4. Discussion of requirements and issues

The issues dealt with in this section relate directly to achieving the scientific goals of the Cape Roberts Project and the requirements of the proposed science and science operations. Logistic and drilling operations were not a concern of the Columbus workshop and have been taken by the U.S. community as a given. Any logistic requirements discussed here relate directly to achieving the scientific goals as perceived by the U.S. science community. The suggestions and viewpoints expressed are those of the U.S. scientists who attended the Columbus workshop. The issues may be specific to U.S. participation in the Cape Roberts Project, but may also be directly relevant to the international collaborative aspects of the project.

4.1 PROJECT OPERATION AND SCIENCE

1) It is expected that the project might follow the Ocean Drilling Program style of operation as far as possible;

- That specialist investigations (e.g., magnetostratigraphy, biostratigraphy, etc.) which contribute to the project during drilling in the Spring of 1996 and 1997 be conducted like ODP shipboard investigations at the Crary Science and Engineering Center (CSEC), McMurdo Station; and that scientists using these facilities include both U.S. personnel and participants from consortium countries.

- U.S. scientists agreed that it is essential to describe the core as soon as possible after recovery. This will allow those describing the core to see it in pristine condition and allow immediate feed-back to the Project Science Coordinator and Chief Driller on aspects of the geology of the hole and prediction of future drilling conditions.

- Similar levels of scientific and support staffing as in the Ocean Drilling Program are likely to be needed to achieve the project requirements.

- Appointment of 2 co-chief scientists to oversee the drilling, science, and publication of results from each hole. This will ensure good communication between different science groups and the timely production of initial characterization volumes.

- A staff scientist will probably be required to ensure science operational requirements are met at the CSEC.

- An Initial Report which details the results of the drilling activities in both seasons should ideally be prepared by the international science group while based at McMurdo Station. This report should be available to contributing scientists in draft form before they return to home institutions. A final version should be prepared soon after.

2) The Project science should have 3 phases;

- Each hole requires a preliminary report/initial characterization. This should include science reports and findings, core logs and description, and an initial interpretation and synthesis.

- This should be followed by a scientific results phase, which should include scientific findings, work evolving from the initial core observation and characterization, and new findings based on sample and laboratory work. Papers should focus on individual disciplines, specific events, and synthesis.

- The 3rd phase should be a synthesis of data from all holes. The International Steering Committee should guide and collaborate with the Project Science coordinator to achieve this. They should respond as far as possible to requests and proposals volunteered by international contributing scientists.

3) Proper procedures, documentation, protocols, manuals, job descriptions and responsibilities should be prepared and agreed on ahead of time to ensure thorough and reliable scientific results.

4) It is important to have a curator on-site overseeing sampling and fully documenting the treatment and sampling of the core. A curation and sampling policy should be prepared in advance and perhaps specific persons can be appointed to sample the core for all requirements under the direction of the co-chief scientists. All
paleontological type specimen material recovered should be reposited in an internationally renowned institution for the availability of all.

5) Chronology and timescales to be used in the project need to be standardized between disciplines and scientists.

6) The following disciplines are thought to be essential to the initial characterization of the core/drillhole:

- stratigraphy
- sedimentology
- paleontology
- biostratigraphy
- magnetostratigraphy
- palynology
- organic geochemistry
- down hole geophysics

The importance of these various disciplines are expected to vary between drillholes and ages of strata recovered. Because of the bearing this may have on selection of scientific personnel and co-chief scientists, it is suggested that the primary logistics option be to drill the most distant hole first and recover the younger strata followed by successively older strata and closer drilling sites.

7) The northern hemisphere half of the recovered core should be stored at the Antarctic Core Storage Facility, Florida State University. This facility has a long history in storing, curating, and overseeing sampling of Antarctic core materials.

8) The ISC should be responsible for approving all sample requests and in protecting the concerns of consortium member countries and their scientists.

9) Pre-drilling and post-drilling meetings will be essential in preparing scientists for the assigned tasks.

10) An education component in the form of a McMurdo-based symposium or course for graduate and advanced students should be considered.

11) The project as a whole might establish review procedures so that it can be easily accountable to the national programs and funding agencies that are supporting it.

4.2 CAPE ROBERTS PROJECT SCIENCE FACILITIES

1) The U.S. science community recognizes four venues where Cape Roberts Project scientific research will take place:

- Drillsite science; involving all initial measurements of core recovery and all down hole and site experiments and observations
- Cape Roberts Camp science; involving mainly the initial description and aspects of science necessary for feedback to the drillers
- Cravy Science and Engineering Center (CSEC), McMurdo Station; Initial characterization and documentation science, involving all activities deemed a necessary part of the initial characterization
- Consortium member countries home laboratory investigations; involving all follow up and home/sample based scientific work

2) It is accepted that drillsite science activities will be overseen by the Project Science Operations Manager (Mr. Alex Pyne). It is anticipated that Mr. Pyne will also oversee other drillsite science operations, including gas geochemistry and down-hole geophysics. The drillsite facility will need to provide space for 24 hour core recovery and processing, 24 hour whole core magnetic susceptibility measurement, 24 hour gas geochemical monitoring, and limited time for down-hole geophysics set up and measurement. Photographic and computing facilities will be essential to correctly document and record all this information and allow its immediate availability to the Cape Roberts and McMurdo science operations.

3) The camp at Cape Roberts should support a laboratory facility for the core logging, and observational sedimentology and stratigraphy. It is expected that this will complement drilling and be a 24 hour operation. Photographic and computing facilities should be on hand.

4) We expect that most of the initial characterization science will take place at the CSEC, McMurdo Station. Because of contamination issues, the 24 hour nature of operations and the extent of sample material to be processed, the following space is suggested as a minimum to achieve the objectives of the Cape Roberts Project:
Operational, curatorial and archival

- Laboratory for all sampling of core in controlled environment. Requires dust removal, water, compressed air and electrical outlets
- Layout space for observation and further core description. Requires extensive table space, and lighting
- Sampling database facility. Requires electrical outlets
- Briefing on core and core logs and observations on arrival and decision on sampling strategy. Requires display boards

Sedimentology and Petrology (Igneous, metamorphic, and sedimentary)

- Thin section and rock preparation laboratory including saw, sectioning, grinding and polishing facilities. Requires water and electrical outlets

Paleomagnetism

- Laboratory for magnetic measurement and data processing. Requires magnetic shielding, water for cooling, electrical outlets, and extensive equipment bench space

Geochemistry

- Laboratory for geochemical measurements and monitoring. Requires water, electrical outlets, fume hood, chemical, and equipment bench space

Paleontology

- Foraminifer laboratory for processing samples, preparing faunal concentrations, and executing both benthic and planktic foraminiferal characterization studies of the core. Requires water, fume hood, chemicals, electrical outlets, and workbench space
- Siliceous micropaleontology laboratory for processing samples, preparing faunal concentrations, and executing diatom, silicoflagellate, and radiolarian characterization of the core. Requires water, fume hood, chemicals, electrical outlets, and, workbench space
- Calcareous Nannofossil laboratory for processing samples, preparing faunal concentrations, and executing calcareous nannofossil characterization of the core. Requires water, fume hood, chemicals, electrical outlets, and workbench space
- Palynology laboratory for processing samples, preparing faunal concentrations, and executing dinoflagellate and pollen characterization of the core. Requires water, fume hood, chemicals (especially Hydrofluoric acid), electrical outlets, and workbench space

General facilities

- Microscope/optical facility room with specific petrologic, binocular, reflected/transmitted light microscopes, multi-function accessories and specialist photographic facilities, in a clean space. Requires clean air, lighting, electrical outlets, bench and, storage space
- Reference, database, library facility, and resource space for general reference and communication activities of the entire project. Can also double as Cape Roberts conference space for project meetings and updates. Should include continuously updated bulletin board for all project progress (from individual labs and co-chief scientists and project Science coordinator). Requires lighting, electrical, display cases, bench space, and seating for 10 or more persons.
- Darkroom facility and technical support; Requires bench space, electrical outlets, water, chemicals, and specialist lighting
- Computer support facility; Requires clean air, lighting, electrical, bench space, storage space
- Technical production facility; for report compilation and production, including graphic artist, technical editor, database administrator, and technical support space and staff. Requires electrical outlets specialized work bench and space, 1 large or several smaller offices, with electrical outlets
- Communications space is essential for communication between all elements of the project. Requires electrical outlets, technical bench space, phones, radio and computing links
- McMurdo operations center; office space for scientists, including especially dedicated
Co-chief scientist space, staff scientist space, and support staff space. Requires several smaller offices with electrical outlets

- Staging space: for receiving, staging, and shipping of equipment and supplies before during and after drilling. Requires lighting and access to outside
- Storage space, for core storage. Requires constant 2 degree centigrade temperature

5) Laboratory space should be designated for specific scientific tasks and disciplines. The project cannot afford the risk of cross-contamination, sample mix-up and chemical mix-up.

4.3 PERSONNEL

1) From the U.S. point of view, the issues related to personnel requirements are complex and are mainly driven by:

- Individual country requirements including science operations and funding procedures
- Proportional financial contributions of consortium member countries
- The required phasing of the Cape Roberts Project over the next 5-6 years as discussed in earlier sections of this report
- The expectation that material recovered by drilling will be different depending on the location and age of the strata in different drillholes. This directly impacts on scientific interests related to specific lithologic or time constraints
- Specific technical support requirements to run and service scientific equipment
- The 3 distinct locations of science facilities for different aspects of the project (drill site - Cape Roberts camp - Crary Science and Engineering Center). These are essentially driven by logistics, physical space, and existing facility restrictions
- The required 24 hour drilling operations and the limited time window for complete field operations of the project
- The necessity of timely and rigorous production of the initial reports of drilling

The following science and science support personnel are suggested as a minimum to achieve the scientific characterization goals outlined above:

2) Senior scientist roles need to be established to oversee the science and ensure that the project meets its objectives at the basic levels. Responsibilities might include synthesizing, decisions on priorities, compilation and production of initial reports for each drillhole. The following positions of responsibility already exist or are suggested:

**Project Science Coordinator** - Position already established. The role is to help develop and prepare the science program for the entire Cape Roberts Project and institute and carry out the science plan during drilling. Reports directly to the ISC.

**Co-chief scientists** - it is suggested that two experienced scientists take responsibility for each drillhole, assist the Project Science Coordinator in executing the science program, and deal directly with science issues related to production of the initial reports. It is suggested that the co-chief scientists be responsible for editing and production of the "initial characterization reports" for each drillhole. They should also be responsible for day to day science issues, communication, and direction. They should report to the Project Science Coordinator and the ISC. It is expected that the co-chief scientists will have other science responsibilities. A suggested requirement is that, for each drillhole, one co-chief be a paleontologist and the other a sedimentologist and at least one be permanently based at the CSEC, McMurdo Station.

**Project Science Operations Manager** - Position already established. Responsible for organizing core processing equipment and personnel, safety, monitoring at the drillsite, and liaising with the drilling team on down-hole logging. The Project Science Operations Manager should be responsible to the Project Science Coordinator and the co-chief scientists.

**Staff Scientist** - it is suggested that a position be established to oversee the set-up, operation, organization and function of the Crary Science and Engineering Center (CSEC). The staff scientist should oversee all equipment and space requests and ensure that the facility is functional for the scientific requirements of the drilling program. The staff scientist should also liaise directly with the U.S. program contractor responsible for shipping, CSEC space, supplies, facilities and operations, and liaise with other national programs to ensure all scientific requirements are met where possible. This person should be a U.S. scientist operating with USAP. The staff scientist might also contribute to the scientific research objectives and requirements of the program in his or her field.
3) **Scientific disciplines** - The following science disciplines are suggested as necessary, and given the objectives and time constraints minimum personnel numbers are also suggested (no consideration is given as to the individual country contributions, suggested minimum numbers and requirements only are specified):

- Curation and Archiving (2 scientists + 2 technicians) - responsible for maintaining core in best possible condition, sampling for all disciplines, logging of samples and other features, maintaining a complete database on core characteristics and work in progress and completed. Scientists responsible for curation, sampling and archiving should be sedimentologists and may have other science contributions, for example in logging, description, facies analysis, sedimentary petrology, and lithostratigraphic investigations. They should also be responsible for briefing other PI's and scientists on new core as it arrives at McMurdo. - can rotate with Cape Roberts sedimentologists
- Down hole geophysics (2 scientists + 2 technicians) - mostly at drillsite
- Foraminiferal paleontology (2 scientists + 2 technicians) - at CSEC, benthics and planktics
- Geochemistry (1 scientist +2 technicians) - 1 technician at drillsite, others at CSEC
- Nannofossil paleontology (2 scientists + 2 technicians) - at CSEC
- Paleomagnetism (2 scientists + 2 technicians) - 1 technician at drillsite, others at CSEC
- Palynology (2 scientists + 2 technical) - at McMurdo
- Petrology (1 scientist + 1 technician) - at CSEC
- Sedimentology (4 scientists + 1 technician) - at Cape Roberts Camp, can rotate with CSEC sedimentologists
- Siliceous paleontology; radiolaria, diatoms, silicoflagellates (2 scientists + 2 technician) - at CSEC

It is suggested that technicians, where possible, be senior graduate students from the participating consortium countries.

4) **Technical production staff are needed to help with initial reports production and science writing:**

- 1 Technical editor and database administrator
- 1 Graphic illustrator
- 1 Photographic assistant

- 2 Support staff (data entry and secretarial)

It is suggested that these people be seconded from existing similar positions in different consortium country institutions and universities.

5) It is anticipated that laboratory facility support and consumables will be provided by the U.S. program operator as part of the U.S. share contribution to the project

6) It is important that contributions in most disciplines involve scientists from several countries

### 4.4 PUBLICATION

1) Three phases of organized publication are expected to result directly from the drilling:

An initial report on the core characterization and immediate science findings for each of the four proposed drillholes should be prepared. It is expected that this will be produced in draft format at the end of each drilling season, before contributing scientists return to their home institutions. Contributors should, on return to their home institution, complete final sample measurements vital to the initial characterization of the core, and prepare final drafts of their initial science findings. These could be presented, manuscript in hand, at a post-drilling meeting scheduled about 3 months after return from Antarctica. The volume must be available before the next phase of drilling. It is expected that this volume will be issued by an established, peer reviewed, journal directly related to the science proposed (such as the Antarctic Research Series of the American Geophysical Union).

Some 12 to 18 months after each of the drilling seasons a science meeting might be convened for presentation of scientific results originating from initial characterization studies and/or sample-based laboratory studies.

At appropriate stages, syntheses of major findings should be directed by the project coordinator, chief scientists and appropriate authors to major journals such as *Science, Nature, Geology*, etc.

2) It is vital that all scientific findings and reports emanating from the Cape Roberts Project be fully peer reviewed and presented in mainstream scientific forums to ensure credibility and integrity in the scientific community as a whole.
3) The ISC representatives should make a list of significant national and international meetings at which the findings from the Cape Roberts Project should be presented.

4.5 DOCUMENTATION

1) It is suggested that a complete flow diagram be prepared to establish the treatment of the core and sub-samples, from recovery at the site to repository in the designated home institutions.

2) A comprehensive policy should be established for core treatment, handling, storage and sample distribution procedures. This could be modeled on the policy established for the Dry Valley Drilling Project (Cassidy, 1981, reproduced as appendix 6.7 here). Because of the significance of the Cape Roberts Project and its proposed findings, proper core curation, handling and repositing of type sample material is vital.

3) Because of the international and multidisciplinary activities proposed by the Cape Roberts Project consortium member scientists, all procedures, samples, treatments, and acquired data should be recorded and reported in some standard format, which can be compiled as a database and made available to all interested parties.

4) It is suggested that manuals for required activities should be prepared in advance, so that collaborating scientists can agree on the same formats, and so that other scientists can readily assimilate and understand the findings and significance of related science. Such manuals could be similar to the ODP and CIROS efforts and might include the following:

- Core logging and description manual
- Core handling, treatment and storage procedures
- Core sample distribution policies. As core is received at McMurdo, decisions will need to be made as to what is sampled and why and all PFs need to be involved in this process.
- Standardization of the reference materials to be used by scientists. For example, chronology and timescales used by the different investigators, basic reference sets, standards, and type material used in scientific investigations need to be standardized.
- All equipment and software operation to be used in conjunction with the project. Much of this will be available with specific equipment items, but as most equipment will have many users (some more familiar than others) operational procedures and requirements will need to be clearly documented and available.

5) Clear advance documentation of international and national collaborations is highly desirable. This will facilitate co-operation and prevent misunderstanding.

6) All of the documentation requirements, sample requests and treatment procedures should be approved by either one or all of the ISC, Project Science Coordinator, Co-chief Scientists, or someone they elect to be responsible.

4.6 COMMUNICATIONS

1) It is important that good communication links be established between the three Antarctic Cape Roberts Project science facilities (drill site - Cape Roberts camp - CSEC). This requires both good physical communication facilities (manned 24 hours during the drilling window) and clearly defined points of contact and responsibility for specific issues and science groups.

2) In Antarctica, a clearly defined administrative link between science operations, the Cape Roberts Project operator, National Science Foundation, the U.S. Antarctic Program operator, and other consortium countries national programs will be highly desirable.

3) Responsibility for the transportation and supply of materials and equipment between home institutions and McMurdo Station and between McMurdo and the Cape Roberts Project science facilities will need to be clearly defined.

4) A communication procedure for dissemination of Cape Roberts Project findings and progress should be established and maintained. Such activities might include:

- Weekly progress reports written by the senior scientists on the project. These need to be circulated to all national programs involved in the project and posted on bulletin boards available to interested personnel (e.g. at various
points in McMurdo, Scott Base, and the Christchurch deployment center).

- Clear points of contact for public relations. This might involve regular contact with the media and explanation of progress to visitors, DV's, the Antarctic community, and National programs. Each consortium member country will likely have their own methods and requirements. However, some form of standardization is suggested to maintain the Project's visibility.

5) The McMurdo earth science facility might include a communications center to easily accommodate all the above requirements.

4.7 U.S. INVOLVEMENT ISSUES

1) The Crary Science and Engineering Center (CSEC) at McMurdo Station should become the McMurdo earth sciences facility for the duration of the Cape Roberts Project. The window of operation related to drilling activities is expected to be 10-12 weeks each season (1996 and 1997) and will probably involve some 40 scientific staff, 22-24 rooms, and approximately 5000 square feet of space. The operation is expected to be something on the order of an ODP shipboard scientific operation. A staff scientist could be employed to prepare, oversee, and ensure science operational requirements at McMurdo Station are met. The CSEC will need to be set up in advance of the project and for each drilling season. But, given the timing of the "drilling window" it is anticipated that the project should be finished at McMurdo by the end of January each season.

2) The Antarctic Research Series of the American Geophysical Union is an important publication in the field of Antarctic Research and should be considered as an outlet for publishing initial and later proceedings of project. It meets all the requirements specified and has a good "turn around time".

3) The U.S. national coordinator (Peter Webb) and head of earth sciences OPP (Scott Borg) should meet with NSF and the U.S. contractor about the U.S. science facilities to be used for the project (specifically the requirement of space, function and equipment), The Antarctic Core Storage repository requirements, and specific resource materials.

4) The U.S. grant proposal funding process is time-consuming and labor intensive, and requires very detailed justification of science and facility logistics. We need to ensure that this process does not leave the U.S. scientists behind in access to the project and core material.

5) It is assumed that the U.S. will provide berthing for all scientists working in the McMurdo earth science facility as part of their share contribution to the project.

6) It is assumed that the U.S. Antarctic program contractor will provide requested space and laboratory support to the project as required.

7) NSF might delegate an observer to the project and various aspects of the project, especially in the technical and logistic support side, so as to ensure that the U.S. program gains experience in the requirements of scientific drilling. This will allow future U.S. drilling ventures to take advantage of experience gained by Cape Roberts Project drilling.
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## 6. APPENDICES

### 6.1 REPORT CONTRIBUTORS AND WORKSHOP PARTICIPANTS

Addresses and affiliations provided in Statements-of-interest herein

#### 6.1.1 ATTENDED WORKSHOP & SUBMITTED STATEMENT-OF-INTEREST

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
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<tbody>
<tr>
<td>Rosemary Askin</td>
<td>Paleontology</td>
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<tr>
<td>Alan Cooper</td>
<td>Geophysics</td>
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<tr>
<td>David Elliot</td>
<td>Tectonics / Structural Geology</td>
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<tr>
<td>Gunter Faure</td>
<td>Sedimentary geochemistry</td>
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<tr>
<td>Paul Fitzgerald</td>
<td>Fission-track / Structural geology</td>
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<td>Patrick Goldstrand</td>
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<td>Charles Hart</td>
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<td>David Harwood</td>
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<td>Mary Holmes</td>
<td>Sedimentary mineralogy</td>
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<td>Richard Jarrard</td>
<td>Downhole geophysics</td>
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<td>Scott Ishman</td>
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<td>Philip Kyle</td>
<td>Volcanic geology</td>
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<td>Wes LeMasurier</td>
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<td>William McIntosh</td>
<td>Isotope dating of volcanic rocks</td>
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<td>Richard Levy</td>
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<td>Michael Prentice</td>
<td>Stable isotopes</td>
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<td>Reed Scherer</td>
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<td>Sally Shoop</td>
<td>Downhole structural geology</td>
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<td>Kenneth Verosub</td>
<td>Magnetostratigraphy of sediments</td>
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<td>Detlef Warnke</td>
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<td>Terry Wilson</td>
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<td>Sherwood Wise</td>
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<td>John Wrenn</td>
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### 6.1.2 Did not Attend Workshop but Submitted Statement-of-Interest

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Lou Bartek</td>
<td>Acoustic stratigraphy</td>
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<tr>
<td>George Denton</td>
<td>Geomorphology</td>
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<td>Brian Huber</td>
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<td>James Kennett</td>
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<td>Michael Wizevich</td>
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### 6.1.3 Attended Workshop

<table>
<thead>
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<tbody>
<tr>
<td>Scott Borg</td>
<td>NSF Polar Programs, Igneous geology / Petrology</td>
</tr>
<tr>
<td>Paul Berkman</td>
<td>Biology / Paleobiology</td>
</tr>
<tr>
<td>James Collinson</td>
<td>Stratigraphy / Sedimentology</td>
</tr>
<tr>
<td>Matt Currey</td>
<td>Micropaleontologist (Graduate student, OSU)</td>
</tr>
<tr>
<td>Fred Davey</td>
<td>Chairman International Steering Comm. CRPNZ,</td>
</tr>
<tr>
<td>Kenneth Jezeck</td>
<td>Geophysics/Glaciology</td>
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<tr>
<td>Andrew Schuckstes</td>
<td>Micropaleontologist (Graduate student, OSU)</td>
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<tr>
<td>Marilyn Kressel</td>
<td>Micropaleontologist (Graduate student, OSU)</td>
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<tr>
<td>Jeff Snyder</td>
<td>Quaternary geology (Graduate student, OSU)</td>
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6.2 COLUMBUS WORKSHOP AGENDA

CAPE ROBERT PROJECT-UNITED STATES (CRPUS)
Workshop 6-7 March 1994
Byrd Polar Research Center
The Ohio State University
Columbus, Ohio

AGENDA

Saturday 5th March
Travel to Columbus

Sunday 6th March

0900-0930 INTRODUCTORY REMARKS
   Peter Webb - Workshop Convener
   Ken Jezek - Director, BPRC / OSU
   Scott Borg - Office of Polar Programs / NSF
   Fred Davey - Chair, CRP / Int. Steering Committee

0930-1000 SESSION 1: OBJECTIVES OF THE CRP WORKSHOP
   Peter Webb - Workshop Convener

1000-1030 --------Break--------

1030-1200 SESSION 2: GEOLOGICAL & GEOPHYSICAL REVIEW AND PREVIEW
   Chair: Peter Webb
   * Structural setting & tectonic history of the Antarctic plate during the Cretaceous & Paleogene (Elliot)
   * Structural setting and tectonic history of the Transantarctic Mountains & Victoria Land Basin during the Cretaceous and Paleogene (Fitzgerald)
   * Cretaceous-Cenozoic igneous geology of the Transantarctic Mountains and West Antarctic Rift basins (Kyle)
   * Cretaceous-Cenozoic stratigraphic record of the Transantarctic Mountains & Victoria Land basin (Harwood)
   * Geophysical databases for Ross Sea basins & Cape Roberts Project drllsite surveys (Cooper)

1200-1300 --------Lunch--------

1300-1500 SESSION 3: DRILLING TECHNOLOGY, LOGISTICS, SCHEDULES, ON-SITE & McMurdo Lab Activities, Core Sampling & Curation, Collaboration, Budgets, Proposals, Publication Etc
   Panel Leaders: Borg, Davey, Harwood,
                 Kyle, Webb, Wilson

1500-1530 --------Break----------

1500-1730 SESSION 4: SPECIALIST GROUP MEETINGS

A. Geophysics, Tectonic History, Structural Geology, & Igneous Geology
   (Leaders: Cooper, Elliot, Fitzgerald, Kyle)

B. Stratigraphy, Sedimentology, Basin History, Mineralogy, Sedimentary
   Geochemistry, Downhole Geophysics, & Magnetostratigraphy
   (Leaders: Powell, Verosub, Wilson)

C. Marine-Terrestrial Paleontology & Biostratigraphy, Basin History, Isotopes,
   Paleoclimate, & Paleoceanography
   (Leaders: Askin, Harwood, Wrenn)

1730-1900
   ------Happy hour and visits around BPRC------

1900-
   --------- Dinner off campus-----------

Monday 7th March

0900-1030 SESSION 5: PLENARY: INDIVIDUAL & SPECIALIST GROUP PRESENTATIONS &
   DISCUSSIONS

   Group A (Chair: Kyle)
   Group B (Chair: Wilson)
   Group C (Chair: Harwood)

1030-1100
   ---------Break---------

1100-1200 SESSION 6: PLENARY: INDIVIDUAL & SPECIALIST GROUP PRESENTATIONS &
   DISCUSSIONS

   Groups A, B, C continued

1200-1300
   -------Lunch-------

1300-1500 SESSION 7: PLENARY: INDIVIDUAL & SPECIALIST GROUP PRESENTATIONS &
   DISCUSSIONS

   Groups A, B, C continued

1500-1530
   ---------Break---------

1530-1730 SESSION 8: SUMMARY OF WORKSHOP, DISCUSSION AND QUESTIONS
   Chair: Webb

1800
   ---------Dinner off campus---------
6.3 INTERNATIONAL STEERING COMMITTEE

Fred Davey,
Institute of Geological and Nuclear Sciences Ltd.,
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NEW ZEALAND

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Dipartimento di Scienze della Terra,
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British Antarctic Survey
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6.4 U.S. NATIONAL STEERING COMMITTEE

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Peter-Noel Webb (Chairman)
Department of Geological Sciences
The Ohio State University
Columbus, OH 43210

Sherwood W. Wise
Department of Geology
Florida State University
Tallahassee, FL 32306
Antarctic Climate and Tectonic History: The Cape Roberts Project

Scientists and logistics experts from Germany, Italy, New Zealand, the United Kingdom, and the United States met from September 21 to 23, 1993, near Washington, D.C., to discuss management, logistics, and science objectives of a proposed international stratigraphic drilling project.

The project plans to core 1500 m of strata beneath the western Ross Sea off Cape Roberts, where shipboard geophysical surveys indicate that dipping sedimentary strata occur close to the seafloor beneath a thin blanket of much younger sediments (Figure 1). These sediments include the oldest sedimentary sequences in the Ross Sea and are interpreted to be from 300 to more than 1000 m.y. old. No rocks of this age are known to crop out in the Ross Sea-Transantarctic Mountains region or other parts of east Antarctica.

The drill core obtained will form the basis for wide-ranging and detailed geological studies. A prime objective will be the recovery of paleoclimatic data from the Antarctic continent for the early Cenozoic and Cretaceous. The relationship between the glacial/deglacial history of Antarctica and global sea level oscillations during this interval of time will be of special interest. A further objective involves determination of the age, type, and style of marine and/or terrestrial deposition close to the rifted margin of the Ross Sea embayment. This would provide information on the early rifting history of this part of Gondwana and the formation of rift mountains and basins. Chronostratigraphic controls provided by study of the drill core will be linked to the extensive seismic sequence data base for the western Ross Sea, which is used to constrain the history of Ross Sea rifting and to test links between rift margin uplift and basin subsidence.

The project is challenging in its logistical and drilling demands as well as in its science scope. For 2 months during each of the two drilling seasons, thirty-five drillers and scientists will be based at the Cape Roberts camp, 125 km northwest of the U.S. McMurdo Station and New Zealand's Scott Base on Ross Island. The four proposed 500-m deep drill holes will be located 10- to 20-km seaward of Cape Roberts in water depths of 100-500 m. Each hole will take about 20 days to drill and only two can be drilled during the annual 45-day springtime window, during which the fast ice is both thick and strong enough to support the drill rig. The use of sea ice as a drill platform was proven in 1984 and 1986 when the New Zealand Antarctic Programme drilled CIROS-2 and CIROS-1 from 2-m-thick fast ice in water depths of about 200 m, recovering high-quality core to as much as 700 m below the seafloor.

Program

The proposed project program for the next 4 years is as follows:

1993–1994: Site investigation and planning

1994–1995: Final site investigation and establishment of Cape Roberts camp

1995–1996: Drilling of sites 1 and 2, and preliminary core studies

1996–1997: Drilling of sites 3 and 4, site pullout, preliminary core studies, and commencement of detailed investigation of drill core obtained at all four sites

The logistic support and drilling requirements for the project are estimated to cost approximately $4 million and would be provided by the national Antarctic programs of the participating countries.

The overall responsibility for the Cape Roberts Project lies with the International Steering Committee (ISC), which comprises representatives from each participating country. Peter J. Barrett will be the project science coordinator. An operations and management group, with representatives from the national Antarctic programs of each country, will be responsible for oversight and allocation of resources. The New Zealand Antarctic Programme will manage the project for the international consortium.

Project Workshop

An NSF-sponsored workshop, convened by U.S. International Steering Committee representative Peter Webb, will be held at the Byrd Polar Research Center at The Ohio State University, March 7-8, 1994, to gauge the U.S. community's breadth of interest and to discuss the submission of proposals for the June 1, 1994, U.S. Antarctic Program deadline. Persons interested in attending this workshop or in receiving further information on the Cape Roberts Project should contact Peter Webb.

A project prospectus, Antarctic Stratigraphic Drilling Cape Roberts Project Workshop Report, can be obtained from the representatives named below. We welcome 1-page research statements of interest regarding drill core or site investigations. Please direct them to the appropriate ISC member and forward a copy to Peter Barrett. The science plan is under review and will be updated as research statements-of-interest are received.

Cape Roberts Project Representatives

International Steering Committee: Fred Davy, Institute of Geological & Nuclear Sciences Ltd., PO Box 30368, Lower Hutt, New Zealand; tel. 64-473-8206, fax 64-471-0797; e-mail swgfd@msg.gns.cri.nz

Maria Bianca Cita, Sezione Geologia e Paleontologia, Dipartimento di Scienze della Terra, Universita degli Studi di Milano, Via L. Mangiagalli 34, 120133 Milano, Italy; tel. 39-2-20692007; fax 39-2063836

Franz Tessensohn, Bundesanstalt fur Gewissenschaften und Rohstoffe, Stilleweg 2, D-3000 Hannover 51, Germany; tel. 49-511-643-7120; fax 49-511-643-2529; e-mail gavoex@atel1.hgr.dhp

Mike Thomson, British Antarctic Survey, High Cross, Madingley Road, Cambridge CB3 0ET, United Kingdom; tel. 44-223-41188; fax 44-223-42612; e-mail u.mtran@vax.nerc.bas.ac.uk

Peter Noel Webb, Department of Geological Sciences, Room 130 Orton Hall, The Ohio State University, 155 South Oval Mall, Columbus, OH 43210; 1-614-292-7285/7271; fax 1-614-292-7285/4967/7288; e-mail plwebbb@magnus.ac.ohio-state.edu

Project Science Coordinator: Peter J. Barrett, Antarctic Research Centre, Victoria University of Wellington, PO Box 660, Wellington, New Zealand; tel. 64-471-3536; fax 64-495-5156; e-mail pbarrett@kauri.vuw.ac.nz

Cape Roberts Project International Steering Committee

Webb, P.-N., EOS, Transactions of the American Geophysical Union, volume 75, number 1, January 4, 1994, copyright by the American Geophysical Union.
6.6 CAPE ROBERTS PROJECT; RECORD OF UNDERSTANDING OF PARTIES CONTRIBUTORS TO THE PROJECT

STRATIGRAPHIC DRILLING EAST OF CAPE ROBERTS IN SOUTHWEST ROSS SEA, ANTARCTICA 1994-1998

("CAPE ROBERTS PROJECT")

RECORD OF UNDERSTANDING OF PARTIES CONTRIBUTORS TO THE PROJECT

WASHINGTON
OCTOBER 1993
INDEX

I  Background
   Introduction ........................................... 1.1- 1.4
   Aims of Project ...................................... 1.5
   Project Phases ....................................... 1.6
   Project Extension ................................. 1.7
   Comprehensive Environmental Evaluation. .... 1.8- 1.9

II Purpose of Record of Understanding. .......... 2.1

II Project Management
   Management Structure. ............................. 3.1-3.10

IV Logistics Budget. .................................. 4.1- 4.7

V Science
   Project Science Plan ............................... 5.1- 5.2
   Sampling and Sample Distribution ................ 5.3
   Reporting and Publications ........................ 5.4- 5.6
   Public Relations. .................................. 5.7- 5.8
I BACKGROUND

Introduction

1.1 The Cape Roberts Project has been initiated by New Zealand as an extension of the CIROS drilling program in western McMurdo Sound which was carried out between 1984 and 1986. It is based on the discovery by New Zealand, United States and Italian seismic surveys of strata deeply buried beneath the Ross Sea and which rise to the sea floor off Cape Roberts, 125 km to the northwest of McMurdo Station and Scott Base.

1.2 The project has been based from the outset on international cooperation and collaboration. Its framework has been developed by discussions among scientists from New Zealand, the United States, Italy, the United Kingdom, Germany, Japan, and Australia.

1.3 The Project is supported in New Zealand by the Ross Dependency Research Committee (RDRC), and the Ministry of Foreign Affairs of which the NZ Antarctic Program (NZAP) is part; in the United States by the National Science Foundation; in Italy by the Italian programme National di Recerche in Antartide; in the United Kingdom by the British Antarctic Survey (BAS) and in Germany by the Alfred Wegener Institut für Polar und Meeresforschung, and Bundesanstalt für Geowissenschaften und Rohstoffe, who shall be called Parties Contributors hereafter.


Aims of Project

1.5 The project proposes to investigate Antarctic climatic and tectonic history from 30 to more than 100 million years ago by drilling from the fast ice four holes, each to a depth of 500 m beneath the sea floor, in order to obtain a continuous record of 1500+ m of strata that are older than and previously drilled in the region. The cores and related seismic data will enable the investigation of a range of problems in late Cretaceous-early Cenozoic history. These include tectonic evolution of the region and its relation to the south west Pacific, and the climatic and depositional history of the region. The polar location of the Cape Roberts site over this time period makes the site ideal for testing the relationship between ice sheets and sea level in the distant past.

Project Phases

1.6 The Project is to be carried out in three phases:

Phase 1 (1994-95)
Project Planning and establishment of a camp at Cape Roberts. Materials will be procured in 1994 for a base camp at Cape Roberts capable of accommodating 35 personnel and will be delivered by ship to the Cape in early 1995.

Drilling periods. The drilling of the four holes proposed will take place over two seasons. On each occasion the Cape Roberts base will be set up on the nearby sea ice, and the rig and associated buildings set up on a proposed site in time for drilling to begin in early October. Drilling will end by mid-November each year.

Phase 3 (1997-98)
Decommissioning.

Project Extension

1.7 The timing of the field program may be revised should there be operational delays. Should drilling not prove possible in either of the 1995/96 or 1996/97 seasons the project shall be extended a further season and Phase 3 put back until 1998/99.
Comprehensive Environmental Evaluation

1.8 A draft Comprehensive Environmental Evaluation (CEE) for the Project, as required by the Madrid Protocol to the Antarctic Treaty, was distributed to parties at the Antarctic Treaty Consultative Meeting in Venice in November 1992 (Information Paper XVII ATCM/INFO 19). The deadline for comments from interested parties was 1 March 1993. Comments on the draft were received from Australia, Germany, the United Kingdom and Greenpeace International.

1.9 A final version of the CEE addressing the suggestions of interested parties is being completed and circulated.

II PURPOSE OF THE RECORD OF UNDERSTANDING

2.1 This record shall serve as an intention of long-term cooperation between Parties Contributors to the Cape Roberts Project. It covers the period from the date all Parties Contributors agree to the Record of Understanding for 5 years or, should ice conditions prevent drilling in one of the seasons planned, for one further year (see 1.7 above).

III PROJECT MANAGEMENT

Management Structure

3.1 Overall supervision of the Project is to be the responsibility of and International Steering Committee (ISC). Logistics support for the project shall be the responsibility of the Operations/Logistics Management Group (OMG).

3.2 The primary task of the ISC is to be responsible for all scientific aspects of the project, including facilitating the planning of project science, ensuring that plans are put into effect, and ensuring that results from the project are appropriately reported.

3.3 Decision-making of the ISC shall be by consensus. Members may delegate responsibility to an alternate for a particular meeting.

3.4 The ISC shall comprise representatives of the Parties Contributors. These representatives shall serve as National Science Coordinators. Members of the ISC were originally agreed at the project workshop held at Victoria University, Wellington, in May 1992, but have been amended subsequently and are now as follows:

<table>
<thead>
<tr>
<th>Country</th>
<th>Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand</td>
<td>(Dr. F. J. Davey)</td>
</tr>
<tr>
<td>United States</td>
<td>(Dr. P. -N. Webb)</td>
</tr>
<tr>
<td>Italy</td>
<td>(Professor M. B. Cita)</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>(Dr. M. R. A. Thompson)</td>
</tr>
<tr>
<td>Germany</td>
<td>(Dr. F. Tessensohn)</td>
</tr>
</tbody>
</table>

3.5 The ISC shall elect its own chair. The committee shall meet formally at least once a year to review the progress of the project. The ISC shall on its own initiative delegate to individual Parties Contributors, to individuals or to ad hoc groups of specialists various tasks, such as science planning, sample distribution, editorial work and press and media communications. The ISC may also co-opt scientific representatives of other countries in either an individual or national capacity to assist in the work of the project. The ISC may also consult by e-mail/fax/letter, etc.

3.6 The ISC shall be assisted in its work by a Project Science Coordinator who shall report to the ISC and shall attend its meetings, and shall be the contact point with the OMG. The initiator of the project, Dr. Peter Barrett (New Zealand) shall serve as coordinator.
3.7 The OMG shall annually review logistics support requirements for the project. The group shall meet as agreed by Parties Contributors. The ISC and OMG shall meet jointly to review plans for future activities and to consider the results of completed activities.

3.8 The OMG shall comprise the National Logistics Coordinators of the Parties Contributors and shall be chaired by the representative of the New Zealand Antarctic Program.

3.9 The New Zealand Antarctic Program (NZAP) shall be the national program coordinating project operations in Antarctica. As such it shall be responsible for:

- coordinating logistics support and the drilling operation, including safety aspects;
- coordinating, and accounting to Parties Contributors for, financial and other resources provided by Parties Contributors; and
- developing operational plans for the three phases of the project based on the requirements of the OMG.

3.10 NZAP shall appoint a Project Manager to manage operations and logistics connected with the project and to serve as a point of contact for national logistics coordinators of Parties Contributors and the Project Science Coordinator. The project manager shall attend all OMG meetings and ISC meetings as appropriate.

IV LOGISTICS BUDGET

4.1 The estimated logistic cost of the project is U.S. $3.989 million over its planned five-year span.

4.2 Any projected increase of more than 5% of the estimated cost will require negotiation.

4.3 The indicative budget for the project is attached at Annex 1. The budget shall be reviewed and refined by the OMG after each completed season’s work.

4.4 Contributions to the project shall be through the commitment by the national program, or other designated organization, of Parties Contributors of both operational and financial resources.

4.5 The contribution of Parties Contributors shall be in accordance with the following indicative percentages of the logistics budget (4.1 above):

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand</td>
<td>20-30%</td>
</tr>
<tr>
<td>United States</td>
<td>10-30%</td>
</tr>
<tr>
<td>Italy</td>
<td>20-30%</td>
</tr>
<tr>
<td>Germany</td>
<td>10%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>10%</td>
</tr>
</tbody>
</table>

4.6 If the cumulative contribution of the Parties Contributors does not comprise 100% funding then consideration will be given to having only one drilling year.

4.7 Each Party Contributor shall be entitled to a degree of scientific involvement in the project that is in general proportion to its contribution to the logistics support of the project. Each party shall bear the cost of its own scientific work and of the attendance of its representatives at meetings connected with the project.
V SCIENCE

Project Science Plan

5.1 The ISC shall take the Cape Roberts Workshop Report of 1992 (see 1.3 above) as the basis for a Project Science Plan. The purpose of this Plan, which will be developed for the consideration of the ISC by the science Coordinator (see 3.5 above), will be to identify the key tasks needed to meet the project objectives and to allocate responsibilities or the drilling and post-drilling program. Each Party Contributor shall select its own scientists and approve their proposals for research on the project in accordance with its own processes taking account of the Project Science Plan.

5.2 The Project Science Plan will take into account outlines of intended proposals to be received by the Project Science Coordinator by November 30, 1993. A draft revised plan shall be circulated to the ISC for comment by January 31, 1994 and approved by March 31, 1994. Subsequently, the ISC shall review with the Project Science Coordinator, at agreed intervals, plans for future activities and shall consider the results of completed activities.

Sampling and Sample Distribution

5.3 Procedures for core processing, description and sampling shall be based on those of the CIROS Project and the Ocean Drilling Program for Leg 119 (Prydz Bay). The core will normally be split lengthwise on site, one part to be stored for shipment and the other to be described, photographed and sampled. On occasion however, full core may need to be sampled for geophysical, geochemical and geotechnical measurements. The on site sampling program will take place in accordance with an agreed program approved by the ISC to take into account the needs of investigation both on the ice and at their institutions to support the initial phase of study. The sampled half will be stored at the Institute of Geological and Nuclear Science, Wellington, New Zealand. The remaining half will be stored at a suitable core curation facility in the Northern Hemisphere.

Reporting and Publications

5.4 The project Science Coordinator shall circulate to Parties Contributors and other interested parties a newsletter updating project developments every six months. Progress reports shall be compiled by the ISC after each session in which the project is under way and forwarded to Parties Contributors.

5.5 Within a week of the completion of drilling, or sooner in exceptional circumstances, the Project Science Coordinator shall prepare a report for the ISC. A volume containing core descriptions and photographs shall be published within five months of the completion of each season’s drilling.

5.6 Scientific results of the project shall be published as soon as practicable, and shall give appropriate recognition to those contributing to the project. Following finalization of the Project Science Plan, the scope, authorship and publication timetable for scientific papers shall be reviewed and agreed by the ISC. The ISC shall keep these matters in review throughout the life of the project.

Public Relations

5.7 The Project Science Coordinator shall prepare, in association with NZAP, media releases at the completion of each season and on any exceptional events.

5.8 Media releases from the Project Science Coordinator, and from other national programs, shall be circulated where possible to all Parties Contributors prior to release.
6.7 ARTICLE ON DVDP CORE STORAGE AND SAMPLE DISTRIBUTION POLICY
Reprinted from Dry Valley Drilling Project
Antarctic Research Series, Volume 33
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DVDP CORE STORAGE AND SAMPLE DISTRIBUTION

DENNIS S. CASSIDY

Antarctic Research Facility, Department of Geology, Florida State University
Tallahassee, Florida 32306

Cores recovered by the Japan-New Zealand-United States Dry Valley Drilling Project (DVDP) in Antarctica are stored at the Florida State University's Antarctic Research Facility. More than 1100 m of DVDP drill core are stored at −23°C, from which 3504 samples have been distributed to authorized investigators worldwide. All cores remain in excellent condition, and further research interest in them is invited.

INTRODUCTION

The purpose of this article is to introduce the role of the Antarctic Research Facility at Florida State University (FSU) within that of the Dry Valley Drilling Project (DVDP), and to provide a summary account of the status of the DVDP core collection curated at the facility, including conditions of storage, sampling methods, and sample distribution totals.

The apparent anomaly of DVDP core storage being located in the state of Florida can be attributed to the wealth of unused, refrigerated storage space available within the Antarctic Marine Geology Research Facility and Core Library at FSU. A curatorial and research activity, the facility was established by the National Science Foundation as a U.S. depository and research center for geological materials collected in the Southern Ocean. Since 1962, the permanent staff of the facility has maintained the marine geology shipboard coring program aboard the research vessels, USNS Eltanin and ARA Islas Orcadas. In addition to the DVDP materials, the facility presently houses more than 11,000 m of Eltanin/Islas Orcadas marine sediment cores, as well as a variety of core and dredge sediments collected in both polar regions under the auspices of the U.S. National Science Foundation.

In December 1972, James H. Zumbeerge, Chairman of the U.S. Academy of Sciences Committee on Polar Research, appointed Sayed Z. El-Sayed to the task of performing an on-site inspection of the facility in order to evaluate its capabilities necessary to the handling, storage, and sample distribution of DVDP core specimens. The result of this visit was that the facility was designated the domestic repository for DVDP sedimentary materials.

In retrospect, this arrangement has proven highly satisfactory and represents a unique, cooperative effort in that the facility has functioned as a satellite sample distribution and storage center for DVDP materials under the direction and guidance of the U.S. project coordinator, Lyle D. McGinnis at Northern Illinois University.

CORE STORAGE

DVDP core storage at FSU totals more than 1100 m of P, H, N, and B drill core packaged in 408 core boxes. This includes all core from the 15 drill sites, except for cores from DVDP holes 1, 2, and 3 and basement core below 10.52 m from hole 6; these are stored at Northern Illinois University. From U.S. ports of entry, the cores were shipped to the facility by refrigerated truck transportation at temperatures below −15°C. Upon receipt, they were immediately placed in a low-temperature storage vault maintained at a constant temperature of −23°C. This vault is located within a larger refrigerated storage room (2°C) and comprises 40 of the 510 m³ of refrigerated storage space available at the facility. The 408 core boxes are arranged (Figure 1) on modular, bulk storage rack units with a total shelf capacity of about 700 core boxes. A duplicate, backup refrigeration unit has been installed to provide continuous service in the event of failure of the main unit.

DVDP core was received in three shipments following the termination of the last three drilling seasons. Cores from DVDP sites 4-9 were received...
Fig. 1. Dry Valley Drilling Project cores stored at -23°C. (Holes 14 and 15 materials not yet received at the time this picture was taken.)
Fig. 2. Frozen Dry Valley Drilling Project core segment being dry drilled for paleomagnetic sample plug by Don Elston U.S. Geological Survey.
during May 1974, cores from sites 10-13 were received during March 1975, and cores from sites 14 and 15 during May 1976.

Essentially, the cores remain in excellent condition for further sampling, since frozen storage has preserved the structural integrity of the ice-cemented sediments. In some lithologies, a loosely consolidated, friable outer rind has developed due to the migration of ice out of the core by sublimation. In these cases, it is difficult to prevent some sediment loss in handling and sampling due to crumbling of the rind. Also, certain geochemical studies of interstitial water may no longer be feasible due to moisture loss.

**SAMPLING**

All sampling of DVDP core at the facility has been carried out with the direct approval of the U.S. coordinator of the project according to the terms of the official DVDP sampling policy. At the time of sampling, information concerning the hole and box number, sample interval, sample weight, proportion of core diameter sampled, and other data, including comments as may be necessitated, for example, by problems of interpretation, are recorded on a sample inventory form. Prepared in triplicate, one copy of the form is forwarded to the investigator receiving the samples, another is forwarded to the DVDP office at Northern Illinois University, which maintains a computerized inventory of all DVDP samples, and the third copy remains in the DVDP file at FSU. Additional inventory control is provided by the placement of sample identification cards at the point of sampling within each core box and by the recording of sample intervals and their locations, keyed to the investigator, on individually printed sets of core box photos which appear in Dry Valley Drilling Project bulletins 3, 5, and 7, prepared at Northern Illinois University.

All sampling is done within the 2°C storage room and is effected by chiseling and handsawing (rarely), dry sawing (no cutting fluid) by circular, diamond blade utilizing a Felker Di-Met Model 41A cut-off saw, or by diamond core drilling using a 38-cm, floor model Clausing drill press (Figure 2). The latter method makes use of a precooled drill bit using compressed air as a drilling ‘fluid’ and was developed by Don Elston of the U.S. Geological Survey to obtain oriented sample ‘plugs’ for paleomagnetic studies of DVDP cores.

voids in the core resulting from the removal of samples are filled with cut-to-fit pieces of Dow Ethafoam rod in order to prevent shifting of core segments during box handling; thus the relative positions of the segments are preserved for further measurement of sample intervals.

**SAMPLE DISTRIBUTION**

Initial sampling and inspection of the DVDP materials at FSU began in August 1974 with a contingent of seven visiting investigators coordinated by Peter N. Webb. A second DVDP core sampling and inspection session was hosted by the facility on July 7, 8, and 9, 1975, involving 12 specialists in polar studies, and coordinated jointly by Lyle D. McGinnis and Mort D. Turner. For purposes of both sampling and core inspection, a total of 24 scientists have been received by the facility. An additional seven investigators have received samples on the basis of letter requests as have many of those who journeyed to the facility.

A total of 3504 samples has been distributed from the DVDP collection at FSU over a 5-year period. This total does not include samples removed from the cores prior to their arrival at the facility, nor does it include the redistribution of sample portions by investigators to whom samples were originally distributed. Figure 3 summarizes the sample distribution total according to the number of samples received per hole by investigators to whom the samples were assigned, and the number of samples distributed from each hole.

The shipment of samples to principal investigators has been by both frozen and unfrozen means of transportation. Frozen samples are packed in dry ice within commercially available styrofoam containers and have been shipped by air to points as far as Seattle without damage to thawing the materials.

**FUTURE SAMPLING**

Following publication of this volume, and the correlation of the presented data with those of related projects underway, it is anticipated that there will be a resurgence of interest in the availability of DVDP materials for further sampling. Potential investigators requiring samples, in order to place a meaningful request for them, are asked to review carefully the available literature, particularly the DVDP bulletins prepared at Northern Illinois University, in which appear the lithologic
CASSIDY: DVDP CORE STORAGE AND SAMPLE DISTRIBUTION

<table>
<thead>
<tr>
<th>SAMPLE RECIPIENT</th>
<th>TOTAL NUMBER OF SAMPLES RECEIVED BY RECIPIENT PER HOLE NUMBER</th>
<th>SAMPLE TOTALS PER HOLE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrett</td>
<td>4  5  6  7  8  9  10  11  12  13  14  15</td>
<td>53 81</td>
</tr>
<tr>
<td>Brady</td>
<td>89</td>
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<tr>
<td>Cameron</td>
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<tr>
<td>Claridge</td>
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<td>Decker</td>
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<td>11  156</td>
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<td>Hendy</td>
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<tr>
<td>Mandra</td>
<td>2  11</td>
<td>20  3  37  159</td>
</tr>
<tr>
<td>McCollum</td>
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<td>33</td>
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<td>Treves</td>
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<td>7  99  17  59  268  67</td>
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<tr>
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<tr>
<td>Wrenn</td>
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Fig. 3. Sample distribution from DVDP core stored at FSU.

logs, photographs, and sediment descriptions of DVDP core. Specifications for samples should indicate, in addition to routine information such as the core interval, sample size, and method of shipment, the criteria used for the determination of the desired sample interval. The latter information is particularly important in that it is extremely helpful to know whether the requested interval is based upon published data or upon perusal of the lithologic log (or both), since an element of subjectivity is often involved in the actual determination of the sample interval due to core condition, percent of core recovery, etc.

Further information concerning the DVDP cores at FSU and other aspects of the operation of the Antarctic Research Facility and its programs can be obtained by writing to the curator of the facility, as well as by reference to those articles appearing in the selected bibliography accompanying this report.

Acknowledgments. The author considers it appropriate to acknowledge the exceptional degree of cooperation and confidence afforded him by many persons throughout the course of the curatorial phase of DVDP, particularly by Peter J. Barrett, Lyle D. McGinnis, and Michael G. Mudrey, Jr. Funding for the curation of DVDP cores at the Antarctic Research Facility has been provided by National Science Foundation contracts C-564 and C-1059.

SELECTED BIBLIOGRAPHY

6.8 SUGGESTED PROJECT PHASING

1994 August
Meetings at SCAR Rome OMG/ISC agreed to proceed with the first year of drilling

December
Camp, drill rod and other supplies assembled in Christchurch for shipping by the ITALICA to Cape Roberts.

1995 January 15-18
ITALICA successfully off-loaded at Cape Roberts

July 30
Meeting of OMA in Santiago, Chile

September 16-17
Meeting of ISC in Sienna to review science program and personnel.

October-November
Cargo traverses Scott Base to Cape Roberts and preparations at Cape Roberts.

1996 January
Last shipment of equipment to Cape Roberts

August
Advance party on winter fly-in to check sea ice. Then travel to Cape Roberts to set up camp and rig for drilling.

October 5 - November 20
First drilling season

1997 February
Publication of report on drilling results

May
ISC meet to review results of first season and plan second season.

August
Advance party on winter fly-in to check sea ice. Then travel to Cape Roberts to set up camp and rig for drilling.

October 5 - November 20
First drilling season

1998 January
Removal of Cape Roberts camp begins; review of area for compliance with Comprehensive Environmental Evaluation

February
Publication of report on drilling results.

August
Workshop to review results from both seasons, and finalize their publication.