

DDI-2551-83

15 APR 1983

MEMORANDUM FOR: Director of Central Intelligence
Deputy Director of Central Intelligence

VIA: Deputy Director for Intelligence

FROM:
Director of Global Issues

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SUBJECT: Agency Clearance for Antarctic Research Approval
Prepared by the Antarctic Policy Group for the
National Security Council

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1. Action Requested: Your concurrence is sought on the attached draft Interagency Memorandum for the National Security Council (NSC). The memorandum gives an endorsement from the Antarctic Policy Group (APG) for proposed US Geological Survey (USGS) research in Antarctic waters during the 1983-84 season. Agency clearance of this memorandum is required for a 10:00 a.m. meeting on Wednesday, 6 April. Agency clearance can be conveyed directly to Mr. Tucker Scully, Director, Office of Oceans and Polar Affairs, Department of State, Tel. 632-6491, or can be relayed via the undersigned (extension). Once approval is given, the APG memorandum will be forwarded to the NSC.

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2. Background: According to a US Presidential Directive of 5 February 1982, agencies other than the National Science Foundation may fund and undertake short-term scientific programs related to Antarctica subject to the budgetary review process and upon the recommendation of the APG. In compliance with that directive, the APG has reviewed the attached USGS draft proposal and feels that as long as the USGS operates in accordance with the provisions of the Antarctic Treaty and related agreed recommendations -- allowing scientists from other nations to participate, announcing in advance a description of the research and complying with the provisions for data sharing -- that the USGS proposal should be condoned.

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SUBJECT: Agency Clearance for Antarctic Research Approval
Prepared by the Antarctic Policy Group for the National
Security Council [redacted]

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3. Recommendation: [redacted]

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[redacted] If
the USGS operates within the confines of the Antarctic Treaty,
there appears to be no intelligence-related objection to the USGS
proposal. Subsequently, we recommend that the Agency concur in
passing this document to the NSC. [redacted]

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Attachment: As stated



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CONCUR: for John M. Makon
Director of Central Intelligence

6am 83
Date

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3/20/83 DRAFT

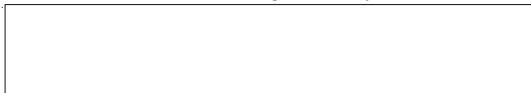
USGS Antarctic Investigations



USGS InterSTAT
2pm. Thur 24
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Phase I - 1983-84 Marine Geophysical Survey Project

During the 1983-1984 Austral Summer season (November-March), the U.S. Geological Survey proposes to conduct a marine geological and geophysical survey on the Antarctic continental shelf adjacent to Wilkes Land, East Antarctica (fig. 1), to map the regional geologic framework of the Cape Adare, Balleny Basin, and Ross Sea Shelf areas. These areas are the key to understanding the geologic structures that developed as the Antarctic - Australian plates separated and sedimentary basins formed along the rifted margin. The areas shown in figure 1 are to be surveyed with wide-spaced (20 to 50 km) tracklines needed for regional mapping of the continental margin. The resulting interpretations and reports would be similar to those which the USGS collects and publishes on the U.S. continental margins. The field work will be conducted using the R/V S.P. LEE, the Geological Survey's ice-reinforced (ABS Class C) vessel which is outfitted for deep penetration, multi-channel and shallow penetration, single channel seismic data, as well as magnetic and gravity data. Plans call for the R/V LEE to depart Christchurch, New Zealand, on December 28, 1983, arriving in Antarctic waters on January 3, 1984. After refueling (and crew change) at the U.S.'s McMurdo Base in early February, the ship would continue its survey, departing Antarctica on March 3, 1984, and arriving in Hobart, Tasmania, on March 8, 1984. This would provide approximately fifty days of scientific survey work and 7,200 kilometers of seismic tracklines.

Within the U.S. Government, the project is being coordinated with the Department of State,  the U.S. Coast Guard, and the Antarctic Policy Group. In addition, the project has been discussed with the

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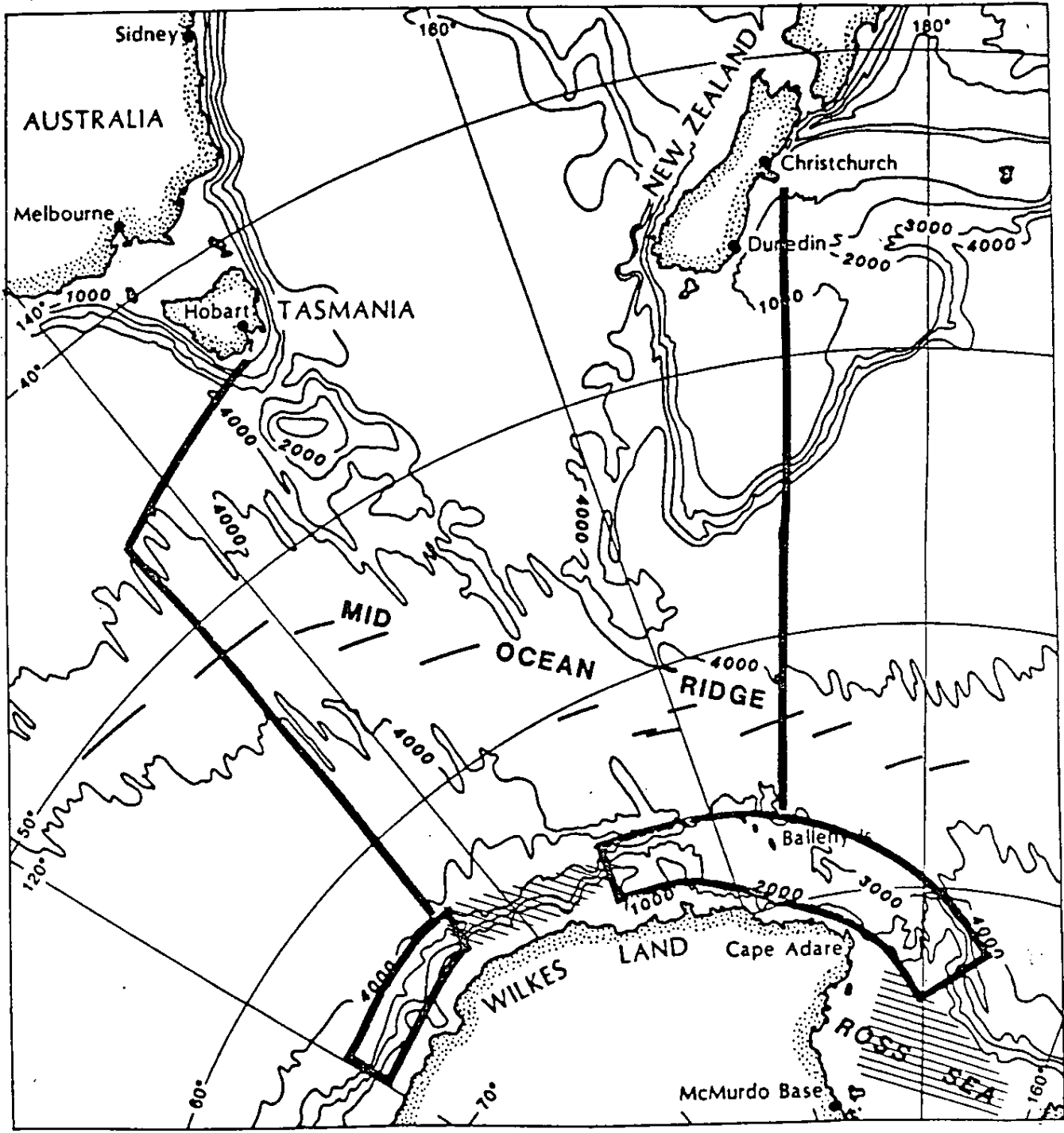


Figure 1.--Cross-hatched area indicates areas of existing multichannel seismic data of French and West Germany. Proposed USGS survey areas enclosed by bold lines.

Polar Research Board of the National Academy of Science and some academic investigators. The project is being planned as an adjunct to the USGS South Pacific program, SOPAC II (fig. 2). This coordinated program will reduce mobilization and transit costs allocated to this Antarctic survey by placing the ship in reasonable proximity to the Antarctic work area. Discussions on program plans are underway with the governments of Australia and New Zealand, who may provide some scientific personnel and partial funding for the marine operations.



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Attachment 1 is an outline of the proposed program.

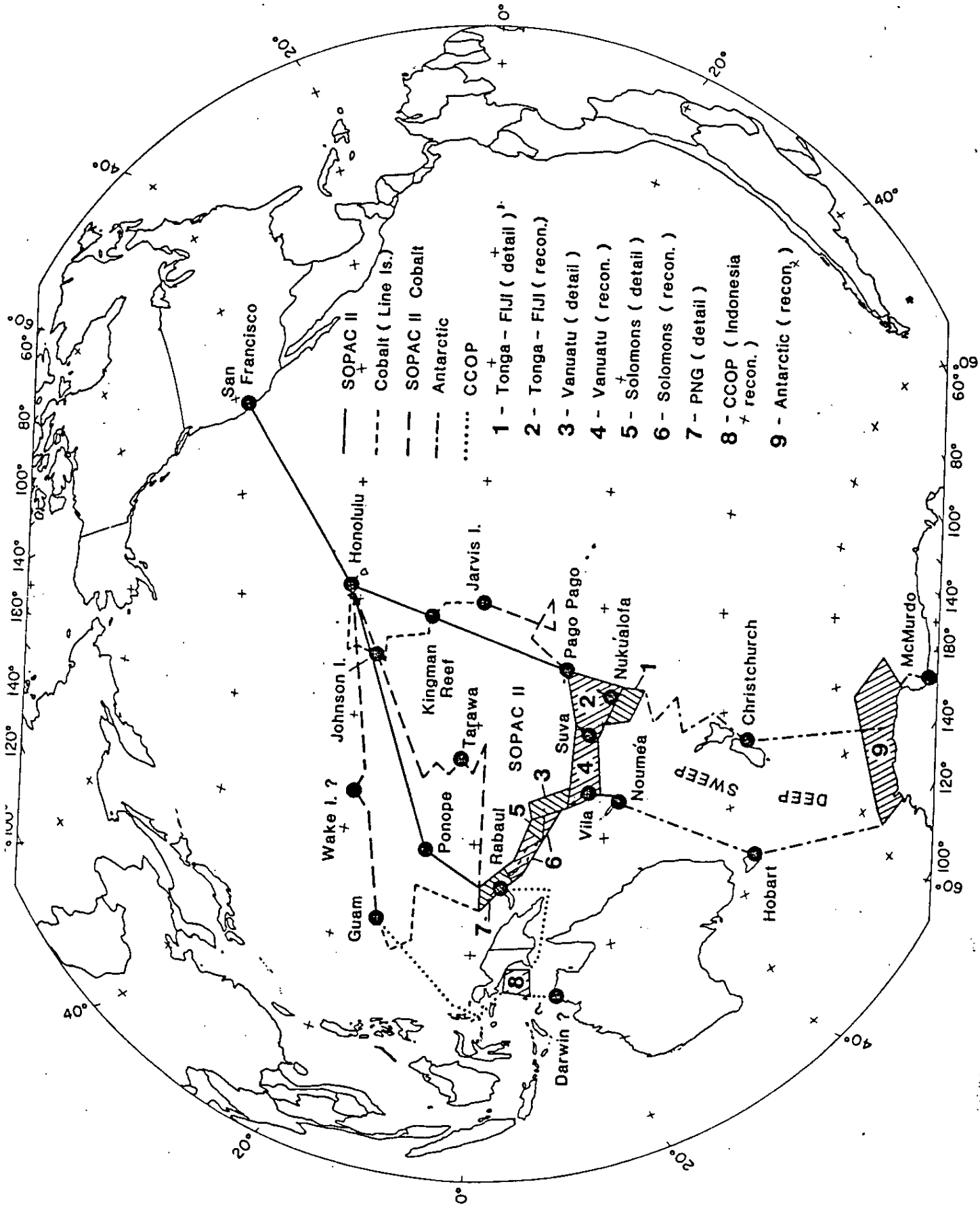


FIGURE 2. PROPOSED 1984 USGS R/V S.P. LEE CRUISE SOPAC II AND OPERATION DEEP SWEEP

Preliminary USGS Proposal for Marine Geophysical Surveys in the Antarctic Region

General Scientific Objectives

1. Conduct reconnaissance geophysical surveys off the coast of Wilkes Land and in the Ross Sea to determine the geologic framework of the region.
2. Correlation of the offshore seismic stratigraphy of the Antarctic Plate with the southern Australian continental margin.
3. Investigate the formation and development of sedimentary basins on the Antarctic continental margin.
4. Identify and map the seabed geologic hazards which may exist as a result of the depression of the shelf, a consequence of continental crust loading as the Antarctic ice cap formed.

METHODOLOGY

Marine geophysical and geological data will be collected aboard the USGS R/V S.P. LEE using the following types of equipment:

- Geophysical:
1. Multi-channel seismic-reflection system (with hydrophone cable length of 2400m and an acoustic source of 1500-2000 in³ airguns fired at 1800-2400 psi.) (several kilometers penetration).
 2. Sonobouy recording system, used in conjunction with the multi-channel seismic system.
 3. Single-channel seismic-reflection system (200-500 in³ airgun source) (about 500 meter penetration).
 4. Uniboom high-resolution single-channel seismic-reflection system (about 250 meters penetration).
 5. Standard 12 and 3.5 kHz bathymetric sounding systems.
 6. Gravimeter
 7. Magnetometer.
- Geological:
1. Deep-sea winch with 10,000m of 3x19 wire, 0.5 in. in diameter.
 2. Chain-bag dredges, time-depth recorders, and wire mounted pingers for depth control.
 3. Gravity and dart corers.
 4. Bottom grab-samplers.

On-Board Laboratory Facilities:

1. Physical property measuring equipment (i.e., velocity, porosity, permeability, etc.).
2. Rock preparation laboratory for production of thin-sections and separation of fossils and minerals.
3. Organic geochemistry instruments for determining types of hydrocarbon fractions that may be present in sediment samples.

[Precise location of data stations provided by an integrated satellite-based and sonar doppler navigation system.]

COSTS

1. <u>Survey Work</u> (scientific data collection) = 60 days @ \$15,000/day	\$ 800,000
2. <u>Transit</u> (round trip from California*) =	473,000
3. <u>Data processing</u> (multi- and single-channel records) =	562,000
4. <u>Transportation</u> (personnel, equipment, and data) =	70,000
5. <u>Salaries</u> (temporary only**) =	60,000
6. <u>Overhead</u> (31%) =	<u>883,000</u>
TOTAL	\$2,848,000

* Transit costs will be reduced to \$287,000 if SOPAC II cruise is approved.

** Salaries of permanent USGS staff are covered under other budget items.

ADDITIONAL FACTORS

Cooperation: Both Australia and New Zealand have shown a sincere interest in cooperating with the USGS in this project. Funds, data exchange, and scientific participation from these countries is being discussed at senior staff levels. Any funds and data obtained from Australia and New Zealand will reduce the cost to the U.S. of this effort.

Data Sharing: Interpretation of data with publication of the results will be jointly done by the participating scientists. Treaty obligations regarding scientific research will be accommodated by the USGS's prompt publication of interpretive results, open file data reports, and transmission of geophysical data to the National Geophysical Data Center (NGDC) of the National Oceanic and Atmospheric Administration. NGDC is tied into a world-wide geophysical distribution network.

Phase II - Earth Sciences Investigations in Antarctica

The Phase II Antarctic geologic research effort supplements the on-going marine geophysical project of Phase I by drawing on other U.S. Geological Survey capabilities in mapping, reconnaissance geologic investigations, and application of remote sensing. The resulting four-element program provides for fundamental energy and mineral studies.

The Antarctic Treaty consultative parties are presently negotiating a mineral resource regime to provide oversight for any mineral resource development in the Treaty area. There is little doubt that those nations which have active resource research programs underway and hard data in hand on the geology and resource potential of key areas will have a lead role and a significant advantage as the regime is developed. With these considerations as a prelude, the USGS has requested funding for Antarctic Earth Science Investigations effort.

Details can be found in Attachment 2 (to follow).

Major Program Objectives are:

1) Mapping

An acceleration of the Survey's present Antarctic topographic mapping program. At the present rate of production it will take 50 years to cover only the map worthy areas of West Antarctica. The program would build from accelerating the geodetic control base which would in turn allow increased production of topographic maps and Landsat image maps.

2) Remote Sensing

Initiate a series of high quality digital multispectral mosaics using Landsat data. The maps resulting would delineate exposed rock units and alteration zones. In addition, material properties and temporal changes in snow and ice cover could be monitored.

Geologic Framework Studies

Reconnaissance geologic mapping of onshore and offshore areas to provide basic data on the occurrence, distribution, and geologic history of major rock types. These studies are aimed at increasing our understanding of the plate tectonic relationships between various sections of the Antarctic continent and other segments of the southern hemisphere plates. In addition these studies will serve to focus later, detailed onshore mineral resource and offshore marine resource investigations.

3) Onshore Mineral Resource Investigations.

To identify, map, and sample mineral rich mountain ranges such as the Dufek intrusive deposit which are known to have occurrences of chromite, nickel, and platinum group metals. Coal deposits known since the days of heroic exploration would also be sampled for resource appraisal.

4) Marine Resources and Investigations.

Follow on regional reconnaissance studies similar to the Phase I marine investigations. Geophysical surveys followed by coring and dredging to determine the extent and geologic history of the marine sedimentary basins

that formed as the southern continents separated. Areas to be surveyed would include sections offshore from Marie Byrd Land and in the Weddell Sea.