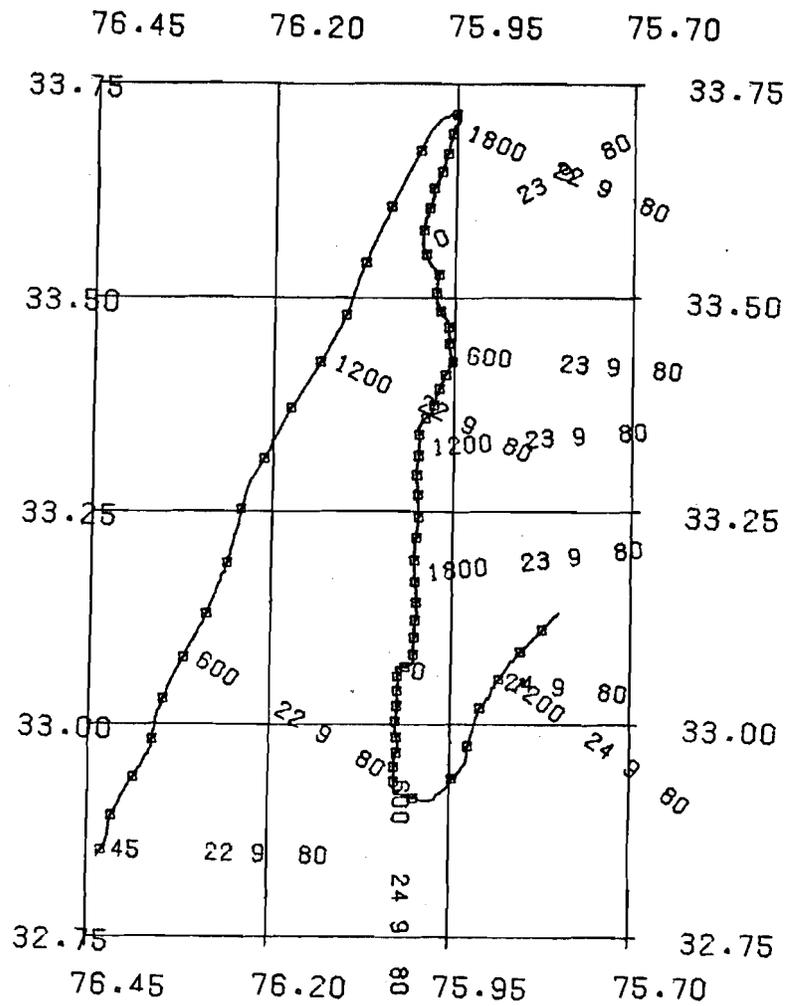


Figure 3. Location map showing ship's track line along which sidescan-sonar data were acquired and nominated lease blocks (shaded) in the Cape Fear quadrangle, Federal OCS Lease Sale 56.



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Figure 4. Track chart of R.V. GYRE 80-9 cruise, Cape Fear and adjacent OCS quadrangles (NOS NI 18-7). Track shows ship's position each hour on September 22-24, 1980, when mid-range sidescan-sonar data were acquired. Latitude and longitude markings are in hundredths of degrees.