

easily transfer control from one to the other using keyboard commands.

Before deciding to use the on-line data acquisition facility, a prospective user must be aware of time and memory capabilities and limitations. The University of California, Davis, service group can be of help in determining what options are available and should be contacted far in advance of serious design of an experiment so that the needs of the user can be evaluated and the right decision made.

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Antarctic Marine Geology Research Facility, 1975-1976

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Curatorial activities

The Antarctic Marine Geology Research Facility and Core Library, Florida State University (FSU), in 1975-1976 continued to receive and process new sedimentary material, curate the collections and distribute samples, and support research by resident and nonresident investigators. Further physical improvements were made to the facility. Staff participated in shipboard collection from ARA *Islas Orcadas* (formerly USNS *Eltanin*) and *Glomar Challenger*.

From 1 July 1975 to 30 June 1976, 2,811 piston core, 486 trigger core, and 30 phleger core samples were distributed from *Eltanin* materials. Piston core samples were taken from 176 individual cores representing 32 of the 55 cruises; trigger core samples were removed from 377 individual cores representing 38 cruises, and phleger core samples were from 21 individual cores representing 5 cruises. Also distributed

from the *Eltanin* collection were 7 grab samples from 6 stations aboard 6 cruises. This number of *Eltanin* samples distributed is 58 percent of the *Eltanin* total for 1974-1975 (Cassidy and Wise, 1975).

Non-*Eltanin* sampling increased in 1975-1976 as follows: 378 piston core samples were distributed from 18 cores taken aboard cruise 7 of *Islas Orcadas*; 536 piston core samples from 15 cores, and 77 trigger core samples from 11 cores were removed from cores taken aboard the 1976 cruise of USCGC *Glacier* in the Ross Sea; 25 additional samples were distributed from 25 trigger cores taken aboard three Coast Guard ships (*Atka*, *Burton Island*, and *Glacier*) that participated in the *Deep Freeze '62* expedition in the Ross Sea; and 112 samples were distributed from 9 piston cores and 16 phleger cores obtained during the 1968, 1969, and 1970 International Weddell Sea Oceanographic Expeditions. Samples distributed from Dry Valley Drilling Project (DVDP) cores totaled 1,751 from seven holes. One *Anton Brun* dredge sample was distributed.

The total 6,214 samples distributed were received by 42 investigators representing 22 institutions in five countries. This total is 32 samples more than the samples total for the 1974-1975 reporting period, and maintains the 289 percent increase in sampling effort by the facility over that of 1973-1974 (Cassidy and Wise, 1974). These sample totals do not include miniscule amounts of core material used to prepare, for example, smear slides.

The staff developed a technique (Elston *et al.*, in preparation) for removing oriented, paleomagnetic sample "plugs" from frozen, sedimentary DVDP core. The technique involves precooled, diamond-bit drilling of the ice-cemented sediments using compressed air as a drilling "fluid" (figure 1). Details will be reported following refinement of the method.

Major acquisitions included 43 piston cores and 28 trigger cores, together with one dredge sample taken during *Islas Orcadas* cruise 7 in the Falkland (Malvinas) Plateau (Warnke *et al.*, 1976). The longest recovered piston core was 1,691 centimeters; the shortest, 10 centimeters; the average length, 655 centimeters. This average length is within 20 centimeters of the average core length of all *Eltanin* piston cores (Cassidy, 1973). Trigger core lengths ranged from 12 to 56 centimeters.

Also received were 66 meters of sediment core taken during the 1976 cruise of *Glacier* in the Ross Sea. Fifteen piston cores and 14 trigger cores were recovered. Completing the receipt of DVDP material were 78 meters of drill core from holes 14 (North Fork) and 15 (McMurdo Sound).



Figure 1. Frozen Dry Valley Drilling Project core segment being dry-drilled for paleomagnetic sample plug by Don Elston, U.S. Geological Survey.

In preparation is a volume of core descriptions to be published in the FSU Sedimentology Research Laboratory Contributions Series. The volume will contain a modified Deep Sea Drilling Project (DSDP) format for lithologic descriptions of the *Islas Orcadas* core and dredge sediments; a list of all *Eltanin* cores giving cruise and core number, longitude, latitude, water depth, and trigger core recovery; yet-unpublished descriptions of cores from *Eltanin* cruise 55; and maps of each *Eltanin* cruise showing core recovery and locations. Figure 2 illustrates the core description format.

The curatorial work described above is supported by National Science Foundation contract C-1059.

Research

Faculty and students associated with the FSU Antarctic Research Facility studied the growing collection of southern ocean drill and piston cores, particularly those obtained from aboard

Islas Orcadas, *Eltanin*, and *Glomar Challenger*. Emphasis was on micropaleontological and sedimentological study of the southern ocean's climatic and oceanic history as recorded in the marine sediments.

Two members of the facility were aboard *Islas Orcadas* during cruise 7 (Warnke *et al.*, 1976), which surveyed the Falkland (Malvinas) Plateau region in the area of DSDP holes drilled the previous year. The broad piston core coverage by *Islas Orcadas*, together with the deep penetration by *Glomar Challenger* and supplemental core acquired during early *Eltanin* cruises, has enabled a comprehensive approach to the history of the Plateau region (Ciesielski and Wise, 1976). An important result has been the establishment of high-latitude, biostratigraphic zonations for major microfossil assemblages found in this part of the world. These zonations are particularly useful; older sediments obtained at the drill sites date back to the Jurassic. Biostratigraphies have been established for diatoms (Gombos, 1976a, 1976b, 1976c), calcareous nannofossils (Wind and Wise, 1975, 1976; Wise and Wind, 1976), and silicoflagellates (Busen and Wise, 1976). Other studies have helped to work out the regional biostratigraphy and history of sections such as the Bellingshausen Sea, adjacent to the Plateau (Weaver, 1976; Weaver *et al.*, 1976).

These stratigraphic studies have served as the basis for paleoenvironmental analysis using various microfossil groups ranging from onychites (Wind *et al.*, 1976a, 1976b) to coccoliths (Haq *et al.*, 1976). They have enabled the correlation of major paleoenvironmental events such as carbonate compensation fluctuations and/or eustatic sea level changes in regions both adjacent to (Constans and Wise, 1975) and far removed from (Peck, 1976) our study area. Contributions to southern ocean geochemistry and sedimentology by four members of the Facility appear in Udintsev (1975).

To integrate regional and paleoenvironmental analyses of southern ocean sediments with detailed micropaleontologic and sedimentologic studies, John B. Anderson (Rice University) completed research on the Weddell Sea (Anderson, 1975a, 1975b, 1975c, 1976). Dr. Anderson and students Richard Wheeler and Susan Shepley were in residence at the Antarctic Research Facility for the 1975 summer quarter. With resident researchers, this group studied antarctic glacial marine sedimentation.

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ISLAS ORCADAS PC 0775-13

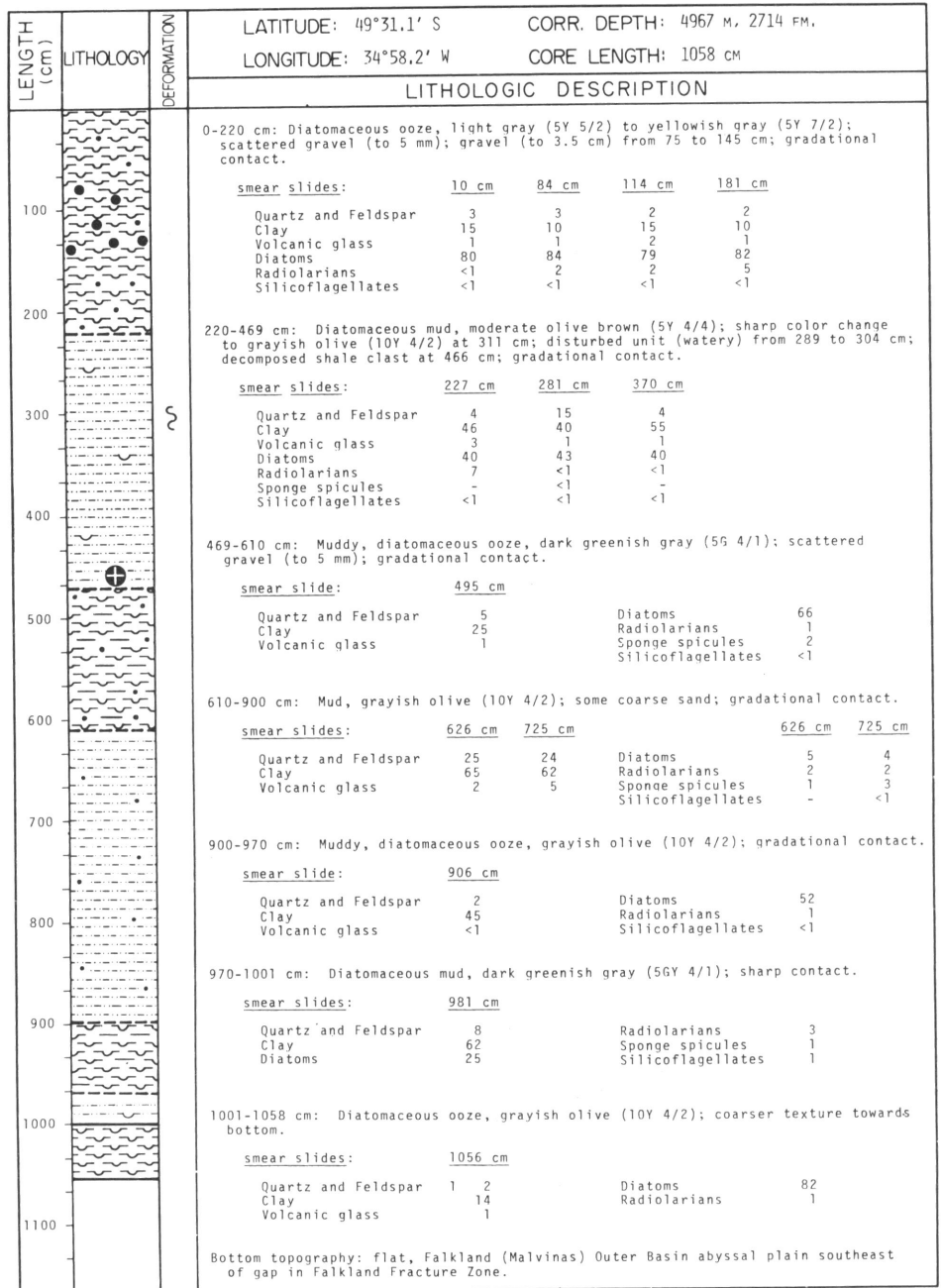


Figure 2. Core description format for Islas Orcadas piston core 0775-13; standard Deep Sea Drilling Project lithology symbols have been used. The completed volume of core descriptions will include explanation of symbols, descriptive techniques, smear slide analyses, and other procedures and criteria used in the organization of the data.

Logged by: Kaharooddin, Campbell, MacKenzie, DeFelice

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Ice core storage and information exchange

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Our facility operates central and satellite ice core storage libraries and a curatorial and information exchange related to the cores, most of which we recovered in National Science Foundation-sponsored field research in the polar, subpolar, and temperate glacier regions. The facility arranges for and assists in proper transport of frozen samples from the field to the central location (figure) or to a warehouse.

On receipt, an ice core is inventoried and processed using established handling procedures. First, all pertinent field data and stratigraphic logs are checked and compared with the samples received to assure accuracy and to provide a datum for future studies. These data are placed in a computerized data bank. All ice cores recovered in Greenland and Antarctica since 1971 have individual data banks. For a list of the ice core inventory up to the summer of 1974, see Langway (1974); the table lists core received since. The data banks contain primary stratigraphy and available secondary core data generated to date on each core. The headings list: specific geographical and meteorological conditions for each site, type core drill used and whether the borehole was fluid filled, depth of the coring and core diameter, date of core recovery in the field, and any unusual cir-