End-756

Appendix A

Geophysical work aboard H.M.S. Endurance - January 1976
C.P. Brett

The main objective was the setting up of an automatic seismic recording station on Southern Thule the southernmost of the South Sandwich Islands group.

The station is based on a modified Racal-Thermionic Geostore tape recorder from the N.E.R.C. equipment pool. The modifications allow the successive use of each of the 14 available channels, giving 28 weeks continuous single channel recording at the slowest tape speed (15/640"/sec). Each hour is divided so that for the period 01^m - 58^m seismic information from a Willmore MkII vertical seismometer is recorded, together with superimposed minute marks from the Geostore's internal clock. From 58^m - 59^m the full clock code is recorded and from 59^m - 01^m the radio, (a single channel, crystal controlled, Eddystone EC964/7), is switched on to record a BBC World Service time check. Power is provided by twenty Le Carbone EMU1 cells, ten each for the Geostore and radio.

The ship's programme commenced with a return visit from Port Stanley to South Georgia, and back again to South Georgia before heading for Southern Thule. During this period, 10th - 22nd Jan. three parallel magnetic survey lines were steamed along the north Scotia Ridge between longitudes 38-51°W to supplement survey work carried out from R.R.S. Shackleton earlier in the season. Ship tracks are shown dashed on the R.R.S. Shackleton Track Chart (fig. 1).

H.M.S. Endurance arrived off Southern Thule in the early morning of 25th Jan. and, with some delays for poor weather, the landing party of six, together with scientific and survival equipment, was put ashore by helicopter at Hewison Point, a flat promontory at the South-East corner of the island. The geographical position of the proposed site was determined using "Hydrodist" measuring equipment and the shipboard satellite navigator, before Endurance departed to survey other islands in the group. The charted position of Hewison Point was found to be approximately 1 mile in error and the position of the site was determined as 59° 27.5'S 27° 18.5'W. Throughout the day the installation went ahead, with construction of the seismometer pit (a 12" diam. sewer pipe vertically embedded in concrete set on bedrock), erection of the radio receiving aerial and the setting

up of the tape recorder. In the evening a fault was found in the radio receiver which could not be cured ashore, but all other equipment functioned correctly.

Early the following morning (26th Jan.) the seismometer was finally installed in the pit and the station, minus radio receiver, set in operation. Immediately H.M.S. Endurance returned the radio was transferred to the ship for repair whilst the remainder of the party were evacuated in the steadily worsening weather conditions. Later that morning the weather eased slightly and permitted a short landing to install the repaired radio receiver.

H.M.S. Endurance then sailed due west from Southern Thule and the magnetometer was streamed with the intention of obtaining a profile across the southern end of the East Scotia Sea spreading centre. Unfortunately in the early hours of the 27th Jan. the magnetometer failed and could not be repaired before the end of the proposed line. The ship arrived at the B.A.S. base on Signy Island in the morning of 29th Jan. and C. Brett disembarked to rejoin R.R.S. Shackleton on 31st Jan.

Grateful thanks are extended to Captain Bearne, and the ships company for their fullest cooperation throughout this project.

End_756_magnetics