



INTRODUCTION

The Blake Escarpment is a steep cliff that trends north-south approximately 400 km east of Florida. Across the escarpment, which marks the eastern edge of the Blake Plateau, water depths increase from about 1,500 m to 5,000 m.

In the past few years the area has been surveyed by the following U.S. Geological Survey cruises: 1. R/V Eastward (cruise 88-8); 2. R/V Starella; 3. R/V Gilliss (cruise 79-3-5); 4. M/V Coral Seal; and 5. R/V Fay (cruise 025) (fig. 1). For this report, bathymetric information from these cruises has been compiled and contoured. Data from earlier surveys of the area (Pratt and Heezen, 1964) were not used because of uncertainties concerning their navigation.

NAVIGATION

The method of navigation varied from cruise to cruise. R/V Eastward and R/V Starella both used Loran C tuned to the 7980 chain as their primary navigation method (Kathleen Kent, unpub. data, 1980; David Twitchell, unpub. data, 1978). Fixes obtained from a satellite navigation system on board R/V Eastward were compared with the Loran-C fixes and revealed very small discrepancies (generally less than 100 m). The error that is present is nonsystematic.¹ R/V Fay and R/V Gilliss both used the U.S. Geological Survey Integrated Navigation System, which includes a Teledyne Loran C (Range-Range and hyperbolic), a Magnavox satellite receiver, a Sperry Mark 29 gyrocompass, and a Chesapeake speed log (John Crow, unpub. data, 1978). Information from these systems was merged in a Hewlett-Packard HP-21/MX data acquisition computer. Range-Range Loran was the primary navigation system. When use of the Range-Range Loran was not possible, hyperbolic Loran or dead reckoning was employed. In most cases, dead reckoning was used for only an hour or less. Satellite fixes were generally within 800 m of Loran fixes (John Crow, unpub. data, 1976).

M/V Coral Seal was equipped with a Magnavox MX-702 hp satellite receiver, a Hewlett-Packard HP 2100A computer, an Edo model 435E doppler sonar, a Sperry Mark 227 gyrocompass, a Microlog ML-200 Loran C, and a Houston Omnigraphic track plotter. All data were merged by computer and recorded on digital tape. Conversions and plotting were done at Teledyne's facilities in Houston using their programs and equipment. Dead reckoning was used between satellite fixes. Velocity information for dead reckoning positions was derived from Loran C (Teledyne Exploration, unpub. data, 1978).

BATHYMETRIC DATA

Bathymetric data were gathered from 3.5-kHz records whenever possible; however, it was necessary to use single-channel airgun records for R/V Fay and M/V Coral Seal (line TD-5). Minispartek records were used from M/V Coral Seal (line TD-4), and 12-kHz records were used from R/V Starella.

Correlation of bathymetric data from different cruises is good. A data point was discarded if it differed from the points surrounding it by more than 250 m (one contour interval). Less than 2 percent of the data points were considered erroneous.

REFERENCE CITED

Pratt, R. M., and Heezen, B. C., 1964, Topography of the Blake Plateau: Deep-Sea Research, v. 11, no. 5, p. 721-728.

¹A systematic error of the 9960 chain has been noted (James McCullough, personal commun., 1981), but this chain was not used during collection of any data used to construct this map.

²Any use of trade names in this report is for descriptive purposes only and does not imply endorsement by the U.S. Geological Survey.

BATHYMETRIC MAP OF THE BLAKE ESCARPMENT
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