SSP Executive Summary
LDGO, New York, July 1990

The aims of the Site Survey Panel's Lamont-Doherty meeting were to update assessment of the CEPAC programs and to assign SSP "watchdogs" to the highest ranked North Atlantic programs as defined by PCOM at its April '90 meeting. Major additional items of business were survey assessments of three proposals new to SSP: Hess Deep, Peru Margin Gas Hydrates and the OSN pilot hole off Oahu.

For a number of the CEPAC programs, either SSP approval has already been given or there were no developments since the previous SSP meeting (April). For some proposals, however, final site locations are still to be reviewed.

Data presentations were made for the three new proposals: the Oahu pilot hole (Collins, WHOI), Hess Deep (Gilliss, WHOI; Caress & Mutter, LDGO) and Peru Margin Gas Hydrates (Brenner on the data package sent by von Huene, GEOMAR).

SSP made its first consideration of the highly ranked North Atlantic drilling proposals as identified by PCOM at their April meeting. Track charts of the Data Bank's holdings were produced. In most cases, substantial input of data from the proponents is still expected. Data packages for the North Atlantic programs will range from the fairly simple to the enormous. The Barbados and broadly-defined "N. Atlantic Conjugate Passive Margin Drilling" proposals are particularly data-intensive, in that they address several different thematic objectives or investigate several different regions, or both.

SSP "watchdogs" were assigned to specific North Atlantic proposals after protracted discussion on potential conflicts-of-interest. It was agreed to recommend SSP liaisons to DPG's.

The following consensus items arose from the meeting:

SSP CONSENSUS: Comments arising during SSP evaluation of survey packages with regard to potentially adverse downhole or oceanographic considerations should always be flagged by this panel (e.g., SSP's comments on bottom current regimes at the Northeast Australian Margin).

SSP CONSENSUS: ODP/TAMU is encouraged to conduct thorough oceanographic studies of regions scheduled for drilling, even if prior

Program experience or proponent advice suggests that no weather- or current-related problems will occur.

SSP CONSENSUS: The SSP Chairman should respond to PCOM's call for nominees to DPG's with a recommendation that an SSP member be appointed as liaison with each. For specific meetings SSP may alternatively recommend that the Data Bank manager attend. SSP must maintain both active communication with DPG's and its *independent* advisory position on the adequacy of data packages.

SSP CONSENSUS: Preliminary CHILE TRIPLE JUNCTION site locations are unchanged after PPSP preview. Proponents should now respond to the specific data recommendations from PPSP, and should also provide the SCS watergun reflection profiles that image the BSR in regions where CDP processing tends to degrade BSR imaging.

SSP CONSENSUS: No further data gathering requirements are foreseen by SSP for the CASCADIA MARGINS. Final SSP approval will await "official" site selection and the presentation of the full data sets at our next meeting.

SSP CONSENSUS: The critical data for the NORTH PACIFIC NEOGENE program are in hand. The seismic reflection data are poor for a number of sites, but are still judged as sufficient for the drilling objectives as long as high-quality seismics are run by the drillship on arrival and departure from the sites.

SSP CONSENSUS: The necessary data for the siting of the OSN PILOT HOLE (at either of the two proposed locations) probably exists. Full site survey data packages must be available for review by SSP and PPSP in September.

SSP CONSENSUS: Additional geophysical data, primarily detailed seismics to better characterize crustal structure and possible existence of rubble, are needed to assure drilling objectives in the HESS DEEP. Most of these requirements would be met if the Caress, et.al. proposal is funded. Although 2 MCS lines are proposed, the panel feels that at least 4 lines are needed (2 ea. orthogonal and 2 ea. parallel to the spreading axis) to establish whether the sections drilled are typical of the area. Deep-towed side-scan sonar is also needed to determine continuity of surface fabrics and to tie into MCS lines. SSP recommends that any transponder beacons deployed during upcoming cruises be left to aid site location for the drillship.The panel is concerned about the time needed to acquire and

assimilate the required survey data, and believes that drilling should not be scheduled before late 1992.

SSP CONSENSUS: SSP concludes that the data set for the PERU GAS HYDRATES proposal is more than adequate for drilling. The Panel recognizes the importance of this proposal, not only for what can be learned from this specific area, but for its impact on future drilling in areas marked by the presence of BSRs.

SSP CONSENSUS: SSP members may serve as "SSP watchdogs" on proposals for which they are "minor" proponents, but not for proposals in which they may be seeking funds for future survey activity.

proposals and so the workload will change and will almost certainly necessitate changes in "watchdog" assignments.

SSP, after considerable discussion, made the following watchdog assignments:

1. Barbados Accretionary Wedge		**SSP Watchdog (* = "minor" proponent)**
378/A Rev.: 342/A	Growth Mechanics and Fluids Evolution of the Barbados Accretionary Wedge	Moore
2. Cayman Trough		
333/A:	Tectonic and Magmatic Evolution of Pull-apart Basin: a Drilling Transect Across the Cayman Trough, Caribbean Sea	Lewis
3. Equatorial Atlantic Transform Margins		
313/A:	Evolution of a Major Oceanographic Pathway: the Equatorial Atlantic.	Pautot
346/A Rev.	A Proposal for Scientific Drilling on the Equatorial Atlantic Transform Margin.	Pautot
4. MARK area: long section of upper mantle		
369/A:	A Deep Mantle Section in the MARK Area: a Preliminary Proposal for the Ocean Drilling Program.	Hirata
5. Mediterranean Gateways		
323/A:	Neogene Evolution of Continental Basement Overthrusting and Extension in the Alboran Sea and the Development of the Atlantic-Mediterranean Gateway.	Kastens
372/A:	Cenozoic Evolution of Intermediate Water Circulation and of Vertical Chemical Gradients in the North Atlantic.	Larsen

6. New Jersey Margin Sealevel

348/A:	Upper Paleogene to Neogene sequence stratigraphy: the Ice House world and the U.S. Middle Atlantic Margin.	Kastens

7. North Atlantic: Non-volcanic Rifted Margins

334/A:	The Galicia Margin New Challenge: Drilling Through Detachment Faults Lower Crust and Crust-Mantle Boundary.	Kidd
365/A:	Conjugate Passive Margin Drilling - North Atlantic Ocean.	Louden*
366/A:	Labrador-Greenland (Preliminary Proposal)	Lewis

8. North Atlantic: Volcanic Rifted Margins

310/A:	Preliminary Proposal for ODP Drilling in the NE Atlantic: Geochemical Sampling of Dipping Reflector Sequences.	Kidd*
311/A:	The "Sedimentary Equivalent" of Dipping Reflector Sequences.	Kidd*
328/A:	Proposal for ODP Drilling on the Continental Margin of East Greenland, North Atlantic.	Meyer*
358/A:	Formation of Volcanic Rifted Passive Continental Margins: Proposal for a Drilling Transect at the Voring Margin.	Meyer
363/A:	Plume Volcanism during the late Rift to Early Drift Phase of Grand Banks - Iberia Separation.	Lewis

9. Northernmost Atlantic Paleoceanography: Arctic Gateway

305/F:	Proposal for Arctic Ocean Drilling	Larsen
336/A:	Arctic to North Atlantic Gateways, Oceanic Circulation and Northern Hemisphere Cooling.	Larsen

320/A:	ODP Drilling in the Nordic Seas (the Arctic Ocean - the Norwegian/Greenland/Iceland Sea- the NW Atlantic Ocean System), Addressing High Northern Latitude Paleoceanography and Paleoclimatology.	Larsen

10. TAG Area: High-temperature Hydrothermalism

361/A:	A Proposal for Drilling an Active Hydro- thermal System on a Ílow-Spreading Ridge: Mid-Atlantic Ridge, 26 N (Tag Area)	von Herzen

11. Vema FZ: Layer 2/3 Transition

376/A:	Drilling the Layer 2-Layer 3 Boundary (and the Crust Mantle Boundary) on the Southern Wall of the Vema Fracture Zone.	Hirata

12. Vema FZ: Layer 3 - Mantle Transition

376/A:	Drilling the Layer 2-Layer 3 Boundary (and the Crust Mantle Boundary) on the Southern Wall of the Vema Fracture Zone.	Hirata

13. West Florida Margin Sea Level

345/A:	Drilling Proposal for the West Florida Continental Margin, Gulf of Mexico: Sea Level and Paleoclimatic history.	Moore

The relationship of the assigned watchdogs to the newly-formed DPG's had already been discussed and is referred to in a previous SSP Consensus and in Action Item 2. Chairman Kidd will offer four names- Kidd, Louden, Lewis, and H. Meyer- as liaisons for the North Atlantic Rifted Margins DPG, and will nominate Larsen as liaison to the Arctic Gateways DPG. Moore and Kastens will be put forth as liaisons to the Sea Level Working Group. If PCOM agrees in principle to the liaisons but does not choose between the names, SSP will make its own assignments on a meeting-by-meeting basis, keeping in mind its additional recommendation concerning the Data Bank Manager's attendance at such meetings.

JOIDES SITE SURVEY PANEL MINUTES
LAMONT-DOHERTY GEOLOGICAL OBSERVATORY, New York

July 12 and 13, 1990

Members:
Kidd, Rob (Cardiff, UK) Chairman
Larsen, Birger (Copenhagen, ESF)
Lewis, Steve (USGS, Menlo Park, USA)
Louden, Keith (BIO, Canada)
Meyer, Heinrich (BGR, FRG)
Moore, Greg (HIG, USA)
Hirata, Naoshi (Chiba University, Japan)
von Herzen, Dick (WHOI, USA)

Liaisons:
Brenner, Carl (Site Survey Data Bank - Host)
d'Ozouville, Laurent (JOIDES Office)
Watkins, Joel (PCOM)
Ball, Mahlon (PPSP)
Meyer, Audrey (ODP/TAMU)
Moran, Kate (SMP)

Guests:
Blum, Peter (JOIDES Office, UT)
Collins, John (WHOI)
Gillis, Kathy (WHOI)
Fornari, Dan (LDGO)
Bangs, Nathan (LDGO)
Caress, Dave (LDGO)
Mutter, John (LDGO)

Apologies received from:
Guy Pautot (IFREMER, France)
Kim Kastens (LDGO, USA)
Jim Hedberg (EXXON, Houston, USA)

AGENDA FOR SSP MEETING
July 12th and 13th, 1990
LAMONT-DOHERTY GEOLOGICAL OBSERVATORY, New York

FIRST DAY

1. PRELIMINARY MATTERS

    1. Introductions (Kidd): Aims of Meeting
    2. Logistics (Brenner)
    3. Changes in minutes of previous meeting and matters arising
    4. Updated ship schedules
    5. Other business for Agenda
    6. Membership

2. REPORTS

    1. PCOM (Watkins)
    2. JOIDES (d'Ozouville)
    3. TAMU (A. Meyer)
    4. PPSP (Ball)
    5. DATA BANK (Brenner)

3. STATUS OF SCHEDULED LEGS (FY91)

    1. Leg 136 - Suva-Honolulu transit and Engineering 3A near Oahu and at 504B (A. Meyer)
    2. Leg 137 - E. Pacific Neogene (H. Meyer/Brenner)
    3. Leg 138 - Sedimented Ridges I (Louden)
    4. Leg 139 - 504B or Engineering 3B (EPR)
        - Presentation of EPR near bottom survey data (Fornari/Lewis)

4. STATUS OF REMAINING CEPAC PROGRAMS (FY 92 and beyond)

    1. Atolls, Guyots and Aprons (Brenner)
    2. Bering Sea (Larsen)
    3. Chile Triple Junction (Lewis/Banks)
    4. Cascadia Margins (Louden)
    5. N. Pacific Neogene and older (Larsen)
    6. East Pacific Rise (Lewis)
    7. Sedimented Ridges II (Louden)

SECOND DAY

5. "NEW" CEPAC PROGRAMS; DATA PRESENTATIONS

    1. Hess Deep: Layer 2/3 Transition and Layer 3 (Gillis)
    2. Peru Gas Hydrates (Brenner/Ball)

6. DISCUSSION AND RECOMMENDATIONS ON PRESENTATIONS

    1. OSN Hole, Oahu
    2. Hess Deep
    3. Peru Gas Hydrates

7. ASSIGNMENT OF N. ATLANTIC PROGRAMS TO SSP 'WATCHDOGS'

    -Approach to Watchdog Activity (Kidd)
    -General status of data supporting each proposal (Brenner/d'Ozouville)
    -Agreed assignments (Kidd)
    -Watchdog Liaison with DPG's

8. NEXT MEETING & MISCELLANEOUS ITEMS

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LDGO SSP MEETING
ACTION ITEM LIST

Item #	Person(s)	Action
1	Kidd/Ball	Kidd will entertain any nominations for a US petroleum industry SSP member from current members. Ball agreed to canvas his contacts and communicate a name to Kidd. Kidd will communicate these to USSAC.
2	Kidd	Write to PCOM Chairman recommending SSP liaisons to DPG's.
3	Louden	Contact Earl Davis for update of recent Sedimented Ridges cruise results from side-scan survey and ALVIN dives.
4	Brenner/Louden	Brenner will meet with Collins to bring together the two Oahu data packages by early September. Louden will visit the Site Survey Data Bank to undertake a final SSP review prior to the scheduled mid-September PPSP meeting.
5	Hirata/Kidd	Hirata to investigate arrangements for hosting the next SSP meeting in Tokyo. Kidd to write to PCOM Chairman Moberly notifying him of requested locale and provisional dates of 12-14 March.

1. PRELIMINARY MATTERS

1. Introductions. The meeting began at 0900. Chairman Rob Kidd welcomed new member Greg Moore (HIG) and future JOIDES Office liaison Peter Blum, who will work with PCOM Chairman Jamie Austin at the University of Texas at Austin. Kidd thanked participants for their efforts in accommodating the two day shift in the dates of this meeting. Apologies had been received from members Pautot and Kastens, both presently at sea.

2. Aims of the Meeting. Kidd noted that the major results of the PCOM April meeting in Paris relevant to SSP activities were that PCOM had indeed outlined a 4-year plan that SSP could now use to assign new "watchdogs" to specific Atlantic proposals, but that the Committee had also introduced three proposals for possible FY92 drilling in the CEPAC program. Consequently, SSP's first priority at this meeting will be to assess data from these three proposals in an attempt to bring them up to the standard of the other CEPAC packages. One of the three- the Oahu OSN pilot hole- was in reality an engineering insertion in the FY91 schedule. Kidd had invited proponents for all three of the new proposals to present survey data at LDGO and he welcomed John Collins (WHOI) to present the Purdy, et.al. OSN proposal data. Roland von Huene was unable to attend to present the Peru margin data but sent a data package to Brenner for presentation on the second day. Kathy Gillis will attend on day two to present data in support of the Dick, et al. Hess Deep proposal. In addition, Dave Caress will present information on his already-submitted NSF proposal to do MCS and Hydrosweep work in the Hess Deep area.

3. Logistics. Carl Brenner as host outlined plans for meals and arrivals of invited presenters. SSP members were invited to familiarize themselves with the Site Survey Data Bank, its personnel and data. Kidd complimented Brenner on his acquisition of special hotel rates for meeting participants.

3. Menlo Park Minutes. No changes to the minutes of the Menlo Park meeting were required and all matters arising were judged to be already included for discussion at LDGO.

4. Updated Ship Schedules. Because the last SSP meeting was held so recently, the only new ship schedule was that from H. Meyer on West German ship activity (Appendix A).

5. Other Business. Kidd recommended that discussion of current and future SSP membership be added to the agenda.

6. Membership. Kidd noted that PCOM had invited both Greg Moore (HIG) and Anne Trehu (Oregon State) to join SSP as U.S. members. Both had accepted but

Trehu was unable to undertake membership until summer of 1991. Hedberg has been unable to attend any SSP meetings since accepting an invitation to join as US petroleum industry representative nominated by USSAC. PCOM was now awaiting a new nomination from USSAC. Kidd asked members for any suggestions for nominees that he could communicate to USSAC Chairman Jeff Weissel.

*ACTION ITEM 1: KIDD WILL ENTERTAIN ANY NOMINATIONS FOR A US PETROLEUM INDUSTRY SSP MEMBER FROM CURRENT MEMBERS. BALL AGREED TO CANVAS HIS CONTACTS AND COMMUNICATE A NAME TO KIDD. KIDD WILL COMMUNICATE THESE TO USSAC.

2. REPORTS

1. PCOM (Watkins):

PCOM accepted the 5 highest ranked proposals by LITHP, OHP, SGPP and TECP for tentative inclusion in the future drilling plan. These proposals are:

LITHP:
1) Hess Deep
2) [tie] EPR and MARK
4) TAG
5) Sedimented Ridges

OHP:
1) Northernmost Atlantic Paleoceanography
2) North Pacific Neogene
3) New Jersey Margin Sea Level
4) Mesozoic Guyots
5) Bering Sea

SGPP:
1) Cascadia
2) Chile Triple Junction
3) Atolls and Guyots
4) Sedimented Ridges
5) New Jersey Margin Sea Level

TECP:
1) Chile Triple Junction
2) North Atlantic non-volcanic margins
3) Cascadia
4) Seismometer emplacement near Oahu
5) North Atlantic volcanic margins

PCOM approved a plan in which the RESOLUTION will drill in the Pacific through late 1992, then transit to the Atlantic in the spring of 1993 where it will drill until the end of the current planning period in April, 1994.

PCOM approved in principle a 2-week mini-leg north of Oahu to drill a hole for emplacement of a seismometer.

Four new subgroups were approved for future staffing:

1) North Atlantic Rifted Margins DPG
2) Arctic Gateways DPG
3) Sea Level WG
4) Deep Drilling WG

PCOM asked that SSP pay particular attention to adequacy of site surveys in areas where near-surface rubble is expected and asked that SSP flag potential rubble-related problems.

2. JOIDES Office (d'Ozouville)

As agreed at the previous SSP meeting, the JOIDES Office has begun to forward officially to the contact proponents, or to the co-chief scientists of upcoming legs, the comments on the site survey data packages that have been discussed during each SSP meeting. SSP recommended that this procedure should be continued.

d'Ozouville distributed to the panel members a document (abstract and maps) synthesizing information contained in the proposals of the highest ranking North Atlantic Programs (the top 5 North Atlantic rankings of each thematic panel, April 1990).

He reported that over the last two months the JOIDES Office has received only four proposals, two of which are new proposals. He reminded the panel that the JOIDES Office will move from the University of Hawaii to the University of Texas at Austin on 1 October 1990. He was very pleased that his successor, Peter Blum, nominated by Japan, was able to attend this SSP meeting. He presented his best wishes of success to Peter in this new position.

3. TAMU Report (A. Meyer)

A. Recent JOIDES Resolution activities:

Leg 131 occupied seven holes at Site 808 (proposed site NKT-2) in the Nankai Trough during the period 1 April - 2 June, 1990. Operations were hampered by strong winds, variably strong currents (up to ~ 4 knots) that induced significant pipe vibration, and unstable hole conditions. The strength of the currents was somewhat unexpected, as prior DSDP drilling in the region had not encountered such currents and advice to ODP/TAMU had indicated that Leg 131 would not be significantly different. Despite these problems, drilling results at Site 808 successfully established a middle Miocene (15.6 Ma) age for basement, mostly hemipelagic sedimentation from middle Miocene to Pleistocene time, and the onset of major turbidite deposition beginning less than 0.5 million years ago. The frontal thrust fault (intersected at 365 mbsf) occurs within an overturned fold sequence and has 145 m of vertical throw, whereas the decollement occurs as a 20m-thick zone between 945-965 mbsf, within a homogeneous hemipelagic sequence. The style and orientation of structural features change with depth and with time, with small faults predominating in the deeper section and shear bands being more common at shallower depths. Porosity and bulk density curves show major discontinuities at the thrust (reflecting the recent offset of the sediments) and immediately below the decollement (perhaps indicating high pore pressures at this level). The first *in situ* measurements of stress and pore pressure in an accretionary prism should help constrain deformation and compaction models. Interstitial pore water data show a lack of strong evidence for active, channeled fluid flow along the major (and minor) fault zones at this location. This suggests that fluid expulsion in the Nankai prism may be primarily from diffusive flow. A major chloride minimum associated with the decollement may imply a past fluid flow event. Hydrocarbon gas distributions suggest maturity levels higher than predicted from the present calculated geothermal gradient. Temperature measurements indicate a present heat-flow which agrees well with a conductive cooling model for oceanic lithosphere (See Appendices B and C).

The main SSP discussion of Leg 131 revolved around how best to predict the current-related problems and to flag potential unstable hole conditions. In both cases there was a feeling that proponents and even some of the other JOIDES panels might tend to gloss over potential difficulties. SSP and PPSP were best suited to ensure that these issues were at least flagged by the panel system, and SSP had the most lead time.

SSP CONSENSUS: Comments arising during SSP evaluation of survey packages with regard to potentially adverse downhole or oceanographic considerations should always be flagged by this panel (e.g., SSP's comments on bottom current regimes at the Northeast Australian Margin).

SSP CONSENSUS: ODP/TAMU is encouraged to conduct thorough oceanographic studies of regions scheduled for drilling, even if prior Program experience or proponent advice suggests that no weather- or current-related problems will occur.

Leg 132 (Engineering II) left Pusan on 8 June. The first thing they did was return to Site 808 in the Nankai Trough; there they successfully deployed the ONDO tool in Hole 808E. The ship next moved to Site 809 (proposed site ENG-5) in the Bonin backarc on 13 June, and have thus far occupied six holes at that site (809A-809F). Holes 809A and 809B were 11-5/8" and 9-7/8" test holes. Hole 809C was the first hole where a "mini" hard-rock guidebase (HRB) was set down on pillow lavas. The HRB's reentry cone landed at an angle too steep to permit reentry, and the HRB settled down around the drill-in bottom-hole assembly as operations continued, so that reentry was obstructed. The drill-in BHA was "fished" and recovered successfully from the HRB. During further reentry attempts, the HRB's gimballed reentry cone was broken off the HRB. In separate operations, both the separated reentry cone and the HRB itself were recovered and pulled back aboard ship and refurbished. The refurbished HRB and reentry cone from Hole 809C were then reset at Hole 809D and the BHA was drilled in, but the hole ended when the male tensioning tool failed, leaving junk in the hole. The same mini-HRB and reentry cone were repositioned to begin Hole 809E, but the mini-HRB shifted on the seafloor, obstructing the BHA and ending operations at the hole. The HRB and reentry cone were then repositioned again and drill-in BHA was emplaced at Hole 809F. After a number of tests of the DCS secondary heave compensator, coring operations in Hole 809F began on 6 July and are continuing now. This cruise will end in Guam on 5 August.

B. Ship schedule:

The current official ship operations schedule for the JOIDES Resolution is shown in Appendix D. This schedule includes cruises scheduled by PCOM through Leg 139, as per changes made at their April 1990 meeting in Paris. Leg 136 is a two-part cruise, to establish a hole close to Oahu for emplacing an OSN seismometer at a later date and to clean out "junk" left in the bottom of Hole 504B by Leg 111. The Eastern Equatorial Pacific paleoceanographic transect is now scheduled as Leg 137, and Sedimented Ridges I is now scheduled as Leg 138. Leg 139 will either be an engineering leg at the East Pacific Rise to set a bare-rock guidebase and establish a drill hole for one (and possibly both) of the two prime sites planned for drilling, or a science leg to 504B (assuming Leg 136 is successful in cleaning out the hole).

C. Cruise scientific staffing:

770 scientists have sailed on the JOIDES Resolution through Leg 131 (see Appendix E). Not counting LDGO Logging Scientists and ODP/TAMU Staff Scientists, 49% of the U.S. scientists who have sailed are from JOI institutions and 51% of the U.S. scientists who have sailed are from non-JOI institutions. The "success rate" of U.S. applicants from JOI versus non-JOI institutions varies considerably from cruise to cruise, roughly averaging 30-40%.

The shipboard scientific parties are in place through Leg 135 (Lau Basin). Scientists for Legs 137 (eastern equatorial Pacific) and 138 (Sedimented Ridges I) will be invited in late July-early August. Scientists for Leg 136 (OSN hole/504B clean-out) will be invited after the August PCOM meeting.

D. ODP personnel changes:

Tim Francis joined ODP as the Deputy Director (replacing Lou Garrison) in late June.

E. Miscellaneous cruise planning pertinent to SSP:

Leg 133: Co-Chief Peter Davies has requested PPSP and PCOM approval for a new site (NEA-10A/3) to better understand the Miocene sealevel story. His current thinking is that approved Site NEA-10A/2 will define the high sealevel part of the Miocene story (CDP 5802 on BMR Line 75/057), but that the corresponding low sealevel part of the story is best seen on the same line at CDP5963 approximately 1 km west of NEA-10A/2. He is proposing that drilling at Site NEA-10A/2 be shortened to 300 mbsf and that the time saved be used to drill Site NEA-10A/3 between a depth of 790-960 msecs (160m at 2 km/sec interval velocity) after washing through the pelagic cap from the seafloor (See Appendices F and G).

SSP viewed with concern the lateness of this insertion but judged that it was within the package already approved by SSP and that the move was now a PPSP matter.

Leg 135: Proposed sites LG2, LG3, and LG6 ran into problems at the PPSP meeting in June. These sites will be reconsidered at a PPSP meeting scheduled for 9 - 10 August at ODP/TAMU; the Co-Chiefs' pre-cruise meeting at ODP/TAMU will take place immediately following the PPSP meeting.

Discussion ensued on whether SSP had erred in its consideration of the Lau Basin package. This was not seen as the problem. SSP approval was rightly given, but the co-chief scientists had not been sufficiently well-prepared in their presentation to PPSP. It is clear that however well SSP and PPSP spell out their guidelines for the preparation of data packages, proponents will frequently gloss over the requirements. Discussion was broadened to consider future procedures with the advent of DPG's and it was concluded that Steve Lewis's involvement in the EPR DPG and Chile Triple Junction Working Group had promoted excellent presentations for SSP and PPSP.

SSP CONSENSUS: The SSP Chairman should respond to PCOM's call for nominees to DPG's with a recommendation that an SSP member be appointed as liaison with each. For specific meetings SSP may alternatively recommend that the Data Bank manager attend. SSP must maintain both active communication with DPG's and its *independent* advisory position on the adequacy of data packages.

*ACTION ITEM 2: KIDD TO WRITE TO PCOM CHAIRMAN RECOMMENDING SSP LIAISONS TO DPG'S.

Leg 136: After discussions at the April PCOM meeting in Paris, this cruise has been divided into two parts. The first part (4 - 18 March, 1991) will drill a hole near Oahu as a site for ocean seismic network (OSN) pilot experiments. A broad-band seismometer will be emplaced in this hole at a later time. The exact location of this hole, and the coring and logging program that will be carried out at this hole are still being discussed (Appendix H). The second part of Leg 136 (18 March - 21 April, 1991) is dedicated to cleaning out junk left in the bottom of Hole 504B during Leg 111. Prior to these milling and fishing operations, two or three days of downhole experiments will be completed in the hole. These experiments include temperature and permeability measurements and fluid sampling. If the fishing/milling operations to clean Hole 504B are successful, the hole will be deepened during a later leg (maybe Leg 139?).

4. PPSP Report (Ball)

Ball responded to Audrey Meyer's suggestion that discussion of means of improving chief scientists' presentations at safety reviews was needed. Ball emphasized the importance of providing chief scientists with copies of Guidelines for Safety Reviews, JOIDES Journal, Vol. XIV, No. 4 Dec. 1988, p. 33-35 and Ocean Drilling Program Guidelines for Pollution Prevention and Safety, JOIDES Journal, Vol. XII, Special Issue No. 5, Mar. 1986, p. 1-39, in the initial set of documents sent to chief scientists. Ignorance or indifference on the part of chief scientists regarding these guidelines is a main cause of problems with safety reviews. The requirement that written descriptions of location, structure, stratigraphy and possible safety problems, accompanied by Safety Review Check sheets, be mailed to Safety Panel members <u>two weeks</u> before the formal review meetings is frequently not met. Rob Kidd and Audrey Meyer will aid Carl Brenner in impressing the need for safety guideline knowledge on future chief scientists. Ball said he would also try to contact chief scientists prior to their safety reviews.

Ball reported the progress of PPSP's subcommittee composed of hydrocarbon chemists (George Claypool of Mobil, Barry Katz of Texaco, and Keith Kvenvolden of USGS) in expanding guidelines for monitoring hydrocarbon shows and updating policy regarding gas hydrate drilling. PPSP has agreed to preview existing proposals for drilling gas hydrates and to pass their impressions regarding safety aspects on to PCOM. PPSP will consider drilling gas hydrate sites like all other proposed sites- that is, on a case-by-case basis.

PPSP and ODP are pressing ahead on analyzing potential high temperature drilling problems connected with possible Cascadia drilling. This must be accomplished by the end of September in order to meet time requirements specified

PPSP will review ODP logging procedures and capabilities and the status of downhole tool developments at its August meeting.

5. Data Bank Report (Brenner)

Brenner stated that he had made a "first pass" through the highly ranked North Atlantic drilling proposals as identified by PCOM at their April meeting. Track charts of the Data Bank's holdings were produced. In most cases, substantial input of data from the proponents is still expected. Data packages for the North Atlantic programs will range from the fairly simple to the "monstrous." The Barbados and broadly-defined "N. Atlantic Conjugate Passive Margin Drilling" proposals are particularly data-intensive, in that they address several different thematic objectives or investigate several different regions, or both.

Brenner added that the TAMU and PPSP reports had covered the other issues he wished to raise, and expressed irritation over the fact that this was the first he had heard of the new Leg 133 site.

3. STATUS OF SCHEDULED LEGS (FY '91)

1. Leg 136: Suva - Honolulu Transit/Oahu Pilot Hole/Engineering 3- 504B

The Chairman welcomed John Collins (WHOI) to present data related to the Purdy, et. al. proposal for an OSN pilot hole near Oahu. Collins explained that the group had revised their preferred site locations and that two sites (north and south of Oahu) were now under consideration. Purdy had also responded to specific concerns raised by the PCOM Chairman, principally that sites in the Hawaii moat or near possible debris slide areas were unsuitable for the purposes of this experiment. SSP now recognized that the requirements included: 1) to be within 200-300 km of Oahu; 2) a sediment thickness of ~ 150m; 3) 50-100m of basement penetration for the instrument (away from the anomalous crustal structure of the Hawaii Ridge); and 4) avoidance of potential drilling difficulties.

The proposed northern site is located on ESP 1 in an area of CSP and ESP cross lines with sonobuoy data. No single channel, 3.5 kHz or 12 kHz profiles were presented, though *Farnella* GLORIA lines with each of these are available nearby. A similar situation exists for the northern site where the new *Farnella* seismics are considered better and where cores were taken in support of the Hawaii Flexure proposal. However, the southern site is now preferred by the Purdy group because of its good refraction data set and sheltered sea conditions.

[SSP held a closed session the on the second day to discuss and make recommendations on this proposal. See Section 6.1 of the minutes.]

2. Leg 137: East Pacific Neogene (Brenner)

Processing continues on the seismic reflection profiles collected during the WASHINGTON site survey. A sense of urgency is now in the air due to the fact that the leg has been moved up in the schedule. Brenner stated that because of this he had invited the co-chiefs (Mayer and Pisias) to Lamont for a meeting in August during which the data will be examined, the final sites selected and the safety package will be put together. Safety review will have to take place at the September PPSP meeting in order to avoid yet another PPSP meeting in calendar 1990.

3. Leg 138: Sedimented Ridges I & II (Louden)

The Sedimented Ridges sites were previously approved at the Hannover meeting. Still no information exists on the possibility of high resolution seismics for Escanaba Trough as previously recommended.

*ACTION ITEM 3: LOUDEN TO CONTACT EARL DAVIS FOR UPDATE OF RECENT SEDIMENTED RIDGES CRUISE RESULTS FROM SIDE-SCAN SURVEY AND ALVIN DIVES.

4. Leg 139: 504B or East Pacific Rise (Lewis)

There were no new developments expected or presented relating to 504B.

Lewis presented a summary of the East Pacific Rise DPG Report, along with new SSP matrices on the currently proposed sites (report and matrices included as Appendix H). The Chairman then welcomed Dan Fornari of LDGO, who gave a presentation on the various types of near-bottom data collected by JASON and ARGO during the Haymon/Fornari site survey cruise. Fornari fielded many questions from SSP members on the resolution capabilities of the various imaging techniques.

It was noted that the EPR DPG had concluded that the "carapace/rubble zone/ honeycomb" surface was indigenous and would likely pose drilling problems. A. Meyer commented that TAMU engineers were considering emplacing the guidebase with a "hammer-driving" action into this surface.

4. STATUS OF REMAINING CEPAC PROGRAMS (FY92 and beyond)

1. Atolls, Guyots & Aprons (Brenner)

The USSAC-funded site augmentation cruise for the Marshall Islands program is underway. The *Moana Wave* will collect another 9-10 days of data (6-channel watergun seismics, 3.5 kHz, dredges) on a cruise from Ponape to Honolulu. Duennebier will forward the data to the Data Bank for SSP examination at the next meeting.

There are no further developments in the Cretaceous guyots program. No information has been forthcoming on opportunities for obtaining sonobuoy data, as requested by SSP at its last meeting.

2. Bering Sea (Larsen)

No developments. The site UM-1 was approved by SSP at the last meeting. The Soviet data in the Shirshov Ridge area has not yet made an appearance.

3. Chile Triple Junction (Lewis)

Since the last SSP meeting in Menlo Park, the following data processing has been completed:

1) Two seismic reflection profiles (Line 734 and Line 750) have been depth migrated (MIGPACK software) at GEOMAR, Kiel. Six proposed drillsites are located on these lines. Continued processing of the CDP seismic reflection data will continue during the summer at HARC, also using the MIGPACK software.

2) Contoured gravity and magnetic field data have been merged with new shaded relief displays of SEABEAM bathymetry to clarify the relationships between the bathymetry and potential field measurements.

3) A PPSP preview of the CMTJ was conducted at the PPSP meeting in Iceland, June 1990. Following presentation of data, including a commercial well completion report from the region, PPSP had the following recommendations for the proponents:

A) The grid of dense single-channel seismic dip lines are probably adequate to delineate the three-dimensional structure surrounding drillsites if the sites cannot be moved to crossing CDP lines.

B) Drillsites might have to be moved to crossing CDP lines where such a move is compatible with reaching target horizons.

C) Proponents should not worry too much at this stage in the planning process about the locations of BSRs.

D) Proponents should get bottom water temperature measurements (perhaps from the Chilean Navy) for gas hydrate stability calculations, particularly in regions of shallow BSRs (approx. 800m water depths).

E) Proponents should display the seismic data at a large scale near the drillsites for the final safety review, rather than at the "regional" scale presented in Reykjavik.

F) Proponents should include the land geology in figures, and discuss the regional geologic history as determined from the land geology at the safety review. In particular, the issues of:

Source
Thermal History
Migration Pathways
Reservoirs
Traps

should be discussed on both regional and site-specific scales at the safety review.

G) Proponents should try to acquire rock samples from the outcrop belt of the Golfo de Penas Basin for TOC analysis, perhaps from Randy Forsythe or ENAP.

H) Proponents should present the commercial seismics from the Golfo de Penas Basin at the safety review.

Lewis was asked whether the new MCS processings and the PPSP preview had resulted in reconsideration of prime site locations. Lewis said that the sites were unchanged (see Appendix I for SSP matrices) and that the CTJ group was now awaiting PPSP's new guidelines on BSR penetrations.

SSP CONSENSUS: Preliminary CHILE TRIPLE JUNCTION site locations are unchanged after PPSP preview. Proponents should now respond to the specific data recommendations from PPSP, and should also provide the SCS watergun reflection profiles that image the BSR in regions where CDP processing tends to degrade BSR imaging.

4. Cascadia Margin (Louden):

The Cascadia Margin DPG is scheduled to meet in August for final selection of sites. Moore reported that for the Oregon margin, side-scan and multichannel seismic images have been coordinated to define surface expressions of faults. A. Meyer reported that heat flow measurements across BSR structures on the Oregon margin have been funded during an Alvin dive program scheduled for September.

Deep-tow side-scan has recently been collected on Vancouver margin.

SSP CONSENSUS: No further data gathering requirements are foreseen by SSP for the CASCADIA MARGINS. Final SSP approval will await "official" site selection and the presentation of the full data sets at our next meeting.

5. N. Pacific Neogene & Older (Larsen):

Site PM-1 (Patton Murray Seamount) was approved by SSP at the Hannover meeting.

Sites NW-1A, NW-3A and NW-4A were also approved by SSP at the last meeting; however, SSP recommends that other opportunities to collect better data should be investigated and pursued, if possible.

Detroit Seamount (DS-1C, DS-2A and DS-3A): Please note the sites were previously designated "DT." A paleoceanographic transect is the main objective, but basement samples may provide important information on the stability of the Hawaii hotspot from K/T boundary time.

Data from both the *Washington* and *Farnella* are now in the Data Bank, and Brenner has compiled a bathymetric map of the Detroit Seamount area with trackline overlays. A selection of appropriate seismic lines and revised site summary forms have been compiled by Larsen (see Appendix J for SSP matrices).

DS-1C. A new site has been selected on 3 crossing SCS lines from the *Washington*. The layers outcrop approximately 1 nm updip to the west in an erosional channel, so the structure is not closed. Basement is poorly imaged, but short range extrapolation indicates that the position is known within $\pm$ 50 m. The sediments are draped and pelagic. The data are sufficient from an SSP point of view.

DS-2A. This (new) site is positioned on crossing SCS lines. The data are sufficient as far as SSP is concerned.

DS-3A. This site is positioned on a *Farnella* SCS line. The seismic data are of low quality but are regarded as sufficient for this type of drilling, provided that good reflection data are collected by the RESOLUTION prior to drilling.

SSP CONSENSUS: The critical data for the NORTH PACIFIC NEOGENE program are in hand. The seismic reflection data are poor for a number of sites, but are still judged as sufficient for the drilling objectives as long as high-quality seismics are run by the drillship on arrival and departure from the sites.

6. E. Pacific Rise

(see item 3.4 above)

7. Sedimented Ridges II

(see item 3.3 above)

5. "NEW" CEPAC PROGRAMS; DATA PRESENTATIONS

1. Hess Deep: Layer 2/3 Transition and Layer 3 (Gillis)

The Chairman welcomed Kathy Gillis (WHOI) and Dave Caress and John Mutter (LDGO) to present data in support of the Hess Deep proposal.

Gillis outlined the Hess Deep regional geology and the main objectives of the drilling. The proposal is for a series of offset, multiple re-entry hard-rock guidebase holes in the Hess Deep region where Layer 2 & 3 rocks are shown to be exposed. Although the general tectonic setting seems reasonably well established, the detailed mechanism(s) which emplaced the crust in its present setting is subject to interpretation. The primary drilling objective is to recover lower crustal and upper mantle sections representative of a fast-spreading ridge. Processes of crustal assimilation, deformation and hydrothermalism as derived from sample recovery are also important objectives.

Presently-held survey data include:
Complete SeaBeam coverage (*Sonne* , *Atlantis* ,*Washington*)
2 dive series: 11 Alvin (Lonsdale) - 21 Nautile (Franchetau)
Magnetics (Searle & Franchetau)
Dredging (Lonsdale, Germans, Soviets)
Seismic Refraction (Soviets, Zonenshain [sp?])

Gillis noted that the sites in the preliminary proposal covering a section of EPR generated crust are now recognized as not viable for bare-rock drilling. Mutter was quizzed on whether the new sites were still priority 1 for LITHP in comparison with North Atlantic possibilities, given that the tectonic setting was now shown to be more complicated. Mutter's opinion was that they were.

Caress then outlined the LDGO proposal for a 35-day *Ewing* cruise to collect Hydrosweep, MCS, OBS, gravity and magnetics data in the Hess Deep area. Members asked many questions relating to the potential of the various techniques in terms of resolving the two structural models (proposed by Lonsdale et al. and Franchetau et al).

Four sites (without priority) have been proposed for drilling. Although tectonic models for the Hess Deep are still controversial, the differences for shallow-to-intermediate crustal drilling are not large. The sites have been selected primarily on the basis of topography and samples recovered by submersibles. Geophysical data, other than multi-beam echo sounding, are generally lacking, although proposals are presently pending (Hildebrand/SIO, Caress/LDGO). See Appendix K for SSP matrix.

[SSP then held a closed session on this proposal with the proponents absent. See Section 6.2 of the minutes for SSP recommendations.]

2. Peru Gas Hydrates (Brenner/Ball):

The objective of this proposal is to drill through the base of a gas hydrate. In previous DSDP/ODP drilling there has been great reluctance to drill into these features for fear of releasing free gas trapped beneath the solid hydrate. Von Huene et.al. hope to penetrate the hydrate and: 1) quantify the parameters controlling hydrate formation; 2) chemically characterize the gas in the hydrate; and 3) evaluate different competing scenarios of methane and fluid sources. Geophysical objectives include measuring the effect of hydrate on thermal conductivity and evaluating the relationship between hydrate presence and seismic signature.

Brenner presented the data set for the proposal. Von Huene has been reprocessing two lines (1017 and 1018) collected by Shell Internationale, paying careful attention to preserving the relative amplitude and waveform characteristics as much as possible. Previous AGC processings (which included migration before stacking) tended to show the BSR as a continuous feature. The "true amplitude" processings, on the other hand, show rather extensive lateral variation in the BSR.

The first site (GH-1) is to be drilled on Line 1018 at a point corresponding to Site 688 (located on line CDP-1 of the Nazca Plate Project). The subsequent sites will be located based on calibrated measurements of hydrate and free-gas, but will be structurally higher.

Ball outlined present PPSP thinking in terms of the viability of drilling BSR's. This results from Claypool et al.'s re-assessment that critical accumulations of gas under BSR's might be relatively rare and in any case detectable as enhanced reflectors on well-processed MCS lines.

Brenner then summarized the data set in the area of the Peru margin. The Shell lines with true amplitude processing are of superior quality. The proposed sites are also located within the net of MCS lines collected by the *Moana Wave* site survey prior to Leg 112. SeaMARC II and 3.5 kHz data were also collected during these surveys. Line CDP-1 provides additional control, as does ODP Site 688, located approximately 1 km away. SSP matrices are included as Appendix L.

[See Section 6.3 for SSP recommendations concerning this proposal.]

6. DISCUSSION AND RECOMMENDATIONS ON PRESENTATIONS

1. OSN Hole, Oahu

SSP noted with dismay the fact that the data in support of this proposal has not yet been synthesized by the proponents. It was agreed that Brenner and Collins could draw together the necessary data by September and that an SSP member should review the package on behalf of the Panel. U.S. East Coast SSP members were unable to undertake this, so Canadian member Louden was asked to visit LDGO in early September for this purpose. If this becomes impossible, the Chairman will arrange a visit from the U.K.

SSP CONSENSUS: The necessary data for the siting of the OSN PILOT HOLE (at either of the two proposed locations) probably exists. Full site survey data packages must be available for review by SSP and PPSP in September.

*ACTION ITEM 4: BRENNER WILL MEET WITH COLLINS TO BRING TOGETHER THE TWO OAHU DATA PACKAGES BY EARLY SEPTEMBER. LOUDEN WILL VISIT THE SITE SURVEY DATA BANK TO UNDERTAKE A FINAL SSP REVIEW PRIOR TO THE SCHEDULED MID-SEPTEMBER PPSP MEETING.

2. Hess Deep

There was considerable discussion over whether or not the drilling results could be properly interpreted without a coordinated seismic reflection survey.

SSP CONSENSUS: Additional geophysical data, primarily detailed seismics to better characterize crustal structure and possible existence of rubble, are needed to assure drilling objectives in the HESS DEEP. Most

of these requirements would be met if the Caress, et. al. proposal is funded. Although 2 MCS lines are proposed, the panel feels that at least 4 lines are needed (2 ea. orthogonal and 2 ea. parallel to the spreading axis) to establish whether the sections drilled are typical of the area. Deep-towed side-scan sonar is also needed to determine continuity of surface fabrics and to tie into MCS lines. SSP recommends that any transponder beacons deployed during upcoming cruises be left to aid site location for the drillship. The panel is concerned about the time needed to acquire and assimilate the required survey data, and believes that drilling should not be scheduled before late 1992.

3. Peru Gas Hydrates

SSP CONSENSUS: SSP concludes that the data set for the PERU GAS HYDRATES proposal is more than adequate for drilling. The Panel recognizes the importance of this proposal, not only for what can be learned from this specific area, but for its impact on future drilling in areas marked by the presence of BSRs.

7. ASSIGNMENT OF ATLANTIC PROGRAMS TO SSP "WATCHDOGS"

The Panel began with a discussion of its approach to watchdog assignments where members of the Panel were named proponents or might be involved in proposals to conduct future site surveys. SSP agreed that the latter conflict of interest must always be avoided. For the former case, unless the member is a senior author on a proposal, there are significant advantages to the Panel in having a member perform the watchdog role. Data oversight is significantly enhanced (e.g., Lewis on Chile Triple Junction and its presentation for PPSP preview). Members must always declare an interest when presenting to SSP and the Panel should take great care in preserving its role as an *independent* advisor to proponents and PCOM.

SSP CONSENSUS: SSP members may serve as "SSP watchdogs" on proposals for which they are "minor" proponents, but not for proposals in which they may be seeking funds for future survey activity.

Kidd noted that 23 proposals were to be shared between 10 panel members. Some proposals are probably large enough to take the full effort of one member, while others are small enough at present to be handled along with 2 and 3 other proposals. Two new members- Trehu and an oil industry representative- are expected to join us after the next meeting and could be available for any new proposals coming our way from thematic panels via PCOM. DPG's are charged with grouping some of these

8. NEXT MEETING & MISCELLANEOUS ITEMS

The anticipated business of the next SSP meeting was discussed. Principal will be the final assessments of individual CEPAC sites (Cascadia Margins; Chile Triple Junction; Atolls, Guyots and Aprons) along with initial watchdog presentations on the North Atlantic proposals. It was agreed that a 3-day meeting was required and that the dates were not as constrained as usual by the need to come after the thematic panel meetings and before PCOM. The provisional dates to be recommended to the JOIDES Office are 12-14 March.

It was recognized that SSP was next due to meet in a non-US locale and that Japan was next in order as non-US host. Hirata agreed to investigate accommodations at ORI for mid-March.

*ACTION ITEM 5: HIRATA TO INVESTIGATE ARRANGEMENTS FOR HOSTING THE NEXT SSP MEETING IN TOKYO. KIDD TO WRITE TO PCOM CHAIRMAN MOBERLY NOTIFYING HIM OF REQUESTED LOCALE AND PROVISIONAL DATES OF 12-14 MARCH.

Chairman Kidd thanked Laurent d'Ozouville on behalf of SSP for his sterling service as liaison to the Panel. He commented that no other JOIDES Office liaison in his experience had implemented so many changes that were specifically beneficial to SSP's interests. These changes had been instituted against a background of panel structure changes that had clearly made SSP's work more difficult, and the Panel was most appreciative of his efforts.

The Chairman also extended his thanks to all of the presenters for their contributions to the meeting, and to Carl Brenner for his efforts as host.

The meeting adjourned at 1600 on 13 July, leaving Kidd and Brenner to cope with the daunting task of compiling the minutes.

SITE SURVEY PANEL MEETING
JULY 12-13, 1990
LDGO

LIST OF APPENDICES

Appendix A:	F.R.G. Ship Schedules: 1990-1991
Appendix B:	Leg 131 Drilling Locations
Appendix C:	ODP Leg 131 Site 808 Section
Appendix D:	Current ODP Operations Schedule
Appendix E:	Shipboard Participant Tally Through Leg 131
Appendix F:	Proposed NEA 10A/3 Site - Leg 133 Insertion
Appendix G:	Interpretation of NEA 10A/3
Appendix H:	Summary of EPR Working Group Report; EPR SSP Site Matrices
Appendix I:	Chile Triple Junction SSP Site Matrices
Appendix J:	North Pacific Neogene SSP Site Matrices
Appendix K:	Hess Deep SSP Site Survey Matrix
Appendix L:	Peru Gas Hydrate SSP Site Matrices

F.R.GERMANY: Ship Schedules 1990-1991

F.S.SONNE Operations-schedule 1990-1991

cruise	dep. - arr.	from - to: (area)		Program (Charter)
SO-69	6-90-- 8-90	Fidji	-Guam	Uni Kiel /Marianen Back Arc
SO-70	8-90-- 9-90		-Guam	Uni Hamburg/Marianen Graben
SO-71	9-90-- 10-90		-Naha	TU Clausthal / Hydromin 2
SO-72	10-90-- 12-90		-Singapur	Uni Hamburg/ South China Sea
		Yard up to Aug.1991		
	8-91	Testcruises after general refit;		BGR; proposed area: Iberian abyssal plane

F.S. POLARSTERN Operations-schedule 1990 - 1991

cruise	dep.	arriv.	from - to	area/program
ARK VII/1	6/90-	7/90	Oslo -Tromsoe	Jan Mayen,Scoresbysund (Biolog.)
ARK VII/2	7/90-	8/90	-Tromsoe	Framstreet,Greenland Sea (Oceanog.,Biolog.)
ARK VII/3	8/90-	10/90	Tromsoe-Bremerhaven	Svalbard,Scoresbysund (Bathym.,Geolog.,Geophys.)
ANT IX/1	10/90-	11/90	Bremerhaven-Puntas Arenas	(Geochem.)
ANT IX/2	11/90-	12/90	-Kapstadt	north. Weddel Sea (Oceanog.,Biolog.,Geol.)
ANT IX/3	1/91-	4/91	-Kapstadt	south-west. Weddel Sea (Oceanog.,Biolog.,Geol.)
ANT IX/4	4/91-	4/91	-Bremerhaven	(Geochem)
ARK VIII/1	5/91-	6/91	Bremerhaveen-Tromsoe	Framstreet,Greenland Sea (Oceaong.,Biolog.,Geolog.)
ARK VIII/2	6/91-	7/91	-Tromsoe	Arctic S. (Biolog.,Geolog.,Oceanogr.)
ARK VIII/3	8/91-	10/91	-Tromsoe-Bremerhaven	Framstr.,Arctic basin (Geol.,Biol.,Oceano.,Meteorl. Glaciolog.)

F.S. METEOR Operations-schedule 1989 - 1991

M13/1	7.90- 7.90	Hamburg	-Tromsoe	Norweg.Sea
M13/2	7.90- 8.90		-Hamburg	Norweg.Sea
M14/1	9.90- 10.90	Hamburg	-Cape Verde	Biskaya/Test of Rainmeter
M14/2	10.90- 10.90		-Receife	equatorial.Atlantic/tropic.Circulation
M14/3	10.90- 12.90		-Rio de Janeiro	Southameric.Eastcoast/Geophys.,Seismic
M15/1	12.90- 2.91		-Rio de Janeiro	c.Southatlant./Brazilstream,Geol.,Biol.
M15/2	2.91- 3.91		-Libreville	subtrop.Southatlant./Oceanograph.
M16/1	3.91- 4.91		-Recife	Southatlantic/Geoscience
M16/2	4.91- 5.91		-Balem	Southatlantic/Goescience
M16/3	5.91- 6.91		-Las Palmas	offshore Brazil/Oceanograph.
M16/4	7.91		-Hamburg	?
M17/1	7.91- 8.91	Hamburg-	Hamburg	Norweg.Sea
M18	8.91- 9.91	Hamburg-	Hamburg	Northatlantic
M19	9.91- 10.91	Hamburg-	Hamburg	Northsea

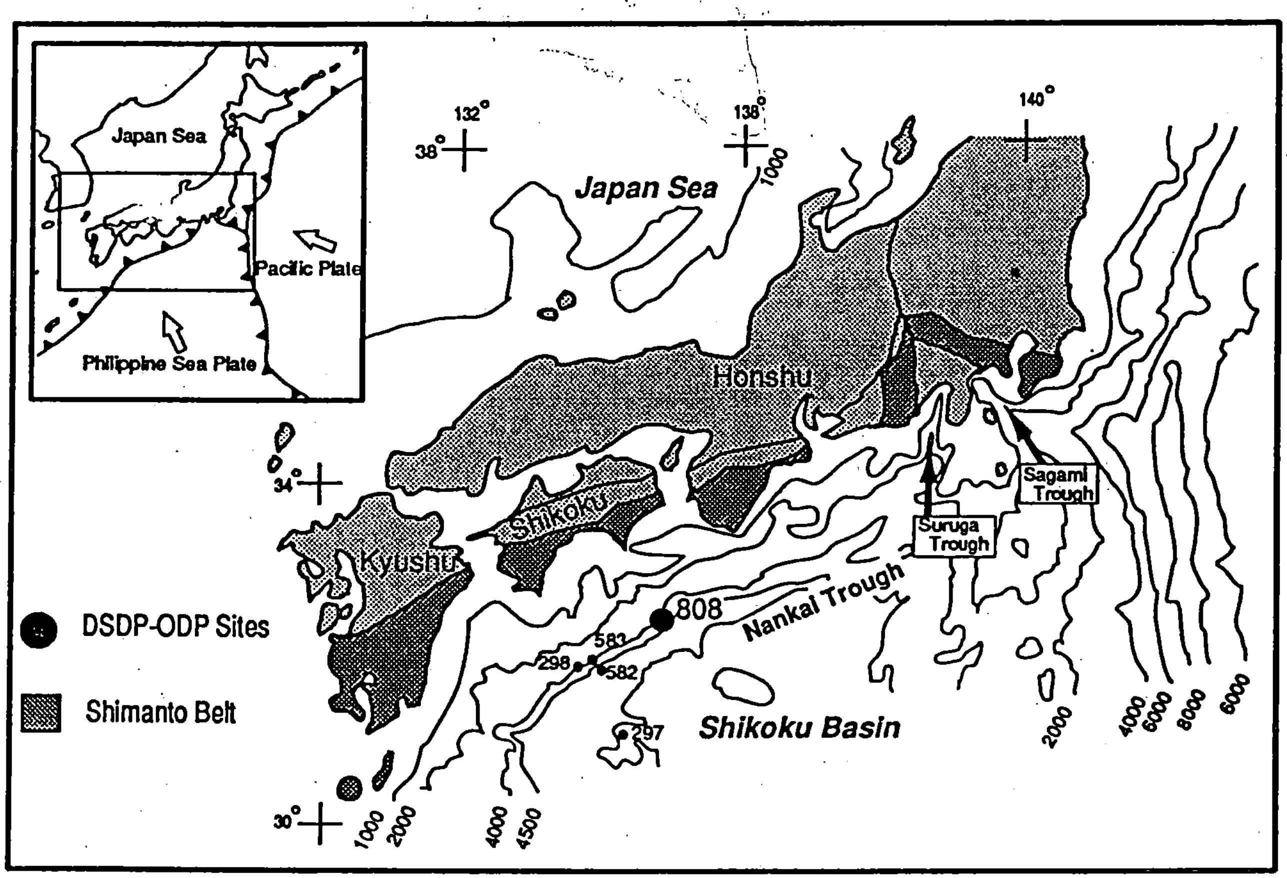

Japan Sea
Pacific Plate
Philippine Sea Plate
132°
138°
140°
38°
34°
30°
Japan Sea
Honshu
Shikoku
Kyushu
Sagami Trough
Suruga Trough
Nankai Trough
808
583
298
582
297
Shikoku Basin
DSDP-ODP Sites
Shimanto Belt
1000
2000
4000
4500
6000
8000

Figure 1

ODP Leg 131 - Site 808

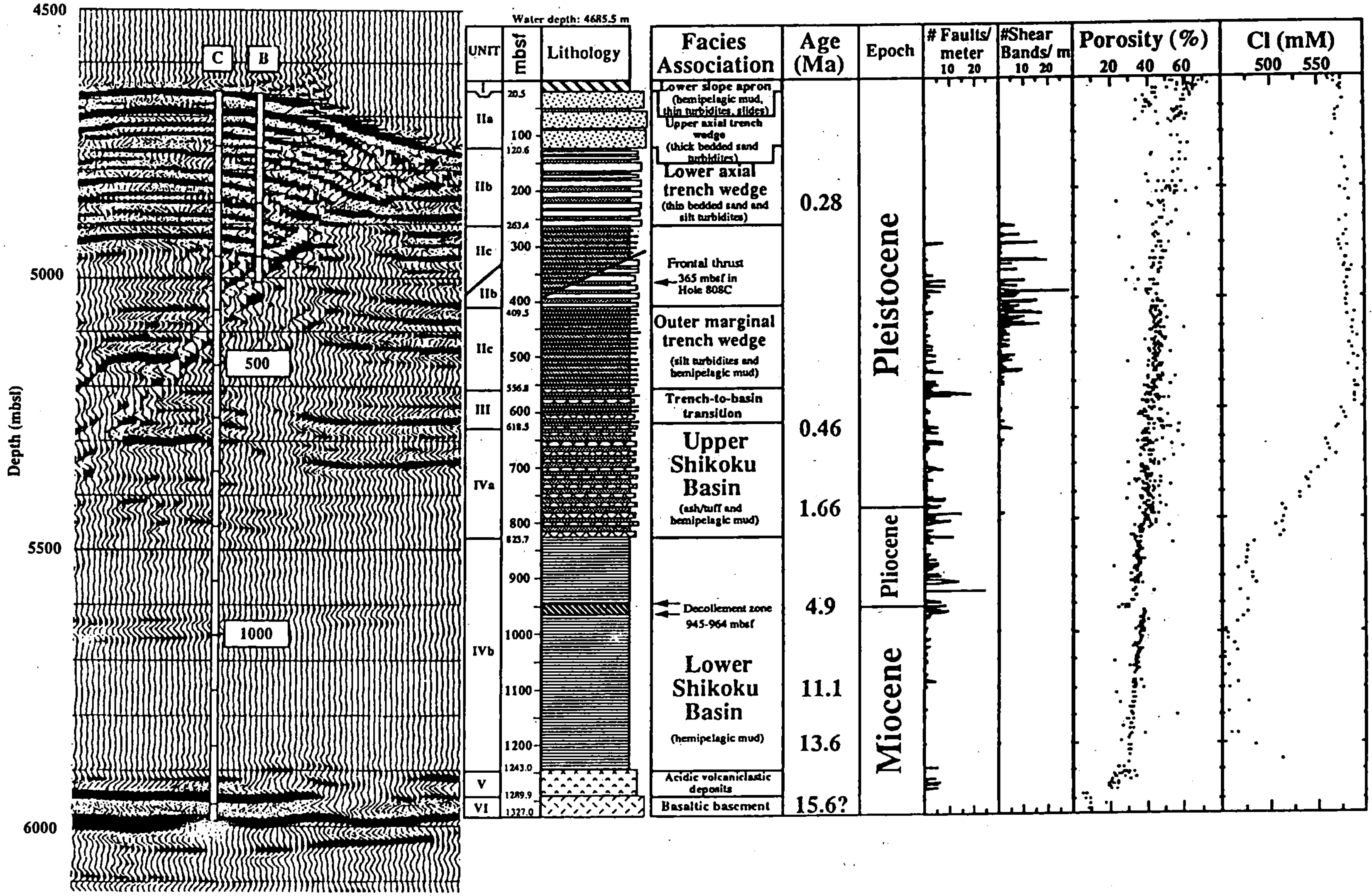


Figure 4

ODP OPERATIONS SCHEDULE

Leg	Cruise Dates	Days at Sea	In Port
131 - Nankai	4/01 - 6/02/90	62	Pusan 6/2-06/90
132 - Engineering 2	6/07 - 8/05/90	59	Guam 8/05-09/90
133 - NE Australia	8/10 - 10/11/90	62	Townsville 10/11-15/90
134 - Vanuatu	10/16 - 12/17/90	62	Suva 12/17-21/90
135 - Lau Basin	12/22/90 - 2/18/91	58	Suva 2/18/91 (Crew Change)
136 - Transit	2/19 - 3/01/91	10	Honolulu 3/01-03/91
OSN-1	3/04-18/91	14 (12 on site)	Honolulu (1/2 day)
Engineering 3A	3/18-4/21/91	34 (15 on site)	Panama 4/22-26/91
		62 days total	
137 - E. Equat. Pacific	4/27-6/26/91	60	San Diego 6/26-30/91
138 - Sedimented Ridge 1	7/01 - 9/02/91	63	Victoria 9/02-06/91
139 - Eng. 3B or 504B	9/07 - 11/06/91	60	Panama 11/06-10/91

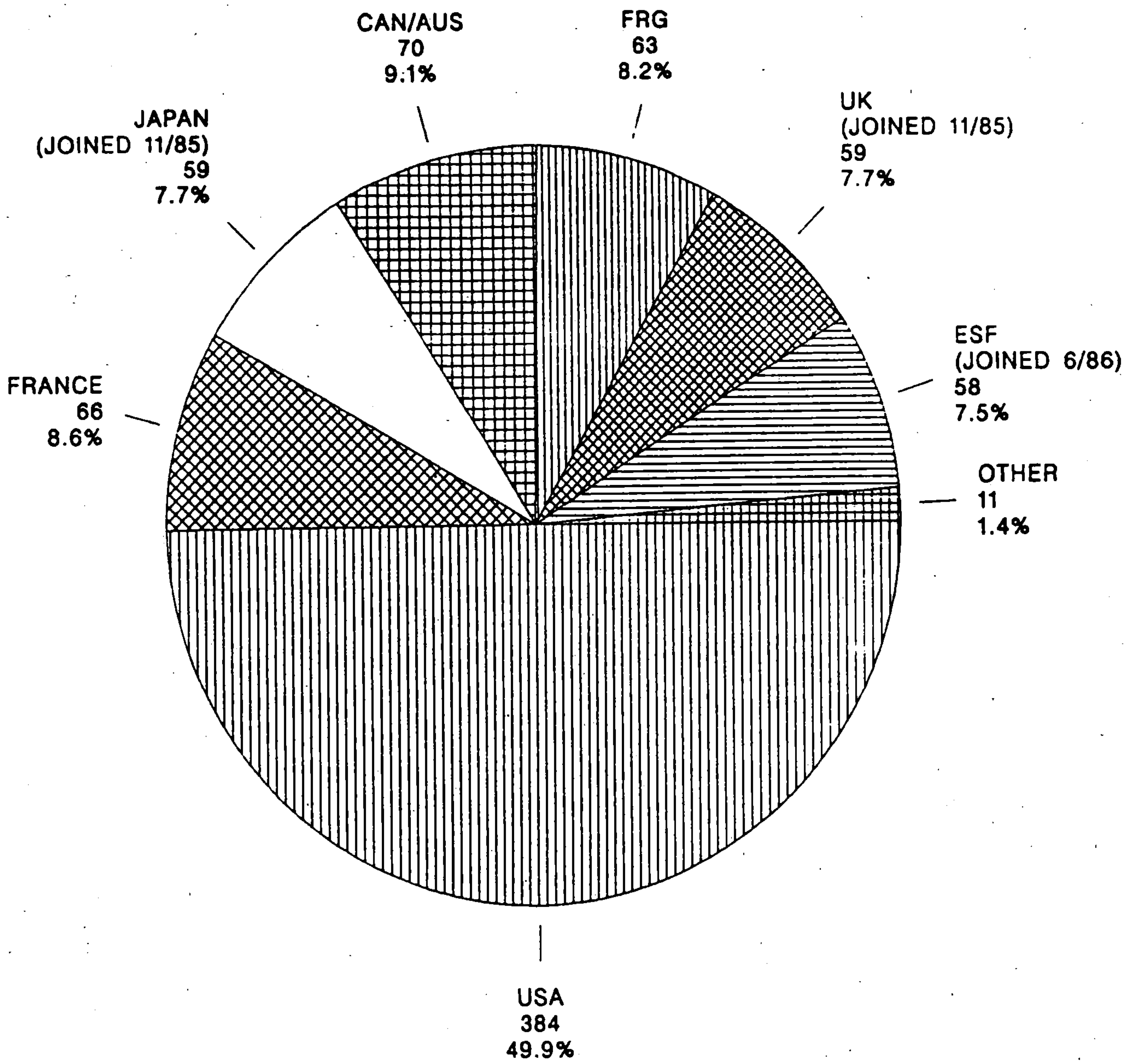
Revised 5/4/90

LEG

D

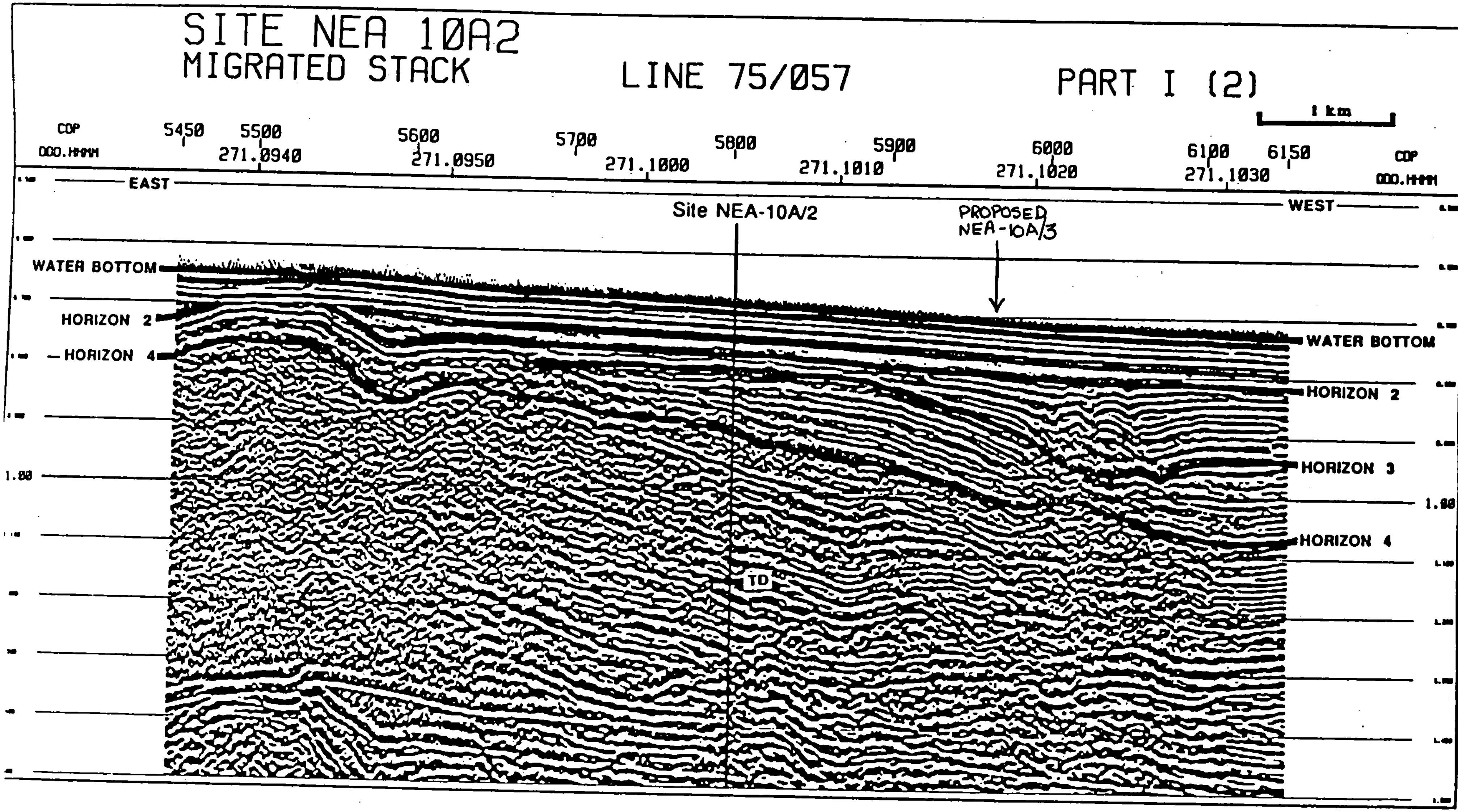
SHIPBOARD PARTICIPANT TALLY
LEGS 101 - 131

(January 1985 - June 1990)



TOTAL 770 PARTICIPANTS
(Does not include scientists on Leg 124E)

Figure 6


SITE NEA 10A2
MIGRATED STACK
LINE 75/057
PART I (2)
1 km
CDP
DDD.HHHH
5450
5500
5600
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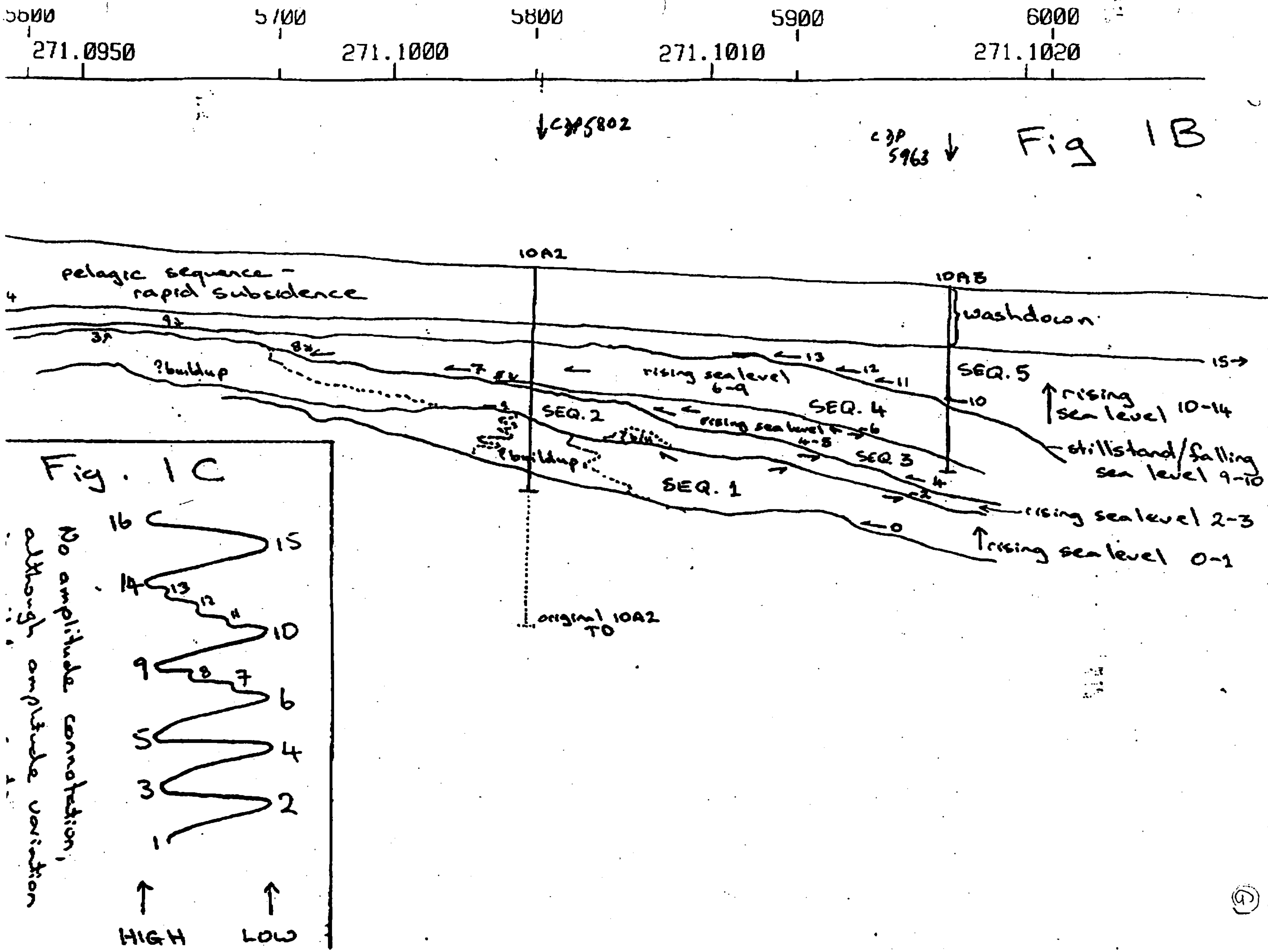
5800
5900
6000
6100
6150
271.0940
271.0950
271.1000
271.1010
271.1020
271.1030
EAST
WEST
Site NEA-10A/2
PROPOSED NEA-10A/3
WATER BOTTOM
HORIZON 2
HORIZON 3
HORIZON 4
1.00
TD

F


5600
5700
5800
5900
6000
271.0950
271.1000
271.1010
271.1020
CDP 5802
CDP 5963
Fig 1B
10A2
10A3
pelagic sequence - rapid subsidence
washdown
?buildup
rising sealevel 6-9
SEQ. 5
rising sea level 10-14
SEQ. 4
SEQ. 2
rising sea level 4-6
SEQ. 3
?buildup
stillstand/falling sea level 9-10
SEQ. 1
rising sealevel 2-3
rising sea level 0-1
original 10A2 TD
Fig. 1C
No amplitude connotation, although amplitude variation
HIGH
LOW

A Drilling Strategy for the East Pacific Rise: ODP East Pacific Rise Working Group Report
Summary for Site Survey Panel

I. Long-term general Goals

A. Composition of partial melt from upper mantle
B. Melt differentiation in crustal-level magma chambers
C. Crustal cooling by hydrothermal circulation
D. Chemical interactions of hydrothermal fluids with crust and ocean water
E. Controlling factors of tectonic, hydrothermal, and magmatic processes

II. Fundamental Observations

A. Along-strike segmentation of medium to fast ridges at 50 km to 150 km scale:
   1. Volcanic morphology
   2. Tectonic structure
   3. Distribution of hydrothermal activity
   4. Crustal structure
   5. Lava composition

B. "(a) long-term mapping and observational program designed with a goal of understanding the seafloor spreading process on a global scale can begin with the proper characterization of the process on a scale of a single ridge segment."

III. Specific Goals

A. Thermal and chemical interactions of high-temperature fluids at depth at ridge axes:
   1. Steady-state or ephemeral axial magma chambers?
   2. Rates of heat exchange
   3. Fluid-rock interactions
   4. Drilling target: presumed axial magma chamber reflectors @ 1 km - 1.5 km depth

B. Near-surface environments of fluid discharge:
   1. Sub-seafloor reactions
   2. Fluid mixing
   3. Ore genesis
   4. Drilling target: small and ephemeral; difficult
C. Low-temperature fluid-rock chemical reactions:
   1. Discharge and recharge zones
   2. Ridge crest and ridge flank
   3. Ocean water chemical balance
   4. Composition of subducted oceanic crust
   5. Drilling targets: sites at/near ridge axis plus older sites on distal flanks of ridge
D. "Ground-truth" for geophysically-mapped horizons:
   1. Seismic reflection events
   2. Electromagnetic horizons
E. Compositional and petrological variation of lavas
   1. Igneous startigraphy preserved in subsurface

IV. Ridge segment selection criteria

A. Fast-spreading ridge; => 50 mm/yr half rate
   1. "typical" ridge morphology
   2. Candidate: Ridge between Rivera and Siqueros F.Z.s.
B. Shallow, well-imaged axial seismic reflector
C. Vigourous hydrothermal activity
D. Well-known spreading history for at least 500,000 yrs.
E. Segment bounded on at least one end by overlapping spreading center offset
F. Well-defined acoustic and electic boundary inferred to be boundary between extrusives and dikes
G. Simple lateral basalt composition variations

V. Drilling Strategy

A. Suite of 8 holes requiring total of 4-6 drilling legs
B. Priority order (Fig. 1):
   1. Top of axial magma chamber (technically difficult)
      a. 1 - 2 km off-axis
      b. 1 - 1.5 km subbottom penetration
      c. 2 legs required for one hole

2. Axial upper crust fluid discharge zone
   a. on axis
   b. 500 m subbottom penetration
   c. sample extrussives and dike complex for for thermal measurements and fluid discharge rates, permeability, etc.
3. 3-hole transect across ridge crest
   a. Petrologic variability as function of time
   b. time-dependent hydrothermal alteration of crust
   c. 300 - 500 m penetration
4. 3-hole transect parallel to axis across OSC
   a. along-axis petrologic/chemical variability
   b. sites similar to hole 1 above
   c. 300 m penetration (extrusives only)
5. Axial discharge zone
   a. no suitable sites yet identified on EPR

VI. Site Survey Requirements

A. Bathymetric/seismic Data
   1. Multi-beam bathymetry
   2. Regional seismic reflection profiles
   3. High-res. side-scan sonar (SeaMarc I, SeaMarc S)
   4. Detailed surface magnetics
   5. MCS profiles (CDP and expanding spread) at all sites
   6. refraction and seismic tomography
   7. electromagnetic sounding and deep-towed conductivity
   8. Near-bottom gravity and magnetic profiling
B. Water chemistry and physics
   1. Hydrocasts and CTD surveys
   2. Backscatter and transmissometry
   3. 3-D CTD and nephelometry surveys (NOAA)
   4. dynamic hydrocasts (IFREMER)
   5. current meter measurements
C. Sampling
   1. transponder-navigated dredging, 1-2 km grid
   2. submersibles
   3. detailed geologic maps around sites (submersible plus high-frequency side-scan (SeaMarc S?))

VII. EPRDPG Recommendations, April 5 - 7, 1990

A. 9° 30' segment identified as primary target region
   1. strength and breadth of axial magma chamber reflection
   2. overall level of geophysical characterization

B. 12° 45' segment to remain in planning process as alternative

C. Seismic tomography expt. (Solomon, Purdy, Toomey) suggests that axial site may be no more difficult to drill than flank sites

D. Local formation conditions can be better predicted with detailed on-bottom seismic refraction experiments (Purdy, 1991; both 9° 30' and 12° 45')

E. Scheduling of Purdy expt. may require postponement of Engineering 3B.

Site Survey Data Summary: 9° 40'N; Proposal 321-E			
SITE	EPR - 1	EPR - 2	
Latitude: **Longitude:**	9° 39.0' N 104° 16.4' W	9° 39.0' N 104° 15.5' W.	
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Fast-spreading ridge 2610 m Bare Rock 1000-1500 m	Fast-spreading ridge 2555 m Bare Rock 500 - 700 m	
TECHNIQUE			
1. High-res. SCS	Yes	Yes	
2. Deep pen SCS	Yes	Yes	
3. MCS+Vel.	Yes	Yes	
4. Seismic Grid	Site at MCS Line 559 and ESP 7	Site at MCS Line 559 and ESP 7	
5. Seis. Refrac.	ESP's, tomography	ESP's, tomography	
6. 3.5 KHz	Yes, also Scripps deep-tow sonar	Yes, also Scripps deep-tow sonar	
7. Multibeam Bathymetry	Yes, SeaBeam; JOI Synthesis data set	Yes, SeaBeam; JOI Synthesis data set	
8. High-res. Imagery	SeaMarc I, SeaMarc II, camera tows, and ARGO survey Nov. 1989.	SeaMarc I, SeaMarc II, camera tows, and ARGO survey Nov. 1989.	
9. Heat Flow			
10. Mag & Grav.	Yes	Yes	
11. Paleo cores Geotech cores			
12. Dredging	Yes, also DSDP Leg 54 and submersible sampling	Yes, also DSDP Leg 54 and submersible sampling	
13. Current Meter			

Site Survey Data Summary: 12° 45' N, East Pacific Rise			
SITE			
Latitude: **Longitude:**			
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Fast-spreading ridge Bare rock up to 1500 m		
TECHNIQUE			
1. High-res.SCS	Yes, minimal		
2. Deep pen SCS			
3. MCS+Vel.	Yes		
4. Seismic Grid	3 MCS cross lies, 1 axial line, no magma chamber events		
5. Seis. Refrac.	2-D solutions		
6. 3.5 KHz	Yes		
7. Multibeam Bathymetry	Yes, SEABEAM		
8. High-res. Imagery	SAR 140 KHz side-scan, SeaMARC I		
9. Heat Flow	Submersible Meas.		
10. Mag & Grav.	Yes		
11. Paleo cores Geotech cores	Water Chemistry		
12. Dredging	submersible samples		
13. Current Meter			

Site Survey Data Summary: Chile Margin Triple Junction, 7/90			
SITE	TJ - 4	TJ - 4B	TJ - 5
Latitude: Longitude:	46° 14.3'S 75° 47.4' W	46° 19.3' S 75° 44.6'W	45° 53.7'S 75° 51.3' W
Environment: Water Depth: Sed. Thickness: Penetration:	Inner trench slope 2905 300 m 400 m	Inner trench slope 2325 m 2000 + m 600 m	Inner trench slope 2760 800 m 825 m
TECHNIQUE			
1.High-res.SCS	Digital watergun, Conrad 29-01	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes, Darwin #1 well	Yes, Conrad 23-04 Darwin #1 well	Yes, Conrad 23-04 Darwin #1 well
12. Dredging	Yes	Yes	Yes
13. Current Meter	---	---	---

Site Survey Data Summary: Chile Margin Triple Junction, 7/90			
SITE	TJ - 6	TJ - 7	TJ - 8
Latitude: **Longitude:**	45° 43.3'S 75° 39.2' W	46° 31.0' S 75° 49.0' W	46° 43.0'S 75° 47.0'W
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Inner trench slope 1340 m 1000 m 1050 m	Inner trench slope 1280 m 500 m 550 m	Inner trench slope 2500 m 700 m 750 m
TECHNIQUE			
1.High-res.SCS	Digital watergun, Conrad 29-01	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes, Darwin #1 well	Yes, Conrad 23-04 Darwin #1 well	Yes, Conrad 23-04 Darwin #1 well
12. Dredging	Yes	Yes	Yes
13. Current Meter	---	---	---

Site Survey Data Summary: Chile Margin Triple Junction, 7/90			
SITE	TJ - 9	TJ - 10	TJ - 11
Latitude: **Longitude:**	47° 11.5'S 75° 47.0' W	47° 45.5'S 76° 13.0'W	47° 45.0' S 76° 01.0'W
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Inner trench slope 1900 m 1200 m 700 m	Inner trench slope 2025 m 1000 m 600 m	Inner trench slope 800 m 900 m 910 m
TECHNIQUE			
1.High-res.SCS	Digital watergun, Conrad 29-01	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes, Darwin #1 well	Yes, Conrad 23-04 Darwin #1 well	Yes, Conrad 23-04 Darwin #1 well
12. Dredging	Yes	Yes	Yes
13. Current Meter	---	---	---

Site Survey Data Summary: Chile Margin Triple Junction, 7/90			
SITE	TJ - 12	TJ - 13	TJ - 14
Latitude: Longitude:	47° 44.0'S 75° 50.0'W	44° 27.0'S 75° 41.0' W	44° 26.0' S 75° 31.0' W
Environment: Water Depth: Sed. Thickness: Penetration:	Inner trench slope 1800 m 500 m 525 m	Inner trench slope 2050 m 4000 m 800 m	Inner trench slope 1125 m 1000+ m 700 m
TECHNIQUE			
1.High-res.SCS	Digital watergun, Conrad 29-01	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes, Darwin #1 well	Darwin #1 well	Darwin #1 well
12. Dredging	Yes		
13. Current Meter	---	---	---

SITE	TJ - 15		
Latitude: Longitude:	44° 25.0'S 75° 23.0'W		
Environment: Water Depth: Sed. Thickness: Penetration:	Inner trench slope 900 m 1200 m 700 m		
TECHNIQUE			
1.High-res.SCS			
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP		
4. Seismic Grid	Yes		
5. Seis. Refrac.	---		
6. 3.5 KHz	Yes		
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets		
8. High-res. Imagery	GLORIA survey of region, Darwin 36		
9. Heat Flow			
10. Mag & Grav.	Yes		
11. Paleo cores Geotech cores	Darwin #1 well		
12. Dredging			
13. Current Meter	---		

"NW sites

SITE SURVEY DATA SUMMARY. AREA North Pacific Neogene

TARGET SITE:	NW-1	NW-3	NW-4
Latitude: Longitude: Region:	46°6'N 161°8'E N. Pacific Basin	41°30'N 178°18'W N. Pacific Basin	44°45'N 168°12'W N. Pacific Basin
Environment: Water Depth, m: Sed. Thickness(m): Penetration(m):	Open Ocean 5530 ~200 400	Open Ocean 5800 ~100 300	Open Ocean 5685 ~100 300
TECHNIQUE:			
1. Single-Channel Seismic: Deep Penetration	"yes" (old small airgun)	"yes"	"yes"
2. Single-Channel Seismic: High Resolution	Vema 21 (poor quality)	S.P. Lee (poor quality)	S.P. Lee (poor quality)
3. MCS & Velocity Determination	No	No	No
4. Grid of Intersecting Seismic Lines	?	?	?
5. Seismic Refraction	No	No	No
6. 3.5 kHz	Poor; needed	Needed	Needed
7. Multi-Beam Bathymetry	No	No	No
8. High Resolution Imagery	No	No	No
9. Heat Flow	No	No	No
10. Magnetics and Gravity	Some	Some	Some
11. Cores: paleoenvironment geotechnical	Yes	No (?)	No
12. Dredging	No	No	No
13. Current Meter (for bottom shear)	No	No	No

Figure 6. Site Survey Data Summary Sheet

Patton-Murray Seamount

SITE SURVEY DATA SUMMARY. AREA North Pacific Neogene

TARGET SITE:	PM-1A		
Latitude: Longitude: Region:	54°21.9'N 148°27.3'W NE Pacific		
Environment: Water Depth, m: Sed. Thickness(m): Penetration(m):	Seamount 3660 310 360		
TECHNIQUE:			
1. Single-Channel Seismic: Deep Penetration	Yes		
2. Single-Channel Seismic: High Resolution	Yes		
3. MCS & Velocity Determination	No		
4. Grid of Intersecting Seismic Lines	Yes		
5. Seismic Refraction	No		
6. 3.5 kHz	Yes		
7. Multi-Beam Bathymetry	No		
8. High Resolution Imagery	No		
9. Heat Flow	No		
10. Magnetics and Gravity	Yes		
11. Cores: paleoenvironment geotechnical	Yes		
12. Dredging	No		
13. Current Meter (for bottom shear)	No		

Figure 6. Site Survey Data Summary Sheet

Detroit Seamount SITE SURVEY DATA SUMMARY. AREA North Pacific Neogene

TARGET SITE:	DS-1C	DS-2A	DS-3A
Latitude: Longitude: Region:	51°17'N 167°40'E N. Pacific	51°02.5'N 167°58'E N. Pacific	51°27.5'N 168°20.5'E N. Pacific
Environment: Water Depth, m: Sed. Thickness(m): Penetration(m):	Seamount (crest) 2400 600 650	Seamount (flank) 3160 600 650	Seamount (flank) 3855 600 650
TECHNIQUE:			
1. Single-Channel Seismic: Deep Penetration	THOMAS WASHINGTON Line "A" at 1358 Z Line "D" at 0618 Z	Crossing of WASHINGTON & FARNELLA lines	FARNELLA (USGS)
2. Single-Channel Seismic: High Resolution	"	"	"
3. MCS & Velocity Determination	No	No	No
4. Grid of Intersecting Seismic Lines	Yes	Yes	No
5. Seismic Refraction	No	No	No
6. 3.5 kHz	Yes	Yes	?
7. Multi-Beam Bathymetry	Yes	Yes	No
8. High Resolution Imagery	No	No	No
9. Heat Flow	?	?	?
10. Magnetics and Gravity	Yes	Yes	?
11. Cores: paleoenvironment geotechnical	Yes	Yes	Yes
12. Dredging	–	–	–
13. Current Meter (for bottom shear)	No	No	No

Figure 6. Site Survey Data Summary Sheet

SITE SURVEY DATA SUMMARY. AREA Hess Deep

TARGET SITE:			
Latitude: Longitude: Region:	2°15'-2°18'N 101°27'-101°33'W		
Environment: Water Depth, m: Sed. Thickness(m): Penetration(m):	Bare rock 3000-5000 0		
TECHNIQUE:			
1. Single-Channel Seismic: Deep Penetration	No (USSR exists?)		
2. Single-Channel Seismic: High Resolution	Some (poor quality)		
3. MCS & Velocity Determination	No		
4. Grid of Intersecting Seismic Lines	No		
5. Seismic Refraction	USSR?		
6. 3.5 kHz	No		
7. Multi-Beam Bathymetry	Yes (FRG & US)		
8. High Resolution Imagery	Submersibles No sidescan		
9. Heat Flow	No		
10. Magnetics and Gravity	Magnetics not useful No gravity		
11. Cores: paleoenvironment geotechnical	No		
12. Dredging	Yes (FRG, USSR, USA)		
13. Current Meter (for bottom shear)	No		

Figure 6. Site Survey Data Summary Sheet

SITE SURVEY DATA SUMMARY. AREA Peru Gas Hydrates

TARGET SITE:	GH-1	GH-2, GH-3	
Latitude: Longitude: Region:	11°32'S 78°56'W Peru Trench	Precise Locations to be determined.	
Environment: Water Depth, m: Sed. Thickness(m): Penetration(m):	Active Margin 3850 900 900	Active Margin ~3800 ~900 ~500	
TECHNIQUE:			
1. Single-Channel Seismic: Deep Penetration	Some	Some	
2. Single-Channel Seismic: High Resolution	Some	Some	
3. MCS & Velocity Determination	Nazca Plate Project Moana Wave Shell Internationale	Same as GH-1	
4. Grid of Intersecting Seismic Lines	Yes	Yes	
5. Seismic Refraction	?	?	
6. 3.5 kHz	Yes (HIG, OSU)	Yes	
7. Multi-Beam Bathymetry	SeaMARC II (HIG)	SeaMARC II	
8. High Resolution Imagery	SeaMARC II (HIG)	SeaMARC II	
9. Heat Flow	?	?	
10. Magnetics and Gravity	Yes	Yes	
11. Cores: paleoenvironment geotechnical	ODP Site 688	ODP Site 688	
12. Dredging	No	No	
13. Current Meter (for bottom shear)	No	No	

Figure 6. Site Survey Data Summary Sheet

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JOIDES SITE SURVEY PANEL MINUTES
USGS MENLO PARK

APRIL 9 and 10, 1990

MEMBERS: KIDD , Rob (Cardiff, UK) - Chairman
DUENNEBIER, Fred (HIG, USA)
KASTENS, Kim (LDGO, USA)
LARSEN, Birger (Copenhagen, ESF)
LEWIS, Stephen (USGS, Menlo Park, USA) - Host
LOUDEN, Keith (BIO, Canada)
PAUTOT, Guy (IFREMER, France)
HIRATA, Aosh (Chiba, Japan)
VON HERZEN, Richard (WHOI, USA)

LIAISONS: BRENNER, Carl (DATA BANK, USA)
d'OZOUVILLE, Laurent (JOIDES Office, HIG, USA)
WATKINS, Joel (PCOM, TAMU, USA)
BALL, Mahlon (PPSP, USGS, Denver, USA)
MEYER, Audrey (ODP, TAMU, USA)

GUESTS: KULM, Vern (Oregon, USA) + Moore, Casey (Santa Cruz, USA)
DAVIS, Earl (PGC, Canada)
WINTERER, Edward (Scripps, USA)
SCHOLL, David (USGS, USA)

Apology was received from: Henrich Meyer (BGR, FGR)

SSP EXECUTIVE SUMMARY
MENLO PARK, CALIFORNIA, APRIL 1990

The aims of Site Survey Panel's Menlo Park Meeting were to assess as fully as possible the remaining CEPAC programs, that are presently either scheduled or tentatively scheduled, prior to PCOM's setting of a 4-year track for JOIDES Resolution at its Paris meeting. SSP plans to defer assignment of work on new proposals to its members until the 4-year plan is known. A further (July) meeting of SSP is to begin this assessment of survey data related to the new track.

SSP 'watchdogs' provided updates on scheduled legs 136, 137, and 138. For Leg 136, Engineering Leg III, there is a complete data package for 504B but SSP recommends that the near bottom seismic study planned for EPR be completed before guidebases are set there, so that the thickness of the rubble zone might be assessed beforehand. For Leg 137, Sedimented Ridges, all data requested by SSP are now in hand. SSP recommended collection of near bottom side-scan data in Escanaba Trough if at all possible. N.B. side-scan data will be collected at Middle Valley in May/June. For Leg 138, E. Pacific Neogene, SSP judges the data to be fully in hand although proponents are refining seismic data with further processing.

Data presentations were made to SSP for a number of remaining CEPAC programs by proponents attending as guests: Winterer, Kulm, Moore, Davis, Scholl. Data packages are now considered generally adequate for Chile Triple Junction, the Cascadia Margins, Atolls and Guyots, North Pacific Neogene and Bering Sea. However, in each case SSP has made specific recommendations to proponents as to desirable improvements in their data sets. Specific site locations when refined will require final SSP review when PCOM's 4-year program is in place.

SSP CONCENSUS:

1- The Equatorial Pacific Neogene sites were approved at the Hannover meeting. Proponent response on the quality of watergun data was to wording in the minutes that had been taken out of context.

2- The panel would track carefully sites proposed in thick sediment accumulations. Present SSP guidelines note that heat flow may be requested in some cases. It was noted that SSP guidelines may need to be updated anyway after PPSP's decisions on drilling through BSR's.

3- SSP confirms its view from the Hannover meeting that Chile Triple Junction data is regionally adequate and appreciates the work accomplished by proponents in data processing since that meeting. The panel looks forward to final review of the data when site locations are refined.

4- At its Hannover meeting, SSP had approved the EPR data package with the provision that video imagery became available for setting the guidebases. These data now emphasize the importance of imaging the extent and thickness of the "rubble zone", and SSP agrees with the EPRDPG's assessment of the importance of projected near bottom seismic surveys in selecting guidebase sites.

5- SSP looks forward to future recommendations for specific sites from the Cascadia Margins DPG at our next meeting. Based on the previously existing regional coverage and our preliminary look at new MCS data, we do not foresee the need of any additional requirements to satisfy SSP.

6- The critical data for the Winterer et al. component of the Atolls and Guyots program is in hand. Where basement is a target, SSP encourages proponents to make every effort to collect velocity data which will be critical in assessing depth to basement. Ships of opportunity should be considered for sonobuoy data and other possibilities are for sonobuoy and sample data to be acquired during Engineering III.

7- The critical data for the Schlanger/Duennebier component of the Atolls and Guyots program is in hand and further data collection on the projected 'Moana Wave' cruise is likely to complete the data set.

8- SSP concluded that the data package is probably sufficient for picking North Pacific Neogene sites. Crossed seismic lines are requested for the site near the crest of the ridge (DT-1) in order to avoid closed structures. All sites should be located on seismic lines, preferably with 3.5 kHz, in order to detect disturbances in the sequence. Heat flow data should be compiled.

MENLO PARK MEETING

ACTION ITEM LIST

Item No	Person	Action
1	d'Ozouville	To forward SSP survey data and evaluations to proponents.
2	Kidd	To provide PCOM chairman with a list of names and resumes for Duennebier's replacement and to clarify the status of J. Hedberg on SSP.
3	Brenner	To initiate site survey data assessments of programs selected at the April PCOM meeting.
4	d'Ozouville	To initiate information synthesis of programs selected at the April PCOM meeting.
5	Kidd	To recommend to PCOM chairman the following dates and place for the next SSP meeting: July 10-11, 1990 at Lamont, to be hosted by C. Brenner
6	Kidd	To propose to PCOM chairman a list of guests to attend the next SSP meeting

AGENDA FOR SSP MEETING

APRIL 9 AND 10, 1990, MENLO PARK, CALIFORNIA

<u>FIRST DAY</u>

1. PRELIMINARY MATTERS:

    1. Introductions (Kidd): aims of meeting
    2. Logisitics (Lewis)
    3. Report on WHOI Panel Chairman's meeting (Kidd)
    4. Changes in minutes of previous meeting and matters arising
    5. Updated ship schedules
    6. Other business for Agenda

2. REPORTS:

    1. PCOM (Watkins)
    2. JOIDES (d'Ozouville)
    3. TAMU (A. Meyer)
    4. PPSP (Ball)
    5. Data Bank (Brenner)

3. STATUS OF SCHEDULED LEGS

    1. Leg 136 Engineering III (504B and EPR) (A Meyer)
    2. Leg 137 Sedimented Ridges I (Louden)
    3. Leg 138 E. Pacific Neogene (Brenner)

4. PRESENTATIONS:

    1. Atolls and Guyots (Winterer and Duennebier)
    2. N. Pacific Neogene and Bering Sea (Scholl)

<u>SECOND DAY</u>

5. PRESENTATIONS (CONTD)

    3. E. Pacific Rise (Davis)
    4. Oregon Margin (Kulm/Moore)
    5. Vancouver Margin (Davis)

6. STATUS OF CENTRAL AND EASTERN PACIFIC PROGRAMS - SSP SUMMARIES:

   1. Chile Triple Junction (Lewis)
   2. East Pacific Rise (Lewis)
   3. Cascadia: Oregon Margin (Louden)
      Vancouver Margin
   4. Atolls and Guyots (Duennebier)
   5. N. Pacific Neogene and Bering Sea (Larsen)

7. MEMBERSHIP

8. SSP SURVEY REQUIREMENTS FOR FRACTURE ZONE DRILLING (Von Herzen/Kastens)

9. PREPARATIONS FOR NEXT MEETING:

   1. Thematic panel rankings for 4-year program (d'Ozouville)
   2. Discussion of requirements from JOIDES Office and Site Survey Bank.
   3. Time and Place
   4. Guests

1. PRELIMINARY MATTERS

1. Introductions. The meeting began at 9:00 a.m. Chairman Rob Kidd welcomed new members Kim Kastens (LDGO), Dick Von Herzen (WHOI), and Aosh Hirata (Chiba Univ., Japan: replacement for Suyehiro)

2. Logistics. Steve Lewis as host outlined logistics for the meeting, noting when guests would arrive to make presentations on E. Pacific legs requiring review.

3. Aims of the Meeting. Kidd outlined the aims of the meeting that resulted largely from PCOM's November 1989 decision at its Woods Hole meeting to plan a 4-year ship track based on thematic panel ranking of programs. The track is to be decided in Paris at the end of this month. Site Survey Panel at its Hannover meeting had begun to adopt procedures for handling the large number of new proposals arriving at the JOIDES Office but it was clear that some such forward plan was necessary from PCOM if we were to efficiently assess and process site survey packages as had been done for the WPAC and CEPAC programs. Chairman made representations to PCOM at WHOI to provide for the necessary lead time and this was in concert with similar pleas from the PPSP, DMP, and TEDCOM chairmen. PCOM put in place a 1-year schedule for JOIDES Resolution for the Eastern Pacific along with a tentative further year of E. Pacific drilling which may or may not be part of the 4-year plan. It was recognized that watchdog assignments of new proposals could not be made until the 4-year track is known so Chairman agreed with Moberly, PCOM chair, that this spring meeting would complete as much as possible SSP's assessment of CEPAC programs. Another meeting will be scheduled in July when PCOM's 4-year track is known. At that meeting 'watchdog' assignments will be made and SSP will consider the overall survey status of programs around the track, as input for PCOM's August meeting at Scripps.

Kidd outlined further the results of his attendance at the Panel Chairman's meeting on November 26, 1989, a day preceding the Woods Hole PCOM meeting. His report as presented is included as Appendix I of these minutes, including a review of the two SSP meetings held in 1989; a forward look on CEPAC legs and SSP's concerns regarding review lead times for MCS data processing and detailed near-site surveys.

4. Changes to Hannover minutes and matters arising. No changes were noted for the Hannover SSP minutes. Chairman noted under "Matters Arising" that he had received a recent telephone call from Larry Meyer about the Eastern Equatorial Pacific Neogene proposal, expressing concern over SSP's assessment that at some sites, watergun data was 'useless' in determining sediment thickness and its other comments that better 3.5 kHz records were necessary. During

discussion it was pointed out that our minutes had: (1) approved all of the proposed sites; (2) noted that better 3.5 kHz should be collected, but that this might be done on slow site approaches to drilling; (3) noted that where sediments were thinned at one site (WEQ-2) a good 3.5 kHz profile was essential because the watergun records were indeed "essentially useless" because of ringing; (4) had asked for checks to be made of sediment thickness estimates which appeared incorrect at one site in particular (WEQ-4).

SSP CONSENSUS: The Equatorial Pacific Neogene sites were approved at the Hannover meeting. Proponent response on the quality of watergun data was to wording in the minutes that had been taken out of context.

Meyer has since noted that it is possible to process the 3.5 kHz records which were digitally collected and this will be done. He has also checked the sediment thicknesses.

Resulting from these discussions it was agreed that a better feedback mechanism was necessary between SSP and proponents (see JOIDES Report below).

5. Updated Ship Schedules. New ship schedules were received (Appendix II) for Japan, France, Canada, Australia, WHOI and LDGO. No change was reported for UK, nothing was available from ESF and the W. German member was absent.

6. Other Business for Agenda. David Scholl (USGS) was scheduled to present data packages for the NE Pacific sites in the group of guest presentations. It was also noted that he would include survey packages for the Bering Sea sites in his presentation.

2. REPORTS

2-1. PCOM reports (Watkins)

Joel Watkins made the following summary of SSP-relevant activities resulting from the November 1989 PCOM meeting:

PCOM noted that there were two competing proposals for Cascadia drilling; one off Oregon and one off Vancouver. A final decision on priority was deferred.

Sedimented Ridge 1, Chile Triple Junction, and Equatorial Pacific Neogene legs require no additional tool development. EPR barerock drilling requires DCS and high temperature slim hole tools to meet its objectives. 504B needs to be cleaned out before it can be drilled again.

PCOM approved for legs through 1991 drilling: Sedimented Ridge 1, Eastern Equatorial Pacific Neogene and 504B. If 504B cannot be cleaned out, East Pacific barerock drilling will be substituted.

PCOM tentatively scheduled for 1992 two Chile Triple Junction legs, an EPR barerock leg, Cascadia I and Sedimented Ridge II legs.

PCOM will develop a 4-year plan at its April 1990 PCOM meeting.

2-2. JOIDES Office (d'Ozouville)

d'Ozouville distributed a list of all the proposals received by the JOIDES office since the inception of ODP. Since October 1989, thirty proposals have been received, the new ones being related to the Atlantic Ocean and the revised ones to the Central and Eastern Pacific. The theme of these new proposals are mainly related to lower oceanic crust and upper mantle, deformation processes and fluid processes at convergent plates, and deformation processes at passive margins. (Appendix III) A list of abstracts of new proposals was also distributed.

In order to be sure that the proponents are informed of the comments of their site survey data by the panel, d'Ozouville proposed that the JOIDES Office forwards officially those comments to the proponents.

ACTION ITEM: JOIDES OFFICE TO SEND PROPONENTS COMMENTS OF THEIR LATEST SITE SURVEY ASSESSMENT FOLLOWING PANEL MEETINGS WITH A NOTE OF THE SSP 'WATCHDOG' OR CHAIRMAN AS CONTACT.

2-3 TAMU Report (Audrey Meyer)

1. Recent JOIDES Resolution activities:

Leg 130 ended on March 27, 1990 in Guam, recovering a record 4822 meters of core from the Ontong Java Plateau. Five sites (Sites 803-807) were occupied during the cruise, addressing both Neogene (and Paleogene) paleoceanographic objectives and basement objectives. The so-called "Neogene depth transect" consisted of Sites 803 (OJP-4), 804 (OJP-6, which the Co-Chief Scientists chose to drill instead of OJP-3), 805 (OJP-2), and 806 (OJP-1). Basement was recovered at Site 803 (~25 meters TD, of Albian or older tholeiitic basalts) and Site 807 (OJP-5; 1528.4 meters TD, including ~150 meters of slightly altered tholeiitic basalts interbedded with Albian-Aptian limestone).

Leg 131 left port on March 31, 1990. The ship is currently occupying Site 808 (proposed site NKT-2).

2. Ship schedule:

The current official ship operations schedule for the JOIDES Resolution is attached (Appendix IV), and includes cruises scheduled by PCOM through Leg 139. In this schedule, the third engineering test leg is Leg 136, consisting of two parts: Leg 136A will reoccupy Hole 504B and Leg 136B will conduct operations at the East Pacific Rise. (For more information, see status report of Leg 136 drilling plans that follows.)

An alternative ship schedule has been proposed by TAMU that separates the two parts of the third engineering test leg into separate legs about seven months apart. This has fiscal advantages for TAMU. More importantly, it also allows more time for making modifications to the diamond coring system that might be deemed necessary after upcoming tests on Leg 132. This schedule will be discussed by PCOM at their upcoming meeting in Paris.

3. Cruise scientific staffing:

742 scientists have sailed on the JOIDES Resolution through Leg 130 (see attached Appendix V).

New Co-Chiefs appointed include: Leg 137--Mike Mottl (University of Hawaii) and Earl Davis (Pacific Geoscience Centre); Leg 138--Nick Pisias (Oregon State University, and Larry Mayer (Dalhousie University, Canada).

Shipboard scientific parties through Leg 135 (Lau Basin) have been invited.

4. ODP personnel concerns:

Lou Garrison is retiring from ODP, and the search for a new Deputy Director is ongoing.

The recently advertised Staff Scientist position was filled by Amanda Palmer Julson, who decided not to leave ODP Science Operations. She will be sailing as Staff Scientist/Sedimentologist on Leg 133 (NE Australian margin).

5. ODP publications:

The Publication Department is making good progress towards reducing publication time for both the "Initial Reports" (Part A) and "Scientific Results" (Part B) volumes. The "Initial Reports" volume will soon be on a 12-month post-cruise publication schedule; the "Scientific Results" volumes are headed toward a 30-32-month publication schedule, though it will take a while to reach that goal. The Publications Department anticipates getting a total of 21 volumes published (or ready to be published) during FY90.

6. Underway lab improvements:

The following changes to the underway lab onboard JOIDES Resolution were made during the recent drydock: (a) A raised tile floor, similar to the floor in the computer user room, was installed. This flooring, complete with closed cableways, allows for easier future cable runs and cleaner signal paths. (b) Equipment racks and furniture were reinstalled in a more efficient configuration for scientists and technicians working together in the lab. This included adding a map case and large light table. (c) An air conditioner was installed in the SEDCO warehouse which vents cold air to the underway geophysics lab. This should provide enough cold air to solve the overheating conditions in the lab during tropical legs. (d) A 10-kw, 3.5kHz sonar transducer was put into the sonar dome, replacing the 2-kw, twelve-bottle array originally installed in the dome. This new system provided improved data on Leg 129--in 6000 m of water, chert layers could easily be seen beneath the sea floor. Efforts are underway to procure a CESP correlator for the 3.5-kHz system. (e) A 14-inch gate valve was reconditioned in preparation for the installation of a doppler speed log. Besides reconditioning, a 6-foot pipe spool extension was added to the gate valve. The doppler sonar transducer would have been installed, but the transducer stem was broken during shipment to the Singapore drydock. A surveyor transferred the centerline mark of the ship's hull to the gate valve hull opening, so that installation and alignment of the transducer will be possible at a later date.

Based on advice of the Shipboard Measurements Panel (SMP), a new RFP for a real-time navigation system will be written by TAMU. This RFP will hopefully produce responses that are within the financial resources of ODP, and result in a real-time navigation system onboard the JOIDES Resolution in the relatively near future.

ODP tested the French high-speed streamer loaned by LDGO during Leg 128 and the transit cruises on either side of the drydock. Results of the tests did not show significant improvement in the seismic records over ODP's existing streamer, so we do not intend to pursue purchasing such a streamer at this time. However, we continue to be interested in working towards acquiring better seismic records at greater than ~8 knots, and would appreciate continued input and advice from SSP and SMP on this matter.

7. Co-Chief Review of Site Survey packages, etc:

At Rob Kidd's request, the issue of how Co-Chiefs view the site survey packages they eventually received from the Data Bank was raised at the most recent Co-Chief Scientists' review workshop (held March 12-14, 1990, involving the Leg 125-129 Co-Chiefs). Though this issue generated little discussion, there seemed to be general agreement that the services and materials provided by the Data Bank were excellent. Chairman commented that this meant that SSP's, and in particular the Data Bank's activities were reaching their objectives and Carl Brenner was to be congratulated.

2-4 PPSP Report (Ball)

PPSP met in Menlo Park, California on February 27 and 28, 1990. The meeting opened with a discussion of the gas shows encountered during Sea of Japan drilling (legs 128 and 129) led by Marta von Breymann (ODP hydrocarbon chemist). It was concluded that judging from the Sea of Japan experience, an addendum to PPSP guidelines for hydrocarbon monitoring at sea is required. George Claypool led a discussion of gas hydrates. Claypool pointed out that although a BSR is evidence for free gas below a clathrate base, pressure of this gas should not exceed hydrostatic as long as water is present in a liquid phase to combine with the gas to form more clathrate. Ball appointed Claypool (Mobil), Katz (Texaco), and Kvenvolden (USGS) to develop expanded guidelines for gas monitoring and to update policy regarding gas hydrates.

PPSP conducted safety reviews of legs 132-134, an engineering leg, the Northeast Australian Margin, and Vanuatu. Three engineering sites (six locations) were approved to penetration depths of less than 300 m in the Bonin Back-arc Basin and on Shatsky Rise. The purposes of this leg are: (1) to further evaluate the diamond coring system (DCS) drilling crystalline rocks, interbedded chalk and cherts, and shallow water carbonates of atolls and guyots; (2) to deploy the mini hard-rock guide base; and (3) deploy and test a modified re-entry cone compatible with the DCS. No safety problems are anticipated in connection with these sites. Fourteen sites were approved on the Northeast Australian Margin. Only two of these sites were approved to penetration depths exceeding 500 m; one to 700 m and one to 1100 m. All the Australian sites are located off structure. PPSP emphasized that the Northeast Australian Margin is essentially an unknown area and that extreme caution must be exercised in monitoring for hydrocarbons during the drilling operations. A hydrocarbon chemist is a member of the scientific party on this leg. Six sites were approved for the Vanuatu leg. Four of these sites are on the d'Entrecasteaux ridge where it collides with the central New Hebrides Arc and don't appear to present potential safety problems. Two sites are on the flanks of the North Aoba Basin. Sediment thicknesses in this basin appear to be 5 to 6 km. It follows that if source rocks are present in this section, they may be mature and could provide hydrocarbons to migration routes that might reach the basin's flanks. Care must be taken in monitoring samples for hydrocarbons in drilling the Aoba Basin holes.

Ball commented that PPSP would like to recommend that all sites with > 2km of sediment thickness should have heat flow data available for safety review, in order to calculate temperature gradients.

SSP CONSENSUS: **The panel would track carefully sites proposed in thick sediment accumulations. Present SSP guidelines note that heat flow may be requested in some cases. It was noted that SSP guidelines may need to be updated anyway after PPSP's decisions on drilling through BSR's.**

2-5 Data bank report (Brenner)

The Data Bank's FY91 budget was trimmed slightly during BCOM review. The final figure is just under $228,000, an increase of about 4.5% over FY90, and about $1,000 less than requested. No hardship is anticipated from this minor reduction.

Brenner described how USSAC had funded Data Bank to convert the EPR synthesis tapes to a single ASCII format. (The SeaMARC tapes were produced at LDGO and had been written in UNIX; the SeaBeam tapes had been prepared by URI and were written in VMS). A general discussion ensued concerning the difficulty of archiving and reproducing some of the more advanced types of survey data (side-scan, swath mapping, video images, etc.).

For now the Data Bank should try to keep things simple and continue to work with "analog" versions of swath data (e.g., photographic negatives for side-scan, drafted maps for bathymetric swath mapping) when preparing data packages for JOIDES panels and scientists.

If in the future a standardized digital format for these data types evolves, the Data Bank will explore the possibility of archiving the data digitally and running off images on an "as needed" basis. Some high quality image processing hardware already exists at LDGO, so the Data Bank will probably be able to provide these services to the JOIDES community without a major budget adjustment.

3. STATUS OF SCHEDULED LEGS

3-1 Leg 136 Status Report (Audrey Meyer)

Leg 136 is scheduled as the third engineering test leg, consisting of two parts (see Appendix IV). Leg 136A will reoccupy Hole 504B and attempt to mill up/fish junk left in the bottom of the hole during Leg 111. Prior to milling, several days of logging experiments (temperature, fluid sampling, and permeability) will be conducted. If the milling and fishing are successful, LITHP has recommended that Hole 504B be deepened as much as possible during the remainder of Leg 136A; if the milling and fishing are not successful, LITHP recommends that a full-logging program be carried out for the remainder of the leg. This recommended full-logging program would include FMS, wireline packer, flow meter, geochemical logging, and sidewall coring (see LITHP minutes from their March 5-7, 1990 meeting for more details). A small scientific party of petrologists, geochemists, and downhole loggers will be invited to participate on this part of Leg 136. There are no remaining survey requirements for 504B drilling.

Leg 136B will establish one or two holes on the East Pacific Rise, using mini hard-rock guidebases and drill-in BHA/back-off sub bare rock spudding systems. Site survey status relating to selection of these sites is discussed in 6-2 below. Additional testing of the diamond coring system (DCS) will be conducted, as necessary to verify that the sites established are viable for further scientific drilling on a later leg. A small scientific party will be invited to participate on this part of Leg 136, to handle any rocks recovered and to make scientific decisions during the leg regarding such critical things as placement of the guidebases. Both LITHP and the EPRDPG feel that Leg 136B should occur as soon as possible, consistent with engineering needs for possible additional development after Leg 132. The EPRDPG has recommended 9°30' N as the preferred region to set the guidebases (see LITHP minutes from the March 5-7, 1990 meeting and EPRDPG minutes from their April 5-7, 1990 meeting for more details).

3-2 Leg 137. Sedimented Ridge Crests

Davis and Franklin were contacted regarding the SSP request for core summary information from Middle Valley (Juan de Fuca). Franklin will supply these to Data Bank. Detailed heat flow data to be merged with pore fluid chemistry. Davis will supply heat flow and single-channel seismics on Escanaba Trough and multichannel seismic lines on Middle Valley. No new information as to possibilities for high resolution seismics for Escanaba Trough. We recommend collection of deep-tow side-scan sonar if possible.

New programs planned for Middle Valley are:

a. 120 kHz side-scan survey (May/June).
b. Alvin program for vent fluid sampling (5-7 dives in August).

No changes in sites from those presented at October 1989 meeting. SSP Site Summary Sheets given in Appendix VI. PCOM has allocated a two leg program:

- First is scheduled for summer 1991 on Middle Valley
- Second tentatively scheduled for summer 1992 on Escanaba Trough.

Technical limitations for logging in high temperature regimes on active sites remain.

3-3 Leg 138 Eastern Equatorial Pacific Neogene (Brenner)

Because Larry Mayer has been at sea on the Ontong-Java leg for the past 2 months, not much progress has been made on the seismic processing for this program. Mayer and Pisias are aware of the SSP's critique of the data set presented in October (see discussion in matters arising above). No major problems are now anticipated. It is hoped that the SSP will get a final look at these data at the July meeting.

4. PRESENTATIONS

At the end of the morning session SSP preceded the presentations by guest proponents, scheduled for day one PM and day 2 A.M., with a review of watchdog concerns for each program.

Following lunch, Chairman welcomed Jerry Winterer (Scripps) and Dave Scholl (USGS, Menlo Park) and presentations of data and discussions ensued on:

1) Atolls and Guyots (Winterer and Duennebier)
2) N. Pacific Neogene and Bering Sea (Scholl).

Day one proceedings ended at 5:30 p.m.

5. PRESENTATIONS CONTINUED

Day two began at 8:30 a.m. with Chairman welcoming guests Vern Kulm (Oregon State), Casey Moore (Santa Cruz), and Earl Davis (PGC, Canada) and presentations of data and discussion ensued on:

3) East Pacific Rise (Davis)
4) Oregon Margin (Kulm and Moore)
5) Vancouver Margin (Davis)

6. STATUS OF CENTRAL AND EASTERN PACIFIC PROGRAMS - SITE SURVEY SUMMARIES

In the afternoon, SSP reconvened to consider the presentation data and discussions in the light of earlier concerns for each of the East Pacific Programs. The following summaries and panel consensus resulted from these discussions:

6-1 Chile Margin Triple Junction (Lewis)

A progress report for Chile Margin Triple Junction data processing and analysis was presented in Menlo Park. Work accomplished or undertaken since the Hannover SSP meeting includes:

1) Merging of SEABEAM bathymetric data with GLORIA side-scan sonar imagery in the triple junction region. These results were presented at the Fall 1989 AGU Meeting.

2) Further processing of the CDP data has begun at GEOMAR and will continue at the HARC supercomputer facility in Houston. Preliminary pre-stack migrations of Line 734 were compared to an earlier post-stack migration. Some structures were better imaged by the pre-stack migration, but it was noted that the BSR reflector was not as apparent as on the earlier profile.

SSP notes that if the processing sequence that best images the structure and stratigraphy of the Chile Margin Triple Junction does not adequately image the BSR reflector, then it will be necessary to provide profiles to SSP and to PPSP that are optimized for imaging the BSR.

SSP CONSENSUS: SSP confirms its view from the Hannover meeting that Chile Triple Junction data is regionally adequate and appreciates the work accomplished by proponents in data processing

since that meeting. The panel looks forward to final review of the data when site locations are refined.

6-2 East Pacific Rise (Lewis)

The EPRDPG met in Sidney, B.C. immediately before the SSP met in Menlo Park. In Sidney, the EPRDPG chose to concentrate initially on a drilling program at 9° 30' N. Drilling will be focussed along MCS Line 561, that displays the best-developed axial reflection event, presumably related to the magma chamber beneath the axis of the East Pacific Rise. New data and results presented in Sidney and reported to the SSP for the 9° 30' N site included:

1) New ARGO side-scan sonar, 35 mm still camera images, and digital electronic video camera images from the EPR axis (Fornari cruise, fall 1989).

2) New 3-D acoustic tomography results from a 16 km square region centered on MCS Line 561 that images a linear sausage-shaped low velocity volume nearly centered under the rise crest and a high-velocity zone at the surface along the rise axis (Purdy cruise, 1989).

SSP CONSENSUS: At its Hannover meeting, SSP had approved the EPR data package with the provision that video imagery became available for setting the guidebases. These data now emphasize the importance of imaging the extent and thickness of the "rubble zone", and SSP agrees with the EPRDPG's assessment of the importance of projected near bottom seismic surveys in selecting guidebase sites.

SSP evaluated the site survey recommendations enumerated by the EPRDPG, and recommends that the following data and/or analyses be conducted prior to final site selection and drilling:

1) MIGRATION OF MCS LINE 561 TO BETTER IMAGE THE LATERAL EXTENT OF THE AXIAL REFLECTION.

2) INTEGRATION OF THE NEW 3-D TOMOGRAPHY RESULTS WITH THE MCS DATA.

3) ANALYSIS OF THE SINGLE-CHANNEL SEISMIC REFLECTION DATA ACQUIRED DURING THE TOMOGRAPHY EXPERIMENT.

In addition, SSP urges that Mike Purdy's NSF-funded near-bottom refraction experiment be scheduled far enough in advance of the Engineering 3B leg so that his preliminary results will be available to select drill sites at which to get guide bases.

6-3 Cascadia Margins: Oregon and Vancouver (Louden)

The Site Survey Panel was presented a selection of recently processed multichannel seismic profiles (144 channel Digicon) which were taken last fall across both the Oregon and Vancouver margins. These data are of high quality and clearly image the structure of faults which were not well demonstrated by the older MCS data. (Site Survey Data Sheets compiled prior to this meeting are in Appendix VI.)

The fault locations can be coherently traced across neighboring profiles with typical spacings of 2 km. This largely answers our previous concerns regarding the lack of near site 3-D imaging. We also note the presence of BSRs in the upper Section of the Oregon margin (sites 6 and 7), similar to those already mentioned on Vancouver.

We had also discussed the lack of good quality 3.5 kHz data for imaging the near surface structure close to prospective drill sites. It now seems that a merging of near-bottom side-scan data with the near MCS profiles is the best approach in correlating surface features with deeply penetrating seismic features. Good quality side-scan images already exist on Oregon and are planned for Vancouver in May-June. However, SSP recommends that deep tow 3.5 kHz data be collected on the Vancouver margin during a projected side-scan survey. On the Oregon margin, Vern Kulm mentioned that new Alvin dives will be made with a view to PPSP's projected decision-making on drilling the BSR's in September 1990, with the possibility of making additional heat flow measurements. SSP encourages the proponents to collect further heat flow data on the September cruise, particularly in the region of prominent BSRs with variable depths on the upper margin. We also encourage the collection of surface 3.5 kHz data to extend the present coverage, if at all possible.

SSP CONSENSUS: SSP looks forward to future recommendations for specific sites from the Cascadia Margins DPG at our next meeting. Based on the previously existing regional coverage and our preliminary look at new MCS data, we do not foresee the need of any additional requirements to satisfy SSP

6-4 Atolls and Guyots (Duennebier)

a. Cretaceous Guyots in the NW Pacific

Proposed sites include drilling on several carbonate capped guyots in the NW Pacific with the intent of studying Cretaceous carbonate platform and history. Data available are from several cruises, but the most recent and valuable presented at this meeting were collected on SIO Cruise Roundabout 10, 1988. Early assessment indicates that critical data are in hand, but much "desirable data" in the SSP guidelines are not available (deep penetration seismic, MCS, seismic refraction, side scan sonar, heat flow, photography, and current data). The desirability of many of these data sets in the context of this drilling may be questionable, and SSP considers their lack should not be considered at this stage detrimental to the possible scientific return afforded by drilling.

Presently the seismic data is weak for some of the Cretaceous guyots and some 3.5 kHz data is missing because of equipment problems on the Roundabout cruise. Basement is a target at some sites where it is poorly imaged by the seismics.

SSP CONSENSUS: The critical data for the Winterer et al. component of the Atolls and Guyots program is in hand. Where basement is a target, SSP encourages proponents to make every effort to collect velocity data which will be critical in assessing depth to basement. Ships of opportunity should be considered for sonobuoy data and other possibilities are sonobuoy and sample data to required during Engineering III.

b. Drowned Atolls of the Marshall Islands

Eight sites are proposed on and near three guyots in the Marshall Islands region. Proposed drilling addresses problems of chronology of reef growth and drowning related to sea level fluctuations, paleolatitude variations, and vertical tectonics. Survey data are from several cruises, mainly from HIG (MW8805, KK810626-02) and the USGS (Hein, 1989). The site survey matrix (Appendix VII) shows all necessary data available, again with some lack of "desirable" deep penetration seismic reflection, MCS, heat flow, photography, and current meter data. SSP again considers the lack of these data should not be considered detrimental the possible scientific return afforded by drilling.

A site augmentation proposal (Duennebier) will be funded by the USSAC for 5 to 7 days of additional data collection in June 1990, on the ***RV Moana Wave*.**

- Data is available from USGS for apron site near Majaro (Jim Hein).

More data to be taken June-July 1990 on Moana Wave (dredge, 3.5kHz, 6-channel seismic with watergun). (USSAC grant for site augmentation, Duennebier). Basement is poorly imaged in some cases, but dredges of volcanic breccias on high slopes indicate basement near bottom of pelagic cap in some places. Sonobuoy velocity data still need to be analysed to find depth to basement.

SSP CONSENSUS: The critical data for the Schlanger/Duennebier component of the Atolls and Guyots program is in hand and further data collection on the projected 'Moana Wave' cruise is likely to complete the data set.

6-5 North Pacific Neogene and Bering Sea (Larsen)

The main objective of the two programs is the Neogene high latitude paleoceanographic development of the northern Pacific and the sampling of possible Cretaceous sediments on seamounts of an Old Pacific plate trapped behind the Aleutian Ridge.

SSP had noted at its last meeting a number of inconsistencies of the updated proposals for the North Pacific Neogene and the Bering Sea programs in the third CEPAC prospectus. Most of these have been clarified in correspondence with C. Sancetta and L.D. Keigwin and by the presentation of D. Scholl at this meeting. It should be noted that the site numbering in CEPAC III prospectus of April 1990 is still not revised. The proponents are urged to do so.

a. North Pacific Neogene

PM-1. Patton Seamount was approved by SSP at the Hannover meeting.

NW-1, NW-3, NW-4. The positions of all of these sites have been relocated in CEPAC Prospectus III, so they need to be assigned a new number (NW-1A, NW-3A, NW-4A). SSP noted that according to Sancetta there are no specific basement objectives here but one double HPC/XCB to 200m or to bit destruction (into basement) has been projected. The seismic data for all three sites are of low quality but is regarded sufficient for this type of drilling, provided better data are collected by JOIDES Resolution prior to drilling. SSP RECOMMENDS THAT OTHER OPPORTUNITIES TO COLLECT BETTER DATA CONTINUE TO BE LOOKED FOR. The ponding of sediments at site NW-4 may suggest that reworking of pelagic sediments from the surrounding hills may have taken place. Copies of the relevant seismic lines have been received at the data bank.

Detroit Seamount. (DT-1A, DT-2A, and DT-3A). A paleoceanographic transect is the main objective but basement samples may provide important information of the stability of the Hawaii hotspot near the K/T boundary. R/V Thomas Washington data was presented in Hilo along with R/V Farnella - USGS data was presented at the meeting and are passed on to the data bank. Lloyd Keigwin proposed (letter April 4, 1990) three positions (DT-1A, DT-2A, DT-3A) which are discussed in Dave Scholl's Memo, April 10, 1990. (Appendix VIII)

SSP CONSENSUS: SSP concluded that the data package is probably sufficient for picking North Pacific Neogene sites. Crossed seismic lines are requested for the site near the crest of the ridge (DT-1) in order to avoid closed structures. All sites should be located on seismic lines, preferably with 3.5 kHz, in order to detect disturbances in the sequence. Heat flow data should be compiled.

b. Bering Sea

Data was presented by Dave Scholl and is referred to in Appendix VIII.

Umnak Plateau (UM-1). The site UM-1 was approved by SSP.

Sounder Ridge (SR-1). Sounder Ridge is a nearly completely buried seamount on a possible basement diapir. Questions with respect to achieving the scientific objectives and to safety considerations were discussed. SSP recommends that structural contour maps be produced for Sounder Ridge in order to investigate possible closures.

Shirshov Ridge. Further SSP assessment awaits the arrival of Soviet seismic profiling data (and this in turn awaits Soviet involvement in the ODP program).

7. MEMBERSHIP

Chairman informed the Panel that Fred Duennebier had formally resigned from SSP and had agreed to attend at Menlo Park as his last meeting. SSP must now recommend to PCOM a suitable US replacement, preferably with similar expertise to Duennebier since the Panel had already diversified its expertise with its latest new member.[5] After discussion it was agreed to recommend

Greg Moore (HIG)
Tom Shipley (UTIG)
Ann Trehu (Oregon State)

Chairman will also ask the PCOM chairman to clarify the status of Jim Hedberg as an SSP member.

Chairman formally thanked Fred Duennebier on behalf of SSP and JOIDES for his sterling service on the Panel. His expertise and humor will be greatly missed.

8. SSP SURVEY REQUIREMENTS FOR FRACTURE ZONE DRILLING (Von Herzen and Kastens)

The requirements for drilling in FZ's are similar in many ways to those of ridge crests, in the sense that drill sites in such environments frequently have igneous rock or rubble at the surface. This means that surveys must provide geological as well as engineering information for ideal siting of drilling locations. The survey data must extend down to the smallest scales (i.e., cm to m) to optimize the critical task of starting the hole in such environments.

On the other hand, FZ's have some general unique characteristics that distinguish them from other environments or survey objectives. FZ's are formed by major tectonic displacements, horizontal as well as vertical, which expose rock of many different types. Indeed, this characteristic is what may allow the strategy of offset drilling to sample sections of the crust and upper mantle. The crustal thickness also may be attenuated or absent in parts of some FZ's, requiring detailed surveys to place any rocks recovered by drilling in a structural and tectonic framework.

Drilling in FZ's to date (1990) has had somewhat mixed results. The most recent extensive campaign on Leg 118 achieved a reasonably deep hole (500m) in Atlantis II gabbro rocks of the FZ of SW Indian Ridge over the last half of the leg only after extensive and somewhat frustrating surveys made by the drill ship itself (Appendix IX). The original surveys of the FZ were not sufficiently detailed, and lacked some techniques which now seem technologically possible and affordable.

In particular, two detailed survey techniques may need upgrading for FZ surveys. To provide information on near-surface (tens to hundreds of meters) structured near-bottom seismic experiments would be useful. Small-scale expanding-spread experiments are capable of providing the velocity vs. depth structure for shallow depths at selected sites, which may indicate the priority and extent of fracturing in the near sub-surface. The ability to start a hole in FZ environments may depend on the amount of fracturing and rubble in the near-surface rock.

Another detailed survey requirement that became obvious during surveys on Leg 118 is sampling of in-situ rocks under TV control. Particularly in vertical sections in FZ's rock types are important to determine location in crustal stratigraphic sections. It was not possible to sample during the Leg 118 surveys, but some recent technological advances suggest that in-situ rock samplers under TV control may soon be available.

9. PREPARATION FOR NEXT MEETING

1. Thematic panel rankings

d'Ozouville presented to the panel the list and the locations of the programs ranked by the thematic panels at their last meeting. Fifty-one programs have been selected amongst which PCOM will establish a 4-year drilling program starting FY92 at its next meeting in April.

2. Requirements from JOIDES Office and the Data Bank for the next SSP meeting

After the selection made by PCOM, the JOIDES Office will forward a list of the chosen programs with the proposal references to the SSP chairman and to the Data Bank for the preparation of the next SSP meeting in July. Carl Brenner will initiate the assessment of the site survey data and Laurent d'Ozouville will begin to synthesize information contained in these proposals for use by SSP members.

ACTION ITEM 3: BRENNER TO INITIATE THE ASSESSMENT OF THE STATUS OF SITE SURVEY DATA FOR THE PROGRAMS RANKED BY PCOM IN ITS 4-YEAR PLAN.

ACTION ITEM 4: D'OZOUVILLE TO INITIATE THE SYNTHESIS OF INFORMATION (ABSTRACT, THEMES, LOCATIONS OF PROPOSED SITES, THEMATIC REVIEWS OF THE PROGRAMS RANKED BY PCOM).

3. Time and place

After discussion at the last Panel Chairman Meeting between SSP chairman and PCOM chairman, it was recommended that SSP should meet as soon as possible after PCOM decision on the 4-year drilling program to start to assign watchdogs to the selected programs.

SSP members agreed that the next panel meeting should be July 10-11 would take place at Lamont, and would be hosted by Carl Brenner.

ACTION ITEM 5. KIDD TO CONFIRM (WITH PCOM CHAIRMAN) TIME AND PLACE OF THE NEXT SSP MEETING (PROPOSED JULY 10-11TH JULY AT LDGO)

4. Guests

Von Herzen suggested that Dan Fornari and/or Rachel Heyman might be invited to make a presentation at Lamont of the new video imagery - East Pacific Rise.

Chairman will also propose that P. Blum, who will replace L. D'Ozouville at the JOIDES Office, be invited to the next meeting. The next SSP meeting will be the last one before the JOIDES Office relocates from Hawaii to Texas.

It was further suggested that it might be appropriate to invite Louden's Australian alternate, Phil Symonds, to take part in the next meeting as it would afford a full view of SSP's work schedule over the next few years.

ACTION ITEM 6. KIDD TO WRITE TO PCOM CHAIRMAN SUGGESTING GUESTS FOR THE JULY MEETING

The meeting closed at 4.30 p.m. Steve Lewis was warmly thanked for arranging a most successful meeting and field trip.

SITE SURVEY PANEL MEETING
MENLO PARK
APRIL 9-10, 1990

APPENDICES

LIST OF APPENDICES

JOIDES SITE SURVEY PANEL - CHAIRMAN'S REPORT 1989

BACKGROUND:

Site Survey Panel provides advice to PCOM on the adequacy of site survey data accompanying mature drilling proposals: in terms of each proposal's stated drilling objectives.

The Panel provides guidelines for proponents and advises where additional data must be collected or may be available elsewhere.

SSP oversees the activities of the JOIDES Site Survey Data Bank in assembling site specific packages, both for PPSP scrutiny and for eventual use on scheduled ODP Legs. Thus, the SSP comprises:

- members, who each maintain a *watchdog* role for specific proposals;
- the manager of the Data Bank;
- liaisons from TAMU and the JOIDES Office;
- liasons from PPSP, PCOM, and SMP.

YEAR REVIEW:

SSP began the year with 8 members and Dr. Greg Mountain as Chairman. During the year, Mountain resigned to move to NSF and R. Kidd took the Chair; members for Canada/Australia and France were changed (Louden for Pierce and Pautot for Mauffret, respectively) and PCOM assigned three new members (Kastens, von Herzen, and Hedberg and one liason (Moran, SMP). This expands the full membership to 11, broadens the technical expertise available and increases the U.S. membership from 2 to 5.

Two SSP meetings have been held:

10 - 12 April in Hawaii (including a joint session with CEPAC);

16 - 19 October in Hannover.

<u>In Hilo, Hawaii</u>, the Panel concentrated primarily on reviewing the status of survey data for the CEPAC program. Updated packages on scheduled and remaining WPAC were discussed as well as the effects on site survey progress of likely changes in order of drilling being contemplated by PCOM. In the event, Old Pacific drilling became scheduled when the key site survey data was still to be collected and SSP requested a special presentation of the data at its Hanover meeting by proponent Lancelot. Good progress was reported on all other WPAC packages. On CEPAC programs, SSP provided advice to proponents on survey data to be collected on cruises in support

of Oregon, Vancouver and Sedimented Ridges Proposals and voiced concern at the quality of N. Pacific Neogene data urging the preparation of alternate site packages. As usual, many action items referred SSP *watchdogs* to *chase up* proponents to deposit their data in the Data Bank for compilation and review.

In Hannover, SSP made made its final reviews of Legs now scheduled through February, 1991. Only Lau,Basin requires further review. SSP included an assessment of new data for the Old Pacific Leg which was presented by Lancelot. The panel noted that processing of the MCS and sonobuoy data is still to be done. The panel also commented on the late inclusion of new NANKAI sites and one extra ONTONG - JAVA (basement) site in the drilling program, in the latter case on old seismic data that had not been presented to SSP. Chairman was asked to recommend to PCOM that proponents be asked to submit many alternate sites for review at an initial stage. SSP review of the CEPAC proposals in Hannover resulted in the forward look as outlined below:

FORWARD LOOK:

SSP has effectively already approved survey packages for the following potential *early* CEPAC Legs:

Sedimented Ridges

504B Lower Crust

Eastern Equatorial Pacific

Because new survey data is being collected or because available data still has to be presented in a collated form, SSP has requested that proponents present data for the following Legs at its next meeting in April '90 (Menlo Park):

Cascadia - Oregon and Vancouver

Atolls and Guyots

N. Pacific Neogene

Hawaii Flexure

If PCOM schedules CHILE TRIPLE JUNCTION and EAST PACIFIC RISE, these two data packages must go through final review in April.

CAUSES FOR CONCERN:

(1) PROPOSAL REVIEW PROCEDURES: SSP has, during 1989, put in place its own procedures for dealing with proposals to take account of the JOIDES thematic structure and PCOM's arrangements for review of proposals. SSP will now consider only those new proposals that are passed on as *favoured* by PCOM. The Panel is concerned, however, that proposals returned by thematic panels for modification, or *resurrected* old proposals, may come to SSP unable to satisfy current survey standards. In both cases, the leadtimes may be too short for SSP to remedy shortfalls in data packages.

(2) MCS DATA PROCESSING: Sufficient leadtime is frequently not being allowed for newly acquired MCS data to be processed. PCOM is being required to schedule a leg before the processed MCS data has been assessed.

(3) DETAILED NEAR-SITE SURVEYS FOR TECP PROGRAMS: Both TECP and SSP recognize the need for tightly constrained seismic surveys and analysis of the 3-D structure of faulting where drilling objectives are to trace fluid flow. SSP is concerned that, whereas proponents can prepare impressive regional data sets, they do not yet appreciate that their needs approximate more the near-site survey requirements of HRGB drilling. Again, the necessary leadtime for surveys and data compilation must be recognized. SSP also recommends that shipboard real-time navigation be provided on the drill ship in the form of a laboratory plot monitor.

(4) TAMU LIASON to SSP meetings: Problems encountered at its Hannover meeting brought SSP to recognize the absolutely essential role of its SSB, JOIDES Office and TAMU liaisons. Suggestions have been made that TAMU may need to be selective as to which service panel meetings it sends representatives to. SSP wishes to record that TAMU representation is considered essential to this particular service panel.

Robert B. Kidd
24, November, 1989

Appendix II

Updated Ship Schedules:
1990 - 1991

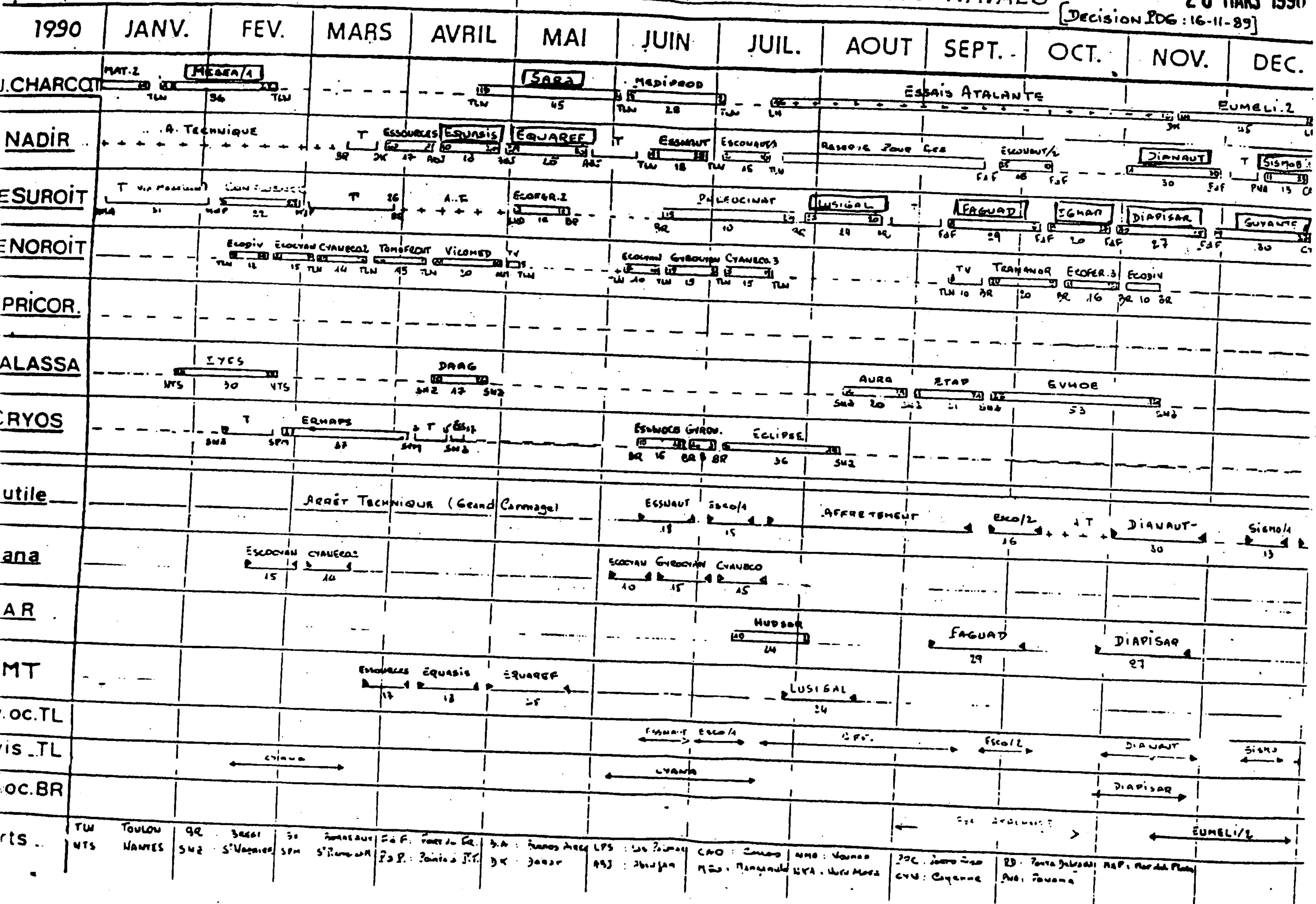
Japan
France
Canada
Australia
WHOI
LGDO
UK

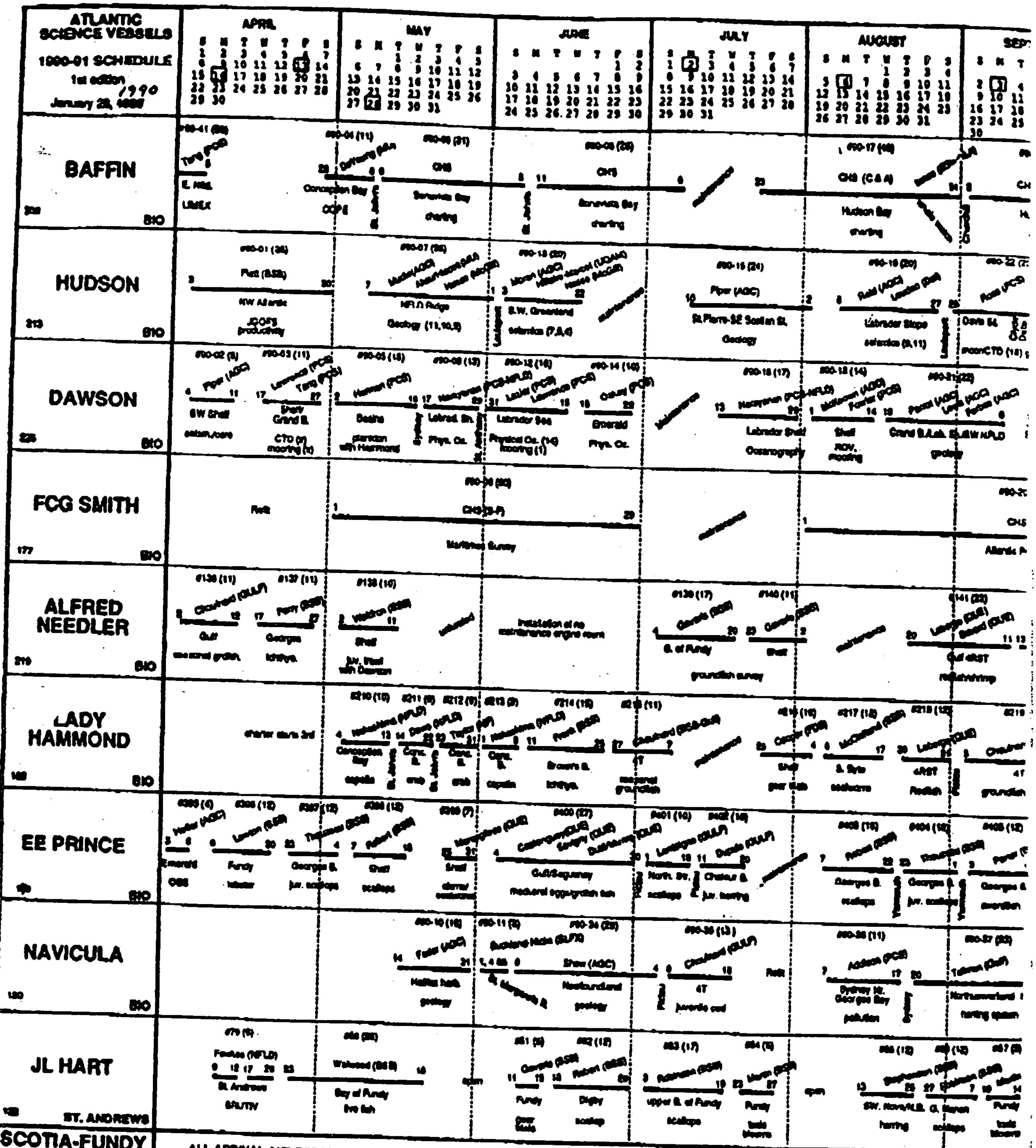
Current Ship Schedules for Japan

(Ocean Research Inst., Tokyo Univ.)

1.	R/V Hakuho-maru June 25- Aug 1 (KH-90-1)	Japan Trench + Izu-Bonin Trench
2.	R/V Tansei-maru May 10-21 (KT-90-6)	Nankai Trough to Support Leg 131
3.	R/V Tansei-Maru June23 - May 2 (KT-90-110	Off Óokkaido
4.	R/V Tansei-maru Sept. 11 ~28 (KT-90-14)	Japan Sea
5.	R/V Tansei-maru Nov 16-24 (KT-90-16)	Izu

... PROGRAMME DES MOYENS NAVALS   20 MARS 1990
[Decision PDG : 16-11-89]





ALL ARRIVAL AND DEPARTURE PORTS ARE HOME PORT UNLESS OTHERWISE INDICATED. SCHEDULES ARE SUBJECT TO CHANGE AT ANY TIME TO

OCTOBER						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

NOVEMBER						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

DECEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

JANUARY						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

FEBRUARY						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

MARCH						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

#90-24 (18) Josenhans (AGC) 8 16 26 Open House 17-20
#90-xx (28) 8 CHS/AGC 20 Scotian Shelf charting/seismics
#90-29 (10) 29 CHS/AGC 7 Scotian Shelf charting/seismics
Refit in April

#90-28 (21) 22 W Hudson St. E. Hudson St. Geology (21,1,2,3,2,3)
#90-29 (18) 29 Josenhans (AGC) 16 Gulf Geology (15,4) Sydney
#90-31 (20) 16 Vilks (AGC) Rodrigues (U. WOO) 6 Cabot St./Laurentian Ch. Geology (16,10)
Refit

#90-26 (11) 26 6 Shelf plankton Open House 17-20
#90-27 (18) Conception B./ N.E. NFLD. Biol./Phys. (8,4,4)
#90-30 (18) 5 Sugden (FCS) 16 Gulf/Shelf Phys./mar Sydney
#90-32 (23) 16 Thompson (OUR) 10 Gulf JGOFS
#90-33 (4) Lawrence (FCS) 11 14 Shelf mooring Sydney
refit
#90-40 (19) 11 Dobson (FCS) 29 Grand Banks Physical Oc.

BIO Open House October 17-20 16

#143 (14) Stephenson (SSB) 11 Georges B. Groundfish acoust. Open House 17-20/16
#144 (20) 1 Cairns (GULF) 20 Gulf herring acoustics
#145 (19) 3 McQuinn (OUR) 21 4RS herring acoustics Refit
#146 (27) 8 Bourke (SSB) Chedabucto Bay herring acoustics
#147 (7) 4 10 IOP training
#148 (15) 1 Georges B. groundfish
#149 (12) 4W/X groundfish

(18) Grand B. capelin
#221 (9) 18 McClelland (SSB) 27 Fundy mackerel
#222 (23) 28 Stephenson (SSB) Gulf 16 Georges B. herring
#223 (18) 19 20 S. Gulf Seasonal groundfish
#224 (10): Note this cruise contingent on meeting U.S. oil pollution restrictions.
3 Arnold (SSB) 12 G. of Maine pollock tagging
13 Dec. off charter

#407 (10) 2 Cooper (FCS) 11 Shelf gear trials
#408 (15) 22 Stephenson (SSB) 8 Bay of Fundy herring larvae
#409 (10) 13 Cairns (GULF) 22 Gulf herring acoustics
#410 (16) 26 Gulf juv. herring 13
refit

#90-36 (31) Pieter (AGC) 30 Eastern Shore surficial geology
#90-39 (10) 30 Warren (GULF) 9 North. Strait phytoplankton

NOTES

-Senior scientists on joint cruises are listed first, followed by other participants. The number of days for each participant are given in the same order.

-cruises are Scotia-Fundy unless otherwise indicated.

-unused cruise numbers:

#80 (2) 1 8 Fundy gear trials
Fundy
open
#81 (3) 29 Fundy

PROGRAM OR VESSEL REQUIREMENTS. FOR MORE INFORMATION ON SCOTIA-FUNDY BASED VESSELS CONTACT A. ADAMS (902) 426-7292

PACIFIC GEOSCIENCE CENTRE Jan. 29,90

1. Proposed Cruise Schedule for fiscal year 1990-91:

Cruise #	Chief Scientist	Ship	Dates
PGC90003	BARRIE	ENDEAVOUR	MAY 22 - JUNE 8
PGC90004	CURRIE	TULLY	MAY 28 - JUNE 22
PGC90005	DAVIS	TULLY	JUNE 25 - JULY 13
PGC90006 7	FRANKLIN Barrie	ENDEAVOUR	JULY 30 - AUG. 3
PGC90008	BORNHOLD	VECTOR	SEPT.10 - SEPT.14
PGC90009	LAW	VECTOR	SEPT.17 - SEPT.28

2. Cruise Objectives and Areas of Operation:

Cruise 03: To complete a regional mapping program for Dixon Entrance, including geophysical surveys (side-scan), bottom sampling, and bottom photography.

Cruise 04: To obtain high resolution acoustic imagery and swath bathymetry to support Canadian proposals for O.D.P. drilling in Canadian waters,(Northern Juan de Fuca Ridge, Explorer Ridge, Tuzo Wilson Knolls, Vancouver Island Margin).

Cruise 05: To determine the scale and pattern of hydrothermal circulation on young mid-ocean ridge flanks, (Juan de Fuca Ridge), and provide constraints on the rates of advective heat and geochemical flux through the seafloor. This survey will include detailed seismic reflection profiling,seafloor heat flow measurements, and sediment pore fluid geochemical and pressure measurements.

Cruise 06: To provide support for the ALVIN submersible program in Middle Valley, (Juan de Fuca Ridge Area) by transferring scientists to the ATLANTIS and some coring and camera work if there is available time

Cruise 07: To determine the climatic and anthropogenic influences on sedimentation in deep basins on the Vancouver Island shelf. The survey will include high resolution seismic profiling and sidescan sonar, and coring.

TENTATIVE PROGRAM FOR RV *RIG SEISMIC* :- 1990 - 1991

Bureau of Mineral Resources, Australia
Division of Marine Geosciences and Petroleum Geology

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* - add on program externally funded.
@ - Theme: Northwest Shelf evolution - passive margin to foreland.
\# - Theme: Tectonic development of Australia's southern margin.

1990 PROGRAM:

1@. Eastern Arafura Sea -framework and HC pot. (Deep seismic + geochem. direct hydrocarbon detection, DHD)	Feb./March From Darwin
2. Triassic Reefs - a new Northwest Shelf play (High res. seismic + sampling)	April/May From Darwin
Installation of new seismic system + shake down (New 4800 m cable and 32 sleeve gun array; microvax acquisition computer etc.)	June In Freemantle
3@. Bonaparte Basin region - deep structure and basin development (Deep seismic on long regional lines)	July From Freemantle
4@. Vulcan Sub-basin - structural reactivation and trapping mechanisms (High res. seismic + sidescan sonar)	September From Darwin
5@. Bonaparte Basin region - geochem. (DHD) (Regional 'sniffing'/seabed sampling, to include Vulcan S-b & margins Londonderry High) [NB. This project may be swapped with 1991/1]	Nov/December From Darwin

1991 PROGRAM:

1@. Southern Northwest Shelf - deep structure (Deep seismic on long regional lines)	Jan./early Feb From Darwin
2*. Philippines study - AIDAB funded	Feb/end March
3. Barrow/Dampier Sub-basin - geochem. DHD ('Sniffing'/seabed sampling + high res. seismic)	May From Darwin
4@. Northwest continental margin sampling (Dredging of Wallaby, Exmouth, & Scott Pl. to solve range of tectonic problems; e.g. nature of volcanic/non-volcanic passive margins)	July From Darwin
5@. Northern margin crustal transects (Extend BIRPS transect across collisional system onto Aust. shelf; passive margin transect - Browse/Scott Pl./Sunda Trench)	September From Darwin
6#. Bremer Basin framework and HC potential (Seismic, dredging; ?geochem. DHD)	November From Freemantle

1990 **RV Franklin** 1990

Research Schedule

Cruise	From	To	Chief Scientist	Project Title and Institute
1	Hobart Wed 10 Jan	Hobart Tues 30 Jan	Griffiths	*Subtropical Convergence* CSIRO Divisions of Fisheries (Harris), Oceanograpy (Mackey) and Atmospheric Research (Pearman)
2	Hobart Mon 26 Feb	Brisbane Mon 19 Mar	Church	*Ocean Transport —Tasman Sea* CSIRO Division of Oceanography
3	Brisbane Tues 20 Mar	Sydney Sun 7 Apr	Meyers	*Ocean Transport —Tasman Sea* CSIRO Division of Oceanography
4	Sydney Thurs 10 May	Townsville Thurs 24 May	Middleton	*Shelf Circulation* University of New South Wales
5	Townsville Fri 25 May	Townsville Tues 5 Jun	Carter	*Deep Sea Sediments* James Cook University & NZ Oceanographic Institute
6	Townsville Wed 11 Jul	Cairns Tues 7 Aug	Burrage	*Coral Sea Circulation Closure* AIMS
7	Cairns Fri 7 Sep	Rabaul Mon 1 Oct	Lindstrom	*BASICS* (Bismark Sea)* CSIRO Divisions of Oceanography & Environmental Mechanics (Bradley)
8	Rabaul Tues 2 Oct	Townsville Wed 17 Oct	Mackey	*Carbon Cycles* CSIRO Division of Oceanography
9	Townsville Fri 16 Nov	Sydney Mon 26 Nov	Middleton	*Shelf Circulation* University of New South Wales ERS*-1 Calibration CSIRO Division of Atmospheric Research (Barton)
10	Sydney Tues 27 Nov	Hobart Fri 14 Dec	McDougall	*Mixing & Subduction (Bunyip)* CSIRO Division of Oceanography ERS—Calibration CSIRO Division of Atmospheric Research (Barton)

*Bismark Air-Sea Interaction and Circulation Study
*Earth Resources Satellite

1991 **RVFranklin** 1991

Research Schedule

Cruise	From	To	Chief Scientist	Project Title and Institute
1	Hobart Sat 5 Jan	Adelaide Mon 14 Jan	Nichols	*Bass Strait Study* CSIRO Oceanography
2	Adelaide Tues 15 Jan	Hobart Wed 30 Jan	v d Borch	*South Australian Margin Geology* Flinders University
3	Hobart Wed 6 Mar	Hobart Wed 27 Mar	McDougall	*Turbulence in ACC* CSIRO Oceanography
4	Hobart Thurs 25 Apr	Sydney Wed 15 May	Nichols	*Bass Strait Study* CSIRO Oceanography
5	Sydney Thurs 16 May	Sydney Tues 21 May	Jenkins	*Continental Margin Geology* University of Sydney
6	Sydney Wed 22 May	Townsville Wed 5 Jun	Nilsson	*Mapping of East Australian Current* CSIRO Oceanography *ERS-1* Scanning Radiometer* CSIRO Atmospheric Research (Barton)
7	Townsville Fri 12 Jul	Townsville Thurs 1 Aug	Lindstrom	*New Guinea Undercurrent* CSIRO Oceanography *ERS-1 Scanning Radiometer* CSIRO Atmospheric Research (Barton)
8	Townsville Sat 7 Sep	Cairns Mon 30 Sep	Burrage	*Boundary Flows —Coral Sea* Australian Institute of Marine Science *ERS– Scanning Radiometer* CSIRO Atmospheric Research (Barton)
9	Cairns Tues 1 Oct	Townsville Mon 21 Oct	Binns/Scott	*PACLARK** CSIRO Geoscience, University of Toronto
10	Townsville Tues 12 Nov	Sydney Thurs 12 Dec	Church	*Ocean Transport (WOCE*)* CSIRO Oceanography *ERS-1 Scanning Radiometer* CSIRO Atmospheric Research (Barton)

*Papua New Guinea, Australia and Canada Woodlark Basin Study
*Earth Resources Satellite
*World Ocean Circulation Experiment

APPENDIX I

NERC RESEARCH SHIPS PROGRAMMES 1990/91

Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar

RRS Charles Darwin

Dates	Ports	Cruise	Scientist	Institution	Programme / Area
02 — 24	BARRY – BARRY	45	RVS		Eq. Trials Atlantic
27 — 22	BARRY – BARRY	46	Savidge	Queens	BOFS NE Atlantic
25 — 19	BARRY – BARRY	47	Burkill	PML	BOFS NE Atlantic
21 — 26	BARRY – LONDON	48	Edwards	BGS	Geophys
28/29 — 22	LONDON – TROON	50	Saunders	IOSDL	Physics NE Atlantic
25 — 21	TROON – TROON	51	Pollard	IOSDL	Physics Iceland/Faeroes
25 — 13	TROON – BARRY	52	Masson	IOSDL	Geophysics Rockall Plateau
18 — 24	BARRY – LISBON	53	Shimmield	Edinburgh	BOFS NE Atlantic
27 — 21	LISBON – LISBON	54	Wilson	IOSDL	Geochem NE Atlantic
21 - - - 15					Re-cert'n
15 — 18	LISBON – FREETOWN	55	Whitmarsh	IOSDL	Geophysics Offshr Ghana
22 — 24	FREETOWN – TENERIFE	56	Kidd	Cardiff	Geophysics NW Africa
27 — 30	TENERIFE – TE	57	Searle	Durham	Geophysics Mid Atlantic

RRS Discovery

Dates	Ports	Cruise	Scientist	Institution	Programme / Area
14 — 8	BARRY – BARRY	190	Watson	PML	BOFS NE Atlantic
11 — 07	BARRY – BARRY	191	Angel	IOSDL	BOFS NE Atlantic
10 — 27	BARRY – BARRY	192	Turner	PML	BOFS NE Atlantic
30 — 01	BARRY – BARRY	193	Pingree	PML	Physics NE Atlantic
04 — 02	BARRY – TENERIFE	194	Herring/Priede	IOSDL / Abdn	Biology NE Atlantic
05 — 05	TENERIFE – UK PORT	195	Herring	IOSDL	Biology NE Atlantic
05	UK PORT				Commence Vessel Conversion

RRS Challenger

Dates	Ports	Cruise	Scientist	Institution	Programme / Area
03 — 03	TROON – GY	64	Owens	PML	Biochem N Sea
06 — 17	GY – GY	65	Morris	PML	Chem N Sea
20 — 18	GY – GY	66	Prandle	POL	Physics N Sea
21 — 05	GY – TROON	67	Ellett	DML	Physics NW Scotland
08 — 23	TROON – BARRY	68	Hill	UCNW	Physics Irsh Sea
26 — 07	BARRY – GY	69	Morris	PML	Chem N Sea
10 — 27	GY – TROON	70	Dando	PML	Biochm N Sea
30 — 17	TROON – GY	71	Ellett	DML	Physics NW Scotland
20 — 19	GY – GY	72	Prandle	POL	Physics N Sea
19 - - - 14					Re-cert'n
14 — 03	TROON – TROON	73	Simpson	UCNW	Physics W Scotland
06 — 19	TROON – BARRY	74	Ellett	DML	Physics NW Scotland
19 - - - 14					Available for charter or laid-up
14 — 03	BARRY – TROON	75	Ellett	DML	Physics NW Scotland
06 — 02	TROON – BA	76	Van den Berg	Liverpool	Biogeochem NE Atlantic

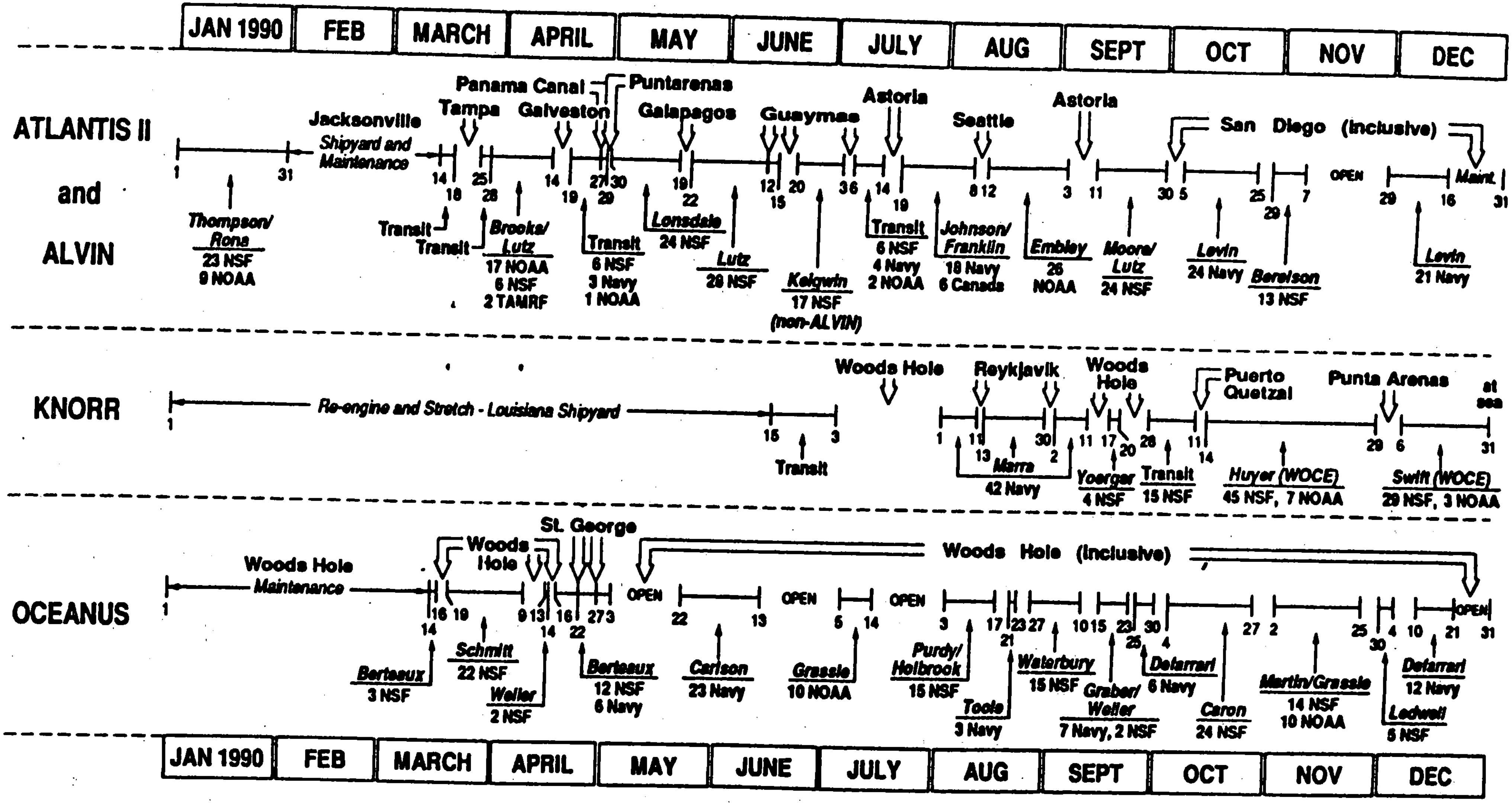
Charter Ships

Days	Ports	Scientist	Institution	Programme / Area
(26)+6	UK Port – UK Port	Kenyon	IOSDL	Geophysics Rhone Fan. Med.
(15)+4	UK Port – UK Port	Fannin	BGS	Geol/Bio NE Atlantic
(23)+2	US Port – US Port	Masson	IOSDL	Geophysics Mont.Fan Offshr.Calif.
(28)+6	UK Port – UK Port	Parson	IOSDL	Geo-phys/chem N Atlantic
(25)+8	? – ?	Parson	IOSDL	Swath Bathymetry Area to be determined

Final Version (20 Sept 1989)

Charter ship allocations shown are for information only. Actual cruise dates and charter vessels are to be determined.

Woods Hole Oceanographic Institution
Ships' Schedule – 1990



Totals:	NSF	Navy	NOAA	Other	Total
Atlantis II	147	70	55	8	280
Knorr	93	42	10		145
Oceanus	114	57	20		191

7 MARCH 1990

Donald A. Moller

Approved: George D. Grice
Associate Director

POC: M.RAWSON.LDGO
Lamont-Doherty Geological Observatory
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Telex: 926090 LDGO Z
Fax: (914) 359-6817

SCHMAY01

M/V ~~BERNIER~~ OPERATING SCHEDULE: 1990
ATLANTIC/PACIFIC SCHEDULE

	DATE	PORT	PROGRAM	P.I.	CRUISE	DAYS AT SEA	PORT	MAINT
YARD	01-Jan-90	SHIPYARD	MODIFICATIONS/INSTALLATIONS					91
PORT	02-Apr-90	NEW ORLEANS	LAY-UP					29
DEP	01-May-90	NEW ORLEANS	MB	SHAKE-	B90-01	10		
ARR	11-May-90	MIAMI	MCS, SCS	DOWN			1	
PORT	12-May-90	MIAMI	NSF (F)				0	
PORT	12-May-90	MIAMI		SHAKE-	B90-02		0	
DEP	12-May-90			DOWN		5		
ARR	17-May-90	MIAMI	MB, MCS, SCS				1	
PORT	18-May-90		NSF (F)				1	
PORT	19-May-90	MIAMI		RYAN	B90-03		0	
DEP	19-May-90					4		
ARR	23-May-90	AT SEA	DMSS TEST				0	
PORT	23-May-90		NAVY (F)				0	
PORT	23-May-90	AT SEA		MILLER	B90-04		0	
DEP	23-May-90		MCS,SCS		(21+2)	23		
ARR	15-Jun-90	N. JERSEY	NSF (F)				1	
PORT	16-Jun-90						1	
PORT	17-Jun-90	N. JERSEY		SHERIDAN	B90-05		0	
DEP	17-Jun-90		MCS			8		
ARR	25-Jun-90	NEW YORK					1	
PORT	26-Jun-90			NSF (E.D.G.E)			0	
PORT	26-Jun-90	NEW YORK		TRANSIT	B90-06		1	
DEP	27-Jun-90					1		
ARR	28-Jun-90	WOODS HOLE					1	
PORT	29-Jun-90						1	
PORT	30-Jun-90	WOODS HOLE	TRANSIT-	NAVY	B90-07		2	
DEP	02-Jul-90		SM-II & MB TEST:	SHOR-	JOI	11		
ARR	13-Jul-90	REYKJAVIK					1	
PORT	14-Jul-90						0	
PORT	14-Jul-90	REYKJAVIK		VOGT/SHOR	B90-08		1	
DEP	15-Jul-90			SM-II,MB		30		
ARR	14-Aug-90	BERGEN					1	
PORT	15-Aug-90			NAVY (P)			1	
PORT	16-Aug-90	BERGEN		VOGT/SHOR	B90-09		2	
DEP	18-Aug-90			SM-II,MB		30		
ARR	17-Sep-90	BERGEN		(REM: HIG SM)			1	
P	18-Sep-90			NAVY (P)			1	

BERNIER Operating Schedule 1990   Date: 06-Apr-90

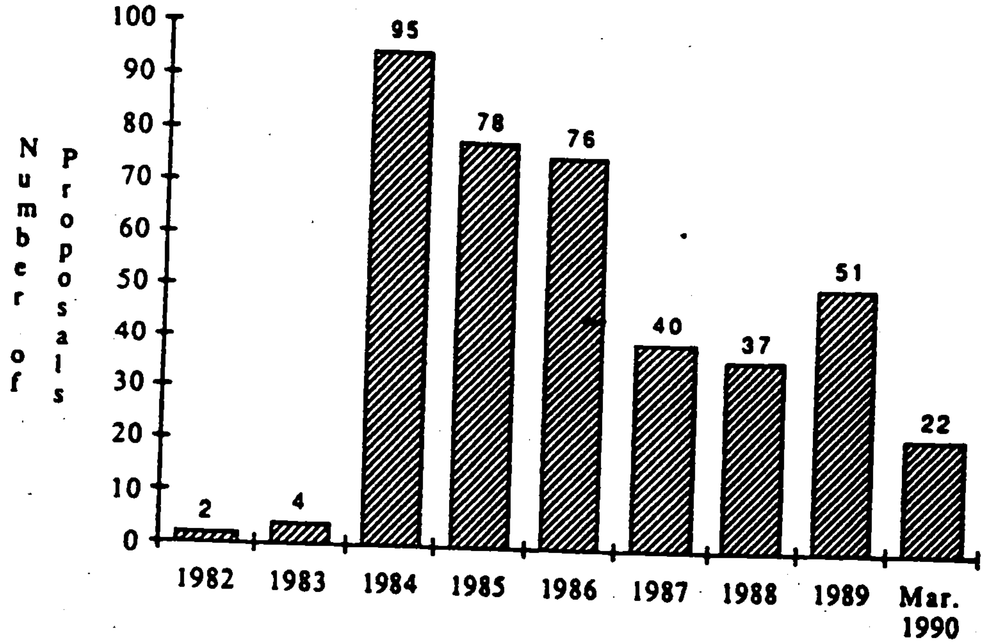
PORT	19-Sep-90	BERGEN	PARSON B90-10		2
DEP	21-Sep-90		MGG, MB	29	
ARR	20-Oct-90	AZORES			1
PORT	21-Oct-90		NSF/UK		1
PORT	22-Oct-90	AZORES	TRANSIT B90-11		1
D	23-Oct-90			10	
A..	02-Nov-90	RECIFE	NAVY/NSF		1
PORT	03-Nov-90				0
PORT	03-Nov-90	RECIFE	CHERKIS B90-12		1
DEP	04-Nov-90		SCS, MB, DR	27	
ARR	01-Dec-90	RIO	NAVY (P)		1
PORT	02-Dec-90				1
PORT	03-Dec-90	RIO	FOX B90-13		2
DEP	05-Dec-90		MB,MGG	26	
AT SEA	31-Dec-90	AT SEA	NSF: FUNDED		
DEP	01-Jan-91		FOX B90-13	12	
ARR	13-Jan-91	PUNTA ARENAS	MB,MGG		1
PORT	14-Jan-91		NSF: FUNDED		1
PORT	15-Jan-91	PUNTA ARENAS	DALZIEL B91-01		2
DEP	17-Jan-91		MCS	45	
ARR	03-Mar-91				1
PORT	04-Mar-91	PUNTA ARENAS	DPP (F)		1
PORT	05-Mar-91	PUNTA ARENAS	LARSON B91-02		2
DEP	07-Mar-91		GLORIA (45+3)	48	
AI	24-Apr-91		NSF: FUNDED		1
PORT	25-Apr-91	VALPARAISO			1
PORT	26-Apr-91	VALPARAISO	COCHRAN B91-03		2
DEP	28-Apr-91		MB, MGG	45	
ARR	12-Jun-91		NSF: FUNDED		1
PORT	13-Jun-91	EASTER I. (?)			1

TOTAL DAYS 364 44 120

OPERATING DAYS BREAKDOWN: CALENDAR YEAR 1990

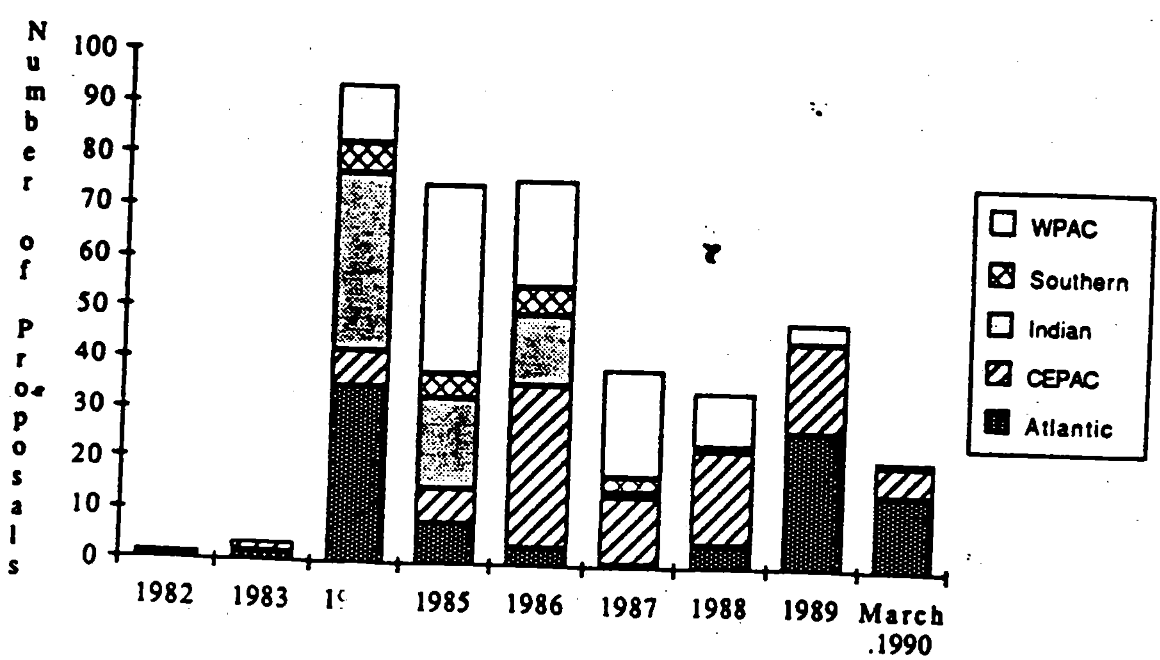
	TOTAL	NAVY	NSF	DPP	INDSTRY
SCIENCE	219	87	87	45	
S/DOWN	15		15		
TRANSIT	27	16	7	4	
PORT	46	19	23	4	
OP DAYS	307	122	132	53	0
YARD	91		91		
LAYUP	29		29		
TOTAL	427	122	252	53	0

Proposals Received by the JOIDES Office, 1982 - April 1990



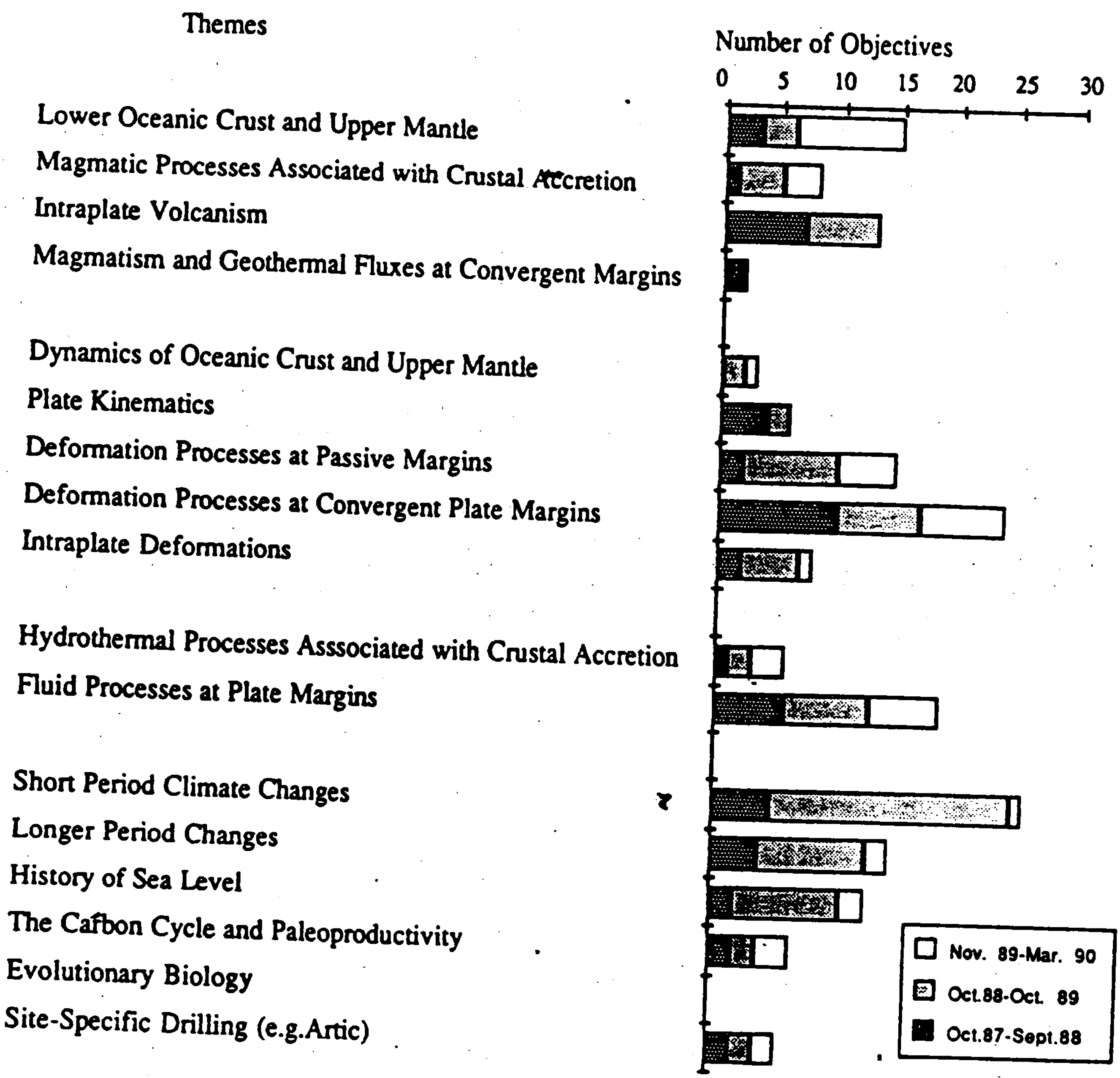
4 April 1990

Proposals vs Years and Oceans 1982 - March 1990



4 April 1990

OBJECTIVES OF RECENT PROPOSALS
(October 1987 to March 1990)
IN RELATION TO THEMES IN THE LONG RANGE PLAN



- 116 proposals have been received by the JOIDES Office from 1st October 1987 to 1st April 1990.

- A proposal can address more than one objective.

4 April 1990

ODP OPERATIONS SCHEDULE

Leg	Port Dates	Sailing Date	Days at Sea	Terminates
129 - Old Pacific	Guam, 11/22-23(89)	11/24	56	Guam, 1/19(90)
130 - Ontong Java	Guam, 1/19-23	1/24	62	Guam, 3/27
131 - Nankai	Guam, 3/27-31	4/1	62	Pusan, 6/2
132 - Engineering II	Pusan, 6/2-6	6/7	59	Guam, 8/5
133 - NE Australia	Guam, 8/5-9	8/10	62	Brisbane, 10/11
134 - Vanuatu	Brisbane, 10/11-15	10/16	56	Suva, 12/11
135 - Lau Basin	Suva, 12/11-15	12/16	62	Papeete, 2/16(91)
136 - Engineering 3A*	Papeete, 2/16-20	2/21	37	Panama, 3/30
Engineering 3B*	Panama, 3/30-4/3	4/4	42	San Diego, 5/16
137 - Sed. Ridges 1	San Diego, 5/16-20	5/21	62	Victoria B.C., 7/22
138 - E. Equat. Pac.	Victoria, 7/22-26	7/27	60	Panama, 9/25
139 504B or EPR-1	Panama, 9/25-29	9/30	60	Panama, 11/29

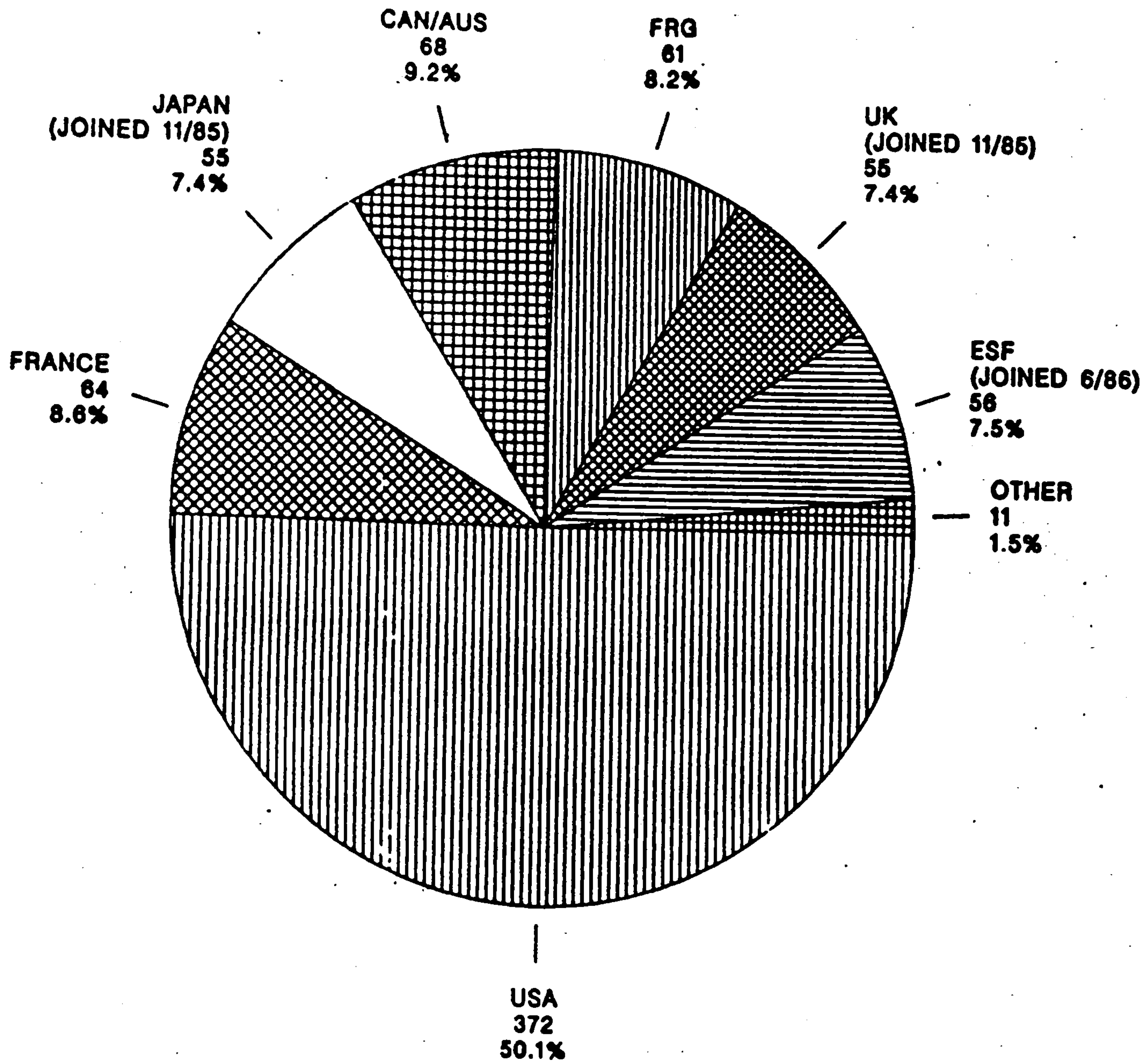
DATES AND PORTS AFTER LEG 132 ARE TENTATIVE

*3A - Hole 504B
*3B - East Pacific Rise

Revised 12/12/89

SHIPBOARD PARTICIPANT TALLY
LEGS 101 - 130

(January 1984 - March 1990)



TOTAL 742 PARTICIPANTS
(Does not include scientists on Leg 124E)

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	MV-7	ET-1	ET-2
latitude:	48°26.61N	41°00.0N	41°00.5N
longitude:	128°38.55W	127°29.5W	127°31.0W
region:	Juan de Fuca Ridge	Escanaba trough	Escanaba trough
Environment:	Ridge Crest	Ridge Crest	Ridge Crest
water depth:	2470	3270	3240
sed. thickness:	120	400-500	500-600
penetration:	120-170	100-500	100-500
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	Yes	Yes	
(b) deep penetration	Yes	Yes	
3. MCS, including velocities	Lines 89-12 to 14 (144-ch)	24 channel	
4. Crossing Seismic Lines or Survey Grid	Yes, SCS only	Yes, MCS only	
5. Seismic Refraction	Yes	Yes	
6. 3.5 kHz	?	Yes	
7. Multi-beam Bathymetry	Yes	Yes	
8. Side Scan Sonar a. Shallow Source	Sea Marc II	No	SAME
b. Deep Towed Source	Sea Marc I	No	
9. Heat Flow	Yes	Yes but could use more	
10. Magnetics and Gravity	Yes	Yes	
11. Coring	Yes	Yes	
12. Dredging	?	Yes	
13. Photography	?	Yes	
14. Current Meter (for bottom shear)	No	No	
Other	June 1990 Alvin	Alvin	Alvin

UPDATE:
Oct 1989

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	MV-4	MV-5	MV-6
latitude:	48°27.45N	48°27.15N	48°27.00N
longitude:	128°46.28W	128°41.58W	128°40.43W
region:	Juan de Fuca Ridge	Juan de Fuca Ridge	Juan de Fuca Ridge
Environment:	Ridge Crest/HT	Ridge Crest	Ridge Crest
water depth:	2480	2460	2470
sed. thickness:	520	250	200
penetration:	520-570	250-300	200-250
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	Yes		
(b) deep penetration	Yes		
3. MCS, including velocities	89-12,13,14 lines (144 ch)		
4. Crossing Seismic Lines or Survey Grid	Yes SCS only		
5. Seismic Refraction	Yes		
6. 3.5 kHz	Yes		
7. Multi-beam Bathymetry	Yes	SAME	SAME
8. Side Scan Sonar a. Shallow Source	Sea Marc II		
b. Deep Towed Source	Sea Marc I		
9. Heat Flow	Yes		
10. Magnetics and Gravity	Yes		
11. Coring	No	No	No
12. Dredging	No	No	No
13. Photography	No	No	No
14. Current Meter (for bottom shear)	No	No	No

Other

June 1990.
Alvin dive

UPDATE:
Oct 1989

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	MV-1	MV-2	MV-3
latitude:	48°27.33N	48°25.82N	48°26.63N
longitude:	128°42.51W	128°40.90W	128°42.65W
region:	Juan de Fuca Ridge	Juan de Fuca Ridge	Juan de Fuca Ridge
Environment:	Ridge Crest/HT	Ridge Crest/HT	Ridge Crest/HT
water depth:	2440	2480	2450
sed. thickness:	120	120	400
penetration:	50-170	75-170	400-500
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	Yes		
(b) deep penetration	Yes		
3. MCS, including velocities	89-12,13,14 (144-ch)		
4. Crossing Seismic Lines or Survey Grid	Yes, SCS only		
5. Seismic Refraction	Yes		
6. 3.5 kHz	Yes		
7. Multi-beam Bathymetry	Yes	SAME	SAME
8. Side Scan Sonar a. Shallow Source	Sea Marc II		
b. Deep Towed Source	Sea Marc I		
9. Heat Flow	Yes		
10. Magnetics and Gravity	Yes		
11. Coring	Yes	Yes	No
12. Dredging	No	No	No
13. Photography	Yes	Yes	No
14. Current Meter (for bottom shear)	No	No	No

Other

June 1990.
Alvin dive

UPDATE:
Oct 1989

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	VI-1	VI-2c	VI-2d
latitude:	49°09'N	48°13'N	48°16'N
longitude:	126°37'N	126°30'W	126°24'W
region:	Vancouver Margin	Vancouver Margin	Vancouver Margin
Environment:	Cascadia Basin	Frontal Fold .	Landward of Frontal Fold
water depth:	2500	2000	2100
sed. thickness:	2600	3000	3500
penetration:	1000	1500	1000
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution			
(b) deep penetration	digital SCS		
3. MCS, including velocities	1989-(144-ch) 85-01		
4. Crossing Seismic Lines or Survey Grid	Yes		
5. Seismic Refraction	Yes		
6. 3.5 kHz	?		
7. Multi-beam Bathymetry	Yes	SAME	SAME
8. Side Scan Sonar a. Shallow Source	Sea Marc II		
b. Deep Towed Source			
9. Heat Flow	Yes		
10. Magnetics and Gravity	Yes		
11. Coring	Yes		
12. Dredging			
13. Photography			
14. Current Meter (for bottom shear)			

Other

ROV or PISCES 1990
Electrical sounding MOSES

UPDATE:

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	VI-3	VI-4	
latitude:	48°19'N	48°23'N	
longitude:	126°17'W	126°10'W	
region:	Vancouver Margin	Vancouver Margin	
Environment:	Mid-slope plateau	Mid-slope plateau	
water depth:	1350	500	
sed. thickness:	~6000	~8000	
penetration:	1000	1000	
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution			
(b) deep penetration			
3. MCS, including velocities			
4. Crossing Seismic Lines or Survey Grid			
5. Seismic Refraction			
6. 3.5 kHz			
7. Multi-beam Bathymetry			
8. Side Scan Sonar a. Shallow Source	E	E	
b. Deep Towed Source	M	M	
9. Heat Flow	A	A	
10. Magnetics and Gravity	S	S	
11. Coring			
12. Dredging			
13. Photography			
14. Current Meter (for bottom shear)			

UPDATE:

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	OR-1	OR-2	OR-3
latitude:	44°40'N	44°36.6'N	44°38.63'N
longitude:	125°34.85'W	125°23.0'W	125°19.72'W
region:	Central Oregon Margin	Central Oregon Margin	Central Oregon Margin
Environment:	Astoria Fan	Astoria Fan	Marginal Ridge
water depth:	2850M	2830	2610
sed. thickness:	3400M	3800	˜2000
penetration:	1000	500	500
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution			
(b) deep penetration	Yes		
3. MCS, including velocities	1989 (144-ch)		
4. Crossing Seismic Lines or Survey Grid	Yes		
5. Seismic Refraction	Yes (Trehn, 1989)		
6. 3.5 kHz	Yes but limited to Sea Marc Ia lines		
7. Multi-beam Bathymetry	Yes	SAME	SAME
8. Side Scan Sonar a. Shallow Source	USGS GLORIA		
b. Deep Towed Source	Sea Marc IA		
9. Heat Flow	Yes		
10. Magnetics and Gravity	Yes		
11. Coring	Yes		
12. Dredging			
13. Photography			
14. Current Meter (for bottom shear)			
Other	Alvin dives 1984,87,88		

UPDATE: Oct 1989

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	OR-3A	OR-4	OR-4A
latitude:	44°41.50'N	44°40.45'N	44°40.65'N
longitude:	125°19.25'W	125°17.45'W	125°16.08'W
region:	Central Oregon Margin	Central Oregon Margin	Central Oregon Margin
Environment:	Marginal Ridge	Marginal Ridge	Slope Basin
water depth:	2720	2075	2275
sed. thickness:	~2000	~2000	~2000
penetration:	500	500	500
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	deep-tow air and watergun (B.Lewis)		
(b) deep penetration	Yes		
3. MCS, including velocities	1989-144ch WO76-4 (24ch)		
4. Crossing Seismic Lines or Survey Grid	Yes		
5. Seismic Refraction	Yes (Trehn, 1989)		
6. 3.5 kHz	Yes but limited to Sea Marc Ia lines		
7. Multi-beam Bathymetry	Yes	SAME	SAME
8. Side Scan Sonar a. Shallow Source	USGS Gloria		
b. Deep Towed Source	Sea Marc Ia		
9. Heat Flow	Yes		
10. Magnetics and Gravity	Yes		
11. Coring	Yes		
12. Dredging			
13. Photography			
14. Current Meter (for bottom shear)			

Other

Alvin 1984,1987
dives 1988

UPDATE:
Oct 1989

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	OR-5	OR-6	OR-7
latitude:	44°38.63'N	44°35.05'N	44°40.50'N
longitude:	125°10.30'N	125°10.30'W	125°02.70'W
region:	Cen. Oregon Margin	Cen. Oregon Margin	Cen. Oregon Margin
Environment:	Second Ridge	Middle Slope Prism	Middle Slope Prism
water depth:	2055	1060	1050
sed. thickness:	~2000	~2500	~1500
penetration:	600	700	500
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution			unihoom SCS
(b) deep penetration	Yes		Yes
3. MCS, including velocities	1989-(144-ch)		1989-(144-ch) WO76-4 (24-ch)
4. Crossing Seismic Lines or Survey Grid	Yes		
5. Seismic Refraction	Yes (Trehn, 1989)		
6. 3.5 kHz	Yes but limited to Sea Marc Ia		
7. Multi-beam Bathymetry	Yes	SAME	
8. Side Scan Sonar a. Shallow Source	Gloria USGS		
b. Deep Towed Source	Sea Marc Ia		SAME
9. Heat Flow	Yes		
10. Magnetics and Gravity	Yes		
11. Coring	Yes		
12. Dredging			
13. Photography			
14. Current Meter (for bottom shear)			
Other	Alvin dives 1984,87,88	None	None

UPDATE:
Oct 1989

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	OR-8	OR-9	OR-10
latitude:	45°04.83'N	45°03.0'N	45°11.9'N
longitude:	125°24.94'W	125°29.65'W	125°32.2'W
region:	Cen. Oregon Margin	Cen. Oregon Margin	Cen. Oregon Margin
Environment:	Thrust Ramp	Thrust Ramp	Mud Volcano
water depth:	2240	2720	2510
sed. thickness:	3600	3800	3000
penetration:	500	600	400
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	Deep towed seismics		
(b) deep penetration	Yes		
3. MCS, including velocities	1989-(144-ch)		
4. Crossing Seismic Lines or Survey Grid	Yes		
5. Seismic Refraction			
6. 3.5 kHz	Yes but limited to Sea Marc Ia profiles		
7. Multi-beam Bathymetry	Yes	SAME	SAME
8. Side Scan Sonar a. Shallow Source	Gloria USGS		
b. Deep Towed Source	Sea Marc Ia		
9. Heat Flow	Yes 1983-84		
10. Magnetics and Gravity	Yes		
11. Coring	Yes		
12. Dredging			
13. Photography			
14. Current Meter (for bottom shear)			
Other	Alvin dives 1984	Alvin 1984	Alvin 1988

UPDATE:

Oct 1989

SITE SURVEY DATA SUMMARY : AREA:

TARGET SITE:	OR-10A		
latitude:	45°11.9'N		
longitude:	125°32.2'W		
region:	Cen. Oregon Margin		
Environment:	Abyssal Plain		
water depth:	2645		
sed. thickness:	3800		
penetration:	500		
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	deep-tow seismics		
(b) deep penetration	Yes		
3. MCS, including velocities	1989-(144-ch)		
4. Crossing Seismic Lines or Survey Grid	Yes		
5. Seismic Refraction			
6. 3.5 kHz	Yes but limited to SeaMarc Ia profiles		
7. Multi-beam Bathymetry	Yes		
8. Side Scan Sonar a. Shallow Source	Gloria USGS		
b. Deep Towed Source	Sea Marc Ia		
9. Heat Flow	Yes		
10. Magnetics and Gravity	Yes		
11. Coring			
12. Dredging			
13. Photography			
14. Current Meter (for bottom shear)			

UPDATE:

SITE SURVEY DATA SUMMARY : AREA: Mid Pac Guyots page 1/2

Proposal 203 Rev - Winterer

TARGET SITE:	Allison A	"HUEVO" A	"HUEVO" B
latitude: longitude: region:	18 27 N 179 32 W S. Mid Pacs	21 19N 174 18 E W. Mid Pacs	21 22N 174 18 E W. Mid Pacs
Environment: water depth, m: sed. thickness, m: penetration, m:	G 1440 >750 750	G 1365 800 1000	G 1370 >300 250-300
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	SIO,LEG 10'88 1971, SIO Aries V	Roundabout SIO,LEG 10'88 DSDP S.463	Roundabout SIO,LEG 10'88 DSDP S.463
(b) deep penetration	DESIRABLE	DESIRABLE	DESIRABLE
3. MCS, including velocities	DESIRABLE	DESIRABLE	DESIRABLE
4. Crossing Seismic Lines or Survey Grid	SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88
5. Seismic Refraction	DESIRABLE	DESIRABLE	DESIRABLE
6. 3.5 kHz	SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88
7. Multi-beam Bathymetry	SEABEAM SIO,LEG 10'88	SEABEAM Roundabout SIO,LEG 10'88	SEABEAM Roundabout SIO,LEG 10'88
8. Side Scan Sonar a. Shallow Source	DESIRABLE	DESIRABLE	DESIRABLE
b. Deep Towed Source	-	-	-
9. Heat Flow	DESIRABLE	DESIRABLE	DESIRABLE
10. Magnetics and Gravity	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88
11. Coring	-	-	-
12. Dredging	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88
13. Photography	DESIRABLE	DESIRABLE	DESIRABLE
14. Current Meter (for bottom shear)	DESIRABLE	DESIRABLE	DESIRABLE

UPDATE: 4/5/90 FKD

SITE SURVEY DATA SUMMARY : AREA: Mid Pac Guyots page 2/2

Proposal 203 Rev - Winterer

TARGET SITE:	"M.I.T." 1	"CAPRINA" A	"CAPRINA" B	"CHAS JOHNSON" A
latitude:	27.2 N	20 02.5 N	20 02.5 N	32 01 N
longitude:	152.8 E	173 32 E	178 30.5 E	148 16 E
region:	W. CPAC	W. Mid Pacs	W. Mid Pacs	Japanese Group
Environment:	G	G	G	G
water depth, m:	1330	1610	1600	1800
sed. thickness, m:	>900	>150	>300	150
penetration, m:	300	150	300	250
TECHNIQUE:				
1. Single-Channel Seismic (a) high resolution	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88 Aries Leg 5
(b) deep penetration	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
3. MCS, including velocities	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
4. Crossing Seismic Lines or Survey Grid	SIO,LEG 10'88	SIO,LEG 10'88	SIO,LEG 10'88	SIO,LEG 10'88
5. Seismic Refraction	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
6. 3.5 kHz	SIO,LEG 10'88	SIO,LEG 10'88	SIO,LEG 10'88	SIO,LEG 10'88
7. Multi-beam Bathymetry	SEABEAM Roundabout SIO,LEG 10'88	SEABEAM Roundabout SIO,LEG 10'88	SEABEAM Roundabout SIO,LEG 10'88	SEABEAM SIO,LEG 10'88 SASS
8. Side Scan Sonar a. Shallow Source	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
b. Deep Towed Source	-	-	-	-
9. Heat Flow	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
10. Magnetics and Gravity	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88
11. Coring	-	-	-	-
12. Dredging	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88	Roundabout SIO,LEG 10'88
13. Photography	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
14. Current Meter (for bottom shear)	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE

UPDATE: 4/5/90 FKD

UNITED STATES GEOLOGICAL SURVEY

MEMORANDUM

April 10, 1990

TO: Site Survey Panel

FROM: Dave Scholl

SUBJECT: Comments concerning proposed NW Pacific and Bering Sea Drilling Sites

DETROIT SEAMOUNT AREA

Three drilling sites, DT-1A, DT-2A, and DT-3A have been recommend for the Detroit Seamount region (see 3rd CEPAC prospectus). One site is to be positions on the broad and relatively flat crest of the seamount, the other two at increasing depths along the edifice's northern flank. Paleoceanographic information is sought at all sites, but, if basement rock is reached and penetrated to some depth, the crestal site, DT-1A, can provide important tectonic information concerning the geographic stability of the Hawaiian hotspot

Proposed site DT-3A has been position (52 27N/168 22E at 3855 m) along seismic line 43 collected in 1987 by the *R/V Farnella* (F287AA/USGS). But, as far as I can tell, proposed sites DT-2A and DT-1A, are based on piston core stations occupied by the *R/V T. Washington* in 1988, rather than seismic profile data.

Fortuitously, the coordinates for DT-1A (41 17.8N/167 39.9E at 2364 m) and DT-2A (51 04.6N/ 167 59.1E at 3160 m) selected by Lloyd Keigwin fall relatively close to *Farnella* seismic lines 41 and 43. Based on these lines, neither one of these sites would optimize the collection of the paleoceanographic or tectonic information desired, in particular at the proposed crestal DT-1A site.

Suggested alternate locations for these two sites are indicated on the *Farnella* seismic lines that have been submitted to SSP via Carl Brenner . However, for the purpose of optimally locating each of the three Detroit sites, the best procedure to follow is to bring together for joint inspection the separate *Washington* and *Farnella* seismic data sets.

SHIRSHOV RIDGE

Paleoceanographic and basement objectives are sought at a proposed Shirshov Ridge site(s), Bering Sea (see 3 rd CEPAC prospectus. The general site location is along the ridge's crestal region in relative shallow water (1100-700 m), where, it is thought (based on surface cores) that calcareous material will be preserved along with an abundant siliceous taxa. Relatively thick sequences (500-1,000 m) of diatomaceous debris has accumulate over the crest of the ridge, and in particular within a longitudinal half-graben. This structure is thought to have formed in early Neogene time as a consequence of rifting and the formation of the modern Komandorsky Basin west of Shirshov Ridge. Basin formation seems to have been rapid and accompanied by sediment infilling, which has since largely buried the basement relief of the ridge's crestal-region. The higher parts of the ridge crest exhibit planation surfaces, presumably documenting by wave-base erosion, as deeply submerged as 1,500-2,000 m. It therefore seems likely that the basin fill along the crest of Shirshov Ridge accumulated in relatively shallow water, possibly shallower but not significantly deeper than the present sea floor.

A provisionally located site (SH-1, 57 28N/170 32E at 1050 m) has been selected along a single-channel reflection line collected in 1970 from the *R/V Bartlett* (USGS). But a great deal more data to guide site selection is available from Soviet sources, including multichannel reflection profiles. Two sites have been recommended by Yuri Neprochnov, but accompanying seismic data, which have been promised, have yet to be received (see attached Telex). The two sites, SSH-1 (58 06N/170 30E at 700 m) and SSH-2 (58 18N/170 16E at 500 m), plot close to some of the *Bartlett* lines (see submitted navigation plot for Shirshov region). Based on these profiles, these sites would appear to be adequate for basement targets but less than ideal for the recovery of Neogene paleoceanographic information.

It is recommended that we await the arrival of the Soviet profiles before locating the proposed Shirshov site(s).

SOUNDER RIDGE

At the Hilo and Menlo Park SSP meetings, questions with respect to achieving scientific objectives and safe drilling conditions arose concerning the Sounder ridge drilling site. Sounder ridge is a nearly completely buried seamount, or basement structural high, located beneath the deep-sea floor of the Aleutian Basin, Bering Sea *(Site SR-1 at 58° 28.8'N, 178° 50.9'E; water depth 3,745 m; sediment column to penetrate to basement 800-1,000 m; see submitted data)*.

Drilling at Site SR-1 has been proposed to gather high-latitude paleoceanographic data from Neogene and Paleogene deposits, and potentially from older beds of Cretaceous age. Desired information bearing on the paleoclimatology of this region, including the Cenozoic history of the northern part of the Subarctic Gyre, which flows through the Aleutian Basin, can be gathered by sampling a 800-1,000-m-thick blanket of terrigenous and pelagic deposits overlying the basement summit of Sounder ridge. This same information, in particular if basement is reached and sampled, has the potential of testing the notion that the Aleutian Basin, which occupies a backarc setting relative to the Aleutian Arc, was formed as the consequence of the early Eocene capture of an oceanic fragment of the former Kula (?) plate. Concepts concerning the evolution of the northern rim of the Pacific basin are linked to this test, including processes by which regional deformation of continental crust is effected and terranes of crustal rock added to, and transported along, convergent ocean margins.

Sounder ridge is a 2-3-km high basement high that is nearly completely buried by basin floor deposits. As much as 4 km of dominantly terrigenous deposits bury the flanks of the ridge, but its crestal region is covered by a slightly undulating sequence of what is presumed to be more richly pelagic and hemipelagic beds only 800-1,000 m thick. The undulations are thought to be depositional synforms and antiforms reflecting the draping and post-depositional differential compaction of pelagic and hemipelagic beds over an uneven ridge summit. The likelihood that some deformation of the core occurred as sediment accumulated above it cannot be entirely ruled out, but the lack of evidence within the overlying sedimentary section of crestal and flank unconformities and faulted, disrupted, and shouldered-aside masses imply that the core is not a diapiric body but fundamentally a depositionally buried basement mass. Bathymetric relief in the past is suggested by the occurrence of deeply buried "moots", arguable signifying current concentration around the then (early Neogene?) bathymetric base of the ridge

Sounder's basement core rises above a regional framework of igneous oceanic crustal rocks. The core is associated with a magnetic anomaly but also a slight gravity low; the core is thus possibly a serpentinite mass. Sounder ridge trends east-west and appears to lie along a "fracture zone" that disrupts a north-trending pattern of magnetic anomalies. The age of this spreading pattern, although under study, remains unknown. Based on the oldest age of basin-filling sediment that can be correlated to sampled sections exposed along the margins of the basin, the anomalies are older than about middle Eocene. They are therefore either of early Cretaceous M-series age, or late Cretaceous to early Tertiary in age. The Sounder edifices is possibly roughly age-equivalent to the anomaly pattern. But Sounder may be part of a northeast-trending track of slightly elevated basement relief that is possibly linked to an early Eocene episode of backarc spreading. If the basement core of Sounder ridge is older than about 50-55 Ma (age of the Aleutian Ridge), then the buried seamount formed south of the Bering Sea region. Magnetic studies underway may help determine if this scenario is the correct one.

Regardless of the exact age of Sounder ridge, existing information supports the notion that sedimentary deposits of at least Eocene and younger age should overlies it formed basement core. The upper part of the burial sequence should be a mixture of pelagic and fine-grained terrigenous (turbidites are likely) units. With subsurface depth the section should become increasingly dominated by pelagic units.

Information exists--for example the widespread occurrence of VAMPs (velocity-amplitude anomalies, which are deep-water bright spots) that gas has locally pooled within the sedimentary sequence of the Aleutian Basin. Organic source beds are thought to occur at depth. Deposition of source beds may have in particular taken place in early and middle Miocene time when the basin was possibly more poorly ventilated then now.

Potential source beds would be relatively thin over the broad crest of the Sounder ridge. But, conceivably, petroleum fluids generated in the surrounding off-ridge section could migrate up-dip to reach the summit of the ridge. Although it seems likely that the thin section cresting the ridge is vented, the occurrence of sealing units cannot be dismissed. On seismic records, seals related to gas hydrates or diagenetic facies of siliceous beds are not exhibited. But reflection evidence suggest that a siliceous BSR (quartzose-facies ?) abutting the deeper flanks of the ridge may have been sealed paths of upward migrating fluid.

To minimize the likelihood that pressured hydrocarbons will be encountered within the relatively thin burial section, Site SR-1 (and an alternate site, SR-1A) has been situated over a synformal structure occupying a basement swale. This location also provides an opportunity to drill through the most complete section capping the ridge. Efforts are presently underway to complete a series of structural contour maps to help insure that the selected drilling sites are not associated with a closure. Prudent drilling practices should adequately allow for the safe drilling and recovery of subsurface rock samples at Sounder ridge.

UMNAK PLATEAU

ODP drilling at Umnak Plateau is intended to provide Neogene paleoceanographic information. The summit of the plateau, approximately 1950 m, is underlain by a nearly flatlying sequence of richly diatomaceous sediment. At a depth near 600, possibly as deep as 800 m, a BSR related to the diagenesis of opaline silica occurs. The age of the sediment at the boundary will probably be somewhat below the top of the Miocene. ODP site UM-1 was selected at the crossing point of two multichannel profiles (L680BS lines 2 and 5). At the intersection point the BSR appears to be relatively deep. Based on a depth-converted 24-fold profile (using interval velocities extracted from RMS values), the BSR could be as deep as 1,000 m.

Judging from DSDP drilling on Leg 19, diatomaceous units below the BSR will be much less abundant than above this horizon. But limestone units containing a well-preserved taxa may well be encountered, and additional paleoceanographic data acquired of middle and perhaps lower Miocene age.

Appendix IX

August 1988

Survey Requirements for Drill Sites in Fracture Zones (and possibly other Bare Rock Environments): ODP Leg 118 Experience

by R. P. Von Herzen

Fracture zones (FZ's, including transforms) are regions where many objectives of ocean crustal drilling may be more readily achieved than in any other tectonic environments. By their very nature, as now understood, FZ's include large vertical displacements (several km) of juxtaposed crust. Furthermore, the crustal thickness near FZ's may be attenuated compared to normal ocean crust, or even non-existent. As a result of these tectonic and structural characteristics, practically the entire section of ocean crustal and upper mantle rocks may be accessible in FZ's near the sea floor, and indeed, such a wide range of rock types have been dredged from many FZ's. Therefore, if the structural relationships of rock types in FZ's are properly deciphered, they offer the opportunity of drilling and sampling a complete section of crustal and upper mantle rocks at relatively shallow depths beneath the sea floor.

On the other hand, drilling in FZ's presents several difficulties and challenges. First, as mentioned above, any section recovered by drilling needs to be placed in a pre-tectonic structural framework, i.e., one in which the rock sequences were originally emplaced, before subsequent displacements. This may require rather complete geological and geophysical surveying in and around particular FZ's of interest. Second, as a result of their structure complexity, FZ's presents formidable technical obstacles to drilling. One major difficulty is the high amplitude topography, with associated steep slopes, created by large vertical offsets of juxtaposed crustal blocks, frequently accompanied by ubiquitous rubble as a result of mass wasting and "weathering" of such slopes. In particular the steep slopes may prevent deployment of a guide base required to start a bare rock hole, and unconsolidated rubble is difficult to drill even in ideal conditions since it tends to collapse around and jam the drill pipe.

All of these drilling opportunities and problems are particularly emphasized in the prominent FZ's of the Southwestern Indian Ridge (SWIR) where Leg 118 took place. The site survey included nearly continuous coverage of the 210 km long offset Atlantis-II transform with SeaBeam depth sounding, including the high amplitude (6 km) transform walls, and about 40 dredge hauls with a wide variety of basic and, especially, ultrabasic rocks. Although these data and samples were essential to establish a basic tectonic framework of the transform, unfortunately the survey was not sufficiently detailed to enable drill sites to be selected in advance of arrival of the drill ship. Therefore most of the detailed surveying for suitable drill sites were accomplished with the drill ship itself, primarily utilizing, first, a TV camera, then test spud-ins with a special turbine rotary drill motor (PDCM) or the standard rotary drill pipe.

On Leg 118, approximately 23 days of drill ship time, almost half the total leg time, was used in such surveys (25 Oct.-17 Nov. 1987) before a suitable site was found (735B) for deployment of the bare rock guide base. These include 4 extensive TV surveys at 4 sites (732-735, inclusive), and 18 test holes to test drilling conditions and to sample the near-surface rock. Although the TV surveys showed a number of regions with massive, apparently in-place, rock outcrop, the exposures were frequently on steep slopes (i.e., cliffs, or canyon walls) where test spud-ins could not be conducted, and in any case would have to be started at least in some softer material to protect the integrity of the drill string. The scenario usually followed was to attempt spud-ins in sediments or rubble up-slope from promising rock outcrops observed with the TV surveys, in hopes of eventually penetrating down to the solid material appearing in outcrop to establish a deep hole in mafic or ultramafic rock.

Unfortunately, this strategy was frustrated by either or both of two factors: (1) the rubble could not be penetrated by the test spud-in, and (2) samples of clearly in-situ rock were difficult to obtain with the tools used. On very steep slopes (greater than 40°), the drill bit tended to "walk" downslope before a spud-in could be established. Frequently the rubble caused jamming of the drill pipe after penetrating 10-20 m or less, and caused collapse and filling of the hole drilled during pauses in drilling, such as attempts to recover cores. In some locations, house-size boulders were part of the rubble, making it impossible to determine if any solid material being drilled was really in-place. Although the PDCM is an excellent tool for starting a hole with an unsupported drill string, its capability to recover samples appears to need improvement. Apparently part of the flow to drive the motor is diverted to the region where the core is being cut, causing all but the most competent material to be washed away. On Leg 118 this tool recovered only solid gabbro where it was drilled; softer in-situ material, perhaps even (serpentinized) peridotite (as deduced from rubble and dredge hauls recovered nearby), was never retrieved. A hole in ultrabasic rock was one of our major objectives, and it seems possible that such a hole could have been established at several of the sites attempted with use of the guide base. But without recovery of clearly in-situ rock on either the site survey cruise or with test spud-ins, we felt that we could not risk the large commitment associated with deployment of the guide base.

The TV survey tool, although somewhat awkward and very costly to use as a survey tool with the drill ship, provides extremely useful visual information for drill site selection in FZ's. Bare rock is certainly distinguishable from rubble, and in many (not all) instances it is possible to determine if the bare rock is in place (from consistency in orientation of bedding, foliation, and/or other lineations). The primary deficiency in the TV data for purposes of selecting drill sites is knowledge of rock type. For example, the petrologists aboard for Leg 118 had considerable discussion, without agreement, about the type of rock appearing in the outcrops during the TV surveys for site 735, before it was decided to deploy the guidebase. Some were convinced it was peridotite, others thought it appeared more like gabbro (which it was).

Therefore a sampling capability which can be coordinated precisely with TV surveys seems essential for selection of FZ drill sites. Dredges are useful to determine general petrology for km-sized regions, especially up-slope rock types, but it is unlikely that a significant fraction of dredged material is ever recovered from solid outcrops. Ideally, a tool could be developed to break off or drill rock samples under control of a TV visualization system, so that rock types could be correlated with the high quality TV images. I understand that the ARGO/JASON system under development may have such a capability, although it may also be possible to develop less complex and costly systems for the particular survey requirements of drilling in FZ's. An edited video tape of the Leg 118 surveys was/is being assembled at ODP (A. Adamson) which may be representative of terrain to be found in other slow spreading rate transforms.

In addition to a coordinated visualization survey and sampling capability, a small-scale (0.1 to 1 km) seismic survey capability would also be very useful to determine seismic velocities and structure to modest drilling depths. Such surveys could perhaps provide information on rock types and drilling conditions over these depths. It is my understanding that a key element in such surveys which has been lacking until recently is a deep seismic source, but that recent progress has been made. Although such surveys may not be routine, at least for the next few years, their deployment at promising sites should be considered seriously among the survey requirements in fracture zones.

30 March 1990

FRACTURE ZONE SURVEYS -- POSSIBLE TECHNIQUES

BATHYMETRY.

Multi-, narrow beam, with profiles parallel to grain.

SIDE-SCAN SONAR.

Surface (e.g., SeaMARC II). Medium-scale tectonics, rock outcrop distribution.

Near-bottom (e.g., SeaMARC I). Small-scale " "

SEISMICS.

Reflection profiling. Diffractions from steep topography.

SCS. Sediment/basement configuration.

MCS. Basement structure, velocity.

Refraction, wide-angle reflection (sonobuoys, OBS, 2-ship). Deep structure and velocity, limited by topographically-induced "noise".

*Near-bottom source, receivers. Shallow (10's to 100's m) structure.

Passive listening (OBS) for earthquakes.

GRAVITY.

Mass anomalies, inferred rock types.

MAGNETICS.

Surface. Magnetic anomaly sequence.

Near-bottom. Magnetization, inferred rock types.

HEAT FLOW.

Severely affected by rock outcrops, hydrothermal circulation.

ROCK SAMPLING.

Dredging. General rock type (rubble, erratics sampled, not outcrops).

Drilling (small). Horizontal outcrop sampling.

*Percussion or chip samplers (with TV control).

PHOTOGRAPHY.

Near-bottom: Detailed visualization.

*50 to 100 m height: Acre (hectare) visualization.

TV.

Real-time detailed visualization.

SUBMERSIBLE.

Special small-scale sampling and experiments in topographically awkward situations.

JOIDES SITE SURVEY PANEL MINUTES

BGR Hannover FRG

October 16-19, 1989

Present: Rob KIDD* (Chairman, UK)

Fred DUENNEBIER* (USA)

Birger LARSEN* (ESF)

Steve LEWIS* (USA)

Keith LOUDEN* (Canada/Australia)

Heinrich MEYER* (Host, FRG)

Guy PAUTOT* (France)

Hidekazu TOKUYAMA (Alternate for SUYEHIRO, Japan)

Mahlon BALL (PPSP)

Yves LANCELOT (PCOM Alt. for WATKINS)

Laurent D'OZOUVILLE (JOIDES Office)

Helmut BEIERSDORF (BGR, Observer, CEPAC Member)

Michael WIEDICKE (BGR, Observer)

Ulrich von RAD (BGR Observer, PCOM Member)

Apologies were received from:

Kim KASTENS* (New Member, USA)

Dick von HERZEN* (New Member, USA)

Carl BRENNER (SSB)

Audrey MEYER (TAMU)

* Denotes Panel Member

AGENDA FOR SSP MEETING

October 16th - 20th, 1989
Hannover, FRG

1. PRELIMINARY MATTERS - Monday 17th October - 09.00

   1.1 Introductions (Kidd).
   1.2 Logistics (H. Meyer).
   1.3 Changes in minutes from previous meeting.
   1.4 Updated ship schedules.
   1.5 Other business for Agenda.

2. REPORTS

   2.1 PCOM (Lancelot)
   2.2 JOIDES (D'OZOUVILLE)
   2.3 TAMU (A. Meyer, written report)
   2.4 PPSP (Ball)
   2.5 [SMP (Moran - not present)]
   2.6 Data Bank (Brenner, written report)

3. SITE SURVEY UPDATES ON SCHEDULED LEGS

   3.1 Leg 129 - Old Pacific (Lancelot)
   3.2 Leg 130 - Ontong Java (H. Meyer)
   3.3 Leg 131 - Nankai Trough (Tokuyama)
   3.4 Leg 132 - Engineering 2 (A. Meyer, written report - including Bonin Back Arc Hole, MIT, Guyot and Shatsky Rise*)
   3.5 Leg 133 - NE Australia (kidd)
   3.6 Leg 134 - Vanuatu (Pautot)
   3.7 Leg 135 - Lau Basin (Duennebier)

4. SITE SURVEY STATUS OF PACIFIC PROGRAMS CURRENTLY UNDER SSP ASSESSMENT - Tuesday 18th October - 09.00

   4.1 Cascadia Accretion + Oregon Proposal Review (Louden)
   4.2 EPR Bare Rock Drilling (Lewis)
   4.3 Sedimented Spreading Ridges (Louden)
   4.4 Atolls and Guyots (Duennebier)
   4.5 Eastern Equatorial Pacific (H. Meyer)
   4.6 Chile Triple Junction (Lewis)
   4.7 North Pacific Neogene (Larsen)
   4.8 Bering Sea History (Larsen)
   4.9 Shatsky Rise Anoxic Events (Suyehiro)
   4.10 Hawaii Flexure (Pautot)
   4.11 Lower Crust at 504B (Brenner)
   4.12 Young Hot Spots: Loihi (Duennebier)

5. ASSIGNMENT OF NEW PROGRAMS FOR PANEL MEMBER 'WATCHDOG' ASSESSEMNT

6. UPDATE ON 17-18TH OCTOBER TAMU PLANNING MEETING FOR ENGINEERING 2 (A. MEYER, FAX REPORT)* -Wednesday 20th October - 09.00?

7. ITEMS FOR REPORT TO PANEL CHAIRMAN'S MEETING 29TH NOVEMBER, WHOI

8. OTHER BUSINESS - DRAFT MINUTES

9. SCHEDULE OF NEXT MEETING

JOIDES SITE SURVEY PANEL MEETING

BGR, HANNOVER, OCTOBER 16TH-20TH, 1989

EXECUTIVE SUMMARY

1. The meeting began with only a partial complement of members since all of the newly assigned members: von HERTZEN, KASTENS and HEDBERG, were unable to attend and TOKUYAMA attended as alternate to SUYEHIRO for Japan. Most difficult was the fact that BRENNER was unable to attend from the DATA BANK because of illness and A. MEYER from TAMU had a conflicting meeting on the upcoming Engineering-2 Leg. Written reports from these two representatives appear in the minutes.

2. OLD PACIFIC:

Yves Lancelot (PCOM Liaison) reviewed the history of 'OLDPAC' surveys up to the Shipley/Meyer cruise in Pigafetta basin on the "Fred Moore" as reported at the last SSP. His update included the new Japanese and "SUROIT" data which have been used to refine drilling sites for Leg 129. Previous aeromagnetic surveys have now been supported by "SUROIT" data in identifying M-series anomalies in the Pigafetta and Marianas Basins. A new selection of PIG sites was presented. New SRP and MCS seismic lines were presented but successful Sonobuoy stations are still being processed. The main effort was to find prime sites with enough sediment section above the indigenous chert to spud-in. There is an internal ringing on the airgun records, but not on the watergun records. Chert and basement reflectors are well shown except in the Quiet Zone.

LANCELOT's drilling strategy is to drill a pilot hole to date basement in the area of M-series anomalies (PIG 2A, M36) which has a sediment thickness of possibly 0.55 sec. Then the drilling would move to PIG - 3 or 4. SSP noted that one option might be to first drill a dome-like location near PIG 3A on profile 6 to date basement where there is clearly an attenuated section (0.25 sec).

SSP can confirm that the best possible data set has now been collected; but must conclude at this stage that there remains a possibility that reflectors exist below the interpreted locations of basement; also that the uncertainty could still be sorted out after sonobuoy processing. SSP notes however that this Old Pacific Data set is received very late and the processing is still to be done.

3. ONTONG JAVA

Data bank (Carl Brenner), Mayer, Kroenke, Shipley and Winterer prepared a safety package for PPSP. The seismic lines for the four Neogene sites (as approved at the last SSP) are now processed. For the pre-Neogene (= deep basement) site there were only old analog-type records from SCRIPPS EURYDICE and from KANA KEOKI available. These lines were never discussed by SSP.

4. NANKAI

TOKUYAMA presented new IZANAGI sidescan and bathymetry data on the Nankai area. SSP approved the previous NANKAI package at its Swansea (September 1988) meeting, and at Hawaii (April 1989) it was noted that PPSP had approved the original sites. BALL commented once more that two new sites had been presented to PPSP at its July meeting (NKT-2A and NKT-10).

5. N.E. AUSTRALIA

This package was approved by SSP at its Swansea meeting. BRENNER has recently been working with Peter DAVIES in Australia and PPSP consideration is expected by BALL to be in mid-February. In terms of operations KIDD noted BRENNER's phone comments on the shallowness of some of the holes in an area of strong boundary currents.

6. VANUATU

The Vanuatu data set has been already been approved by SSP. It was concluded at this meeting, however, that the diving data now showed that sufficient 'spud-in' sediment is present at all sites; no outcrop was observed in the dives near the sites.

7. LAU BASIN

SSP has approved in general the data package on Lau Basin. All presently proposed sites have been reviewed and approved by SSP. Final review, including any new sites, must take place at the next SSP meeting.

8. CASCADIA ACCRETION : OREGON AND VANCOUVER MARGINS

Both regions have recently had detailed MCS profiling completed. These data are necessary for final evaluation of site locations but were not available for this meeting. Processing of these data should concentrate on site locations so that proponents have it ready for the next SSP meeting in April 1990.

Oregon: this represents SSP's first review of the detailed Oregon data set. The proponents have essentially met the other requests from SSP's last assessment regarding High-resolution SCS and MCS. SSP is impressed with the regional coverage and this is certainly adequate. However, in view of the fluid pathways objectives for this drilling, SSP requests that the proponents present for the next meeting a detailed near-site compilation of data tracks and types of data collected to demonstrate that the potential to trace the 3D structure and faulting is there. SSP notes that the processing is unlikely to be available before decisions are made by PCOM on scheduling this drilling and also that true 3D processing is not possible with the existing track spacing.

Vancouver: LOUDEN presented an update on the Vancouver program noting the presence of BSR's and that the proponents would like to drill one of the BSR's to study their temperature/pressure implications and also their relationship to fluid migration.

Specific responses from proponent HYNDMAN to SSP's recommendations from its last meeting including questions about imaging of the BSR's have not been forthcoming. SSP recommends that Oregon and Vancouver proponents be invited to the next SSP meeting in April 1990.

9. EPR BARE ROCK DRILLING

Site survey requirements are met by the present package except for video imagery to be collected with ARGO on the "Thomas Washington" in

November 1989. SSP approves these sites with the provision that video imaging for guide base location will become available from the above cruise.

10. SEDIMENTED RIDGES

Much new data has now come through for SSP assessment. All that is missing presently is the processed MCS data, but SSP does not believe this is crucial to our approval of the sites.

On MIDDLE VALLEY, SSP approved the data set as adequate but requests that for completeness a compilation map of coring and rock drilling stations along with logs and physical properties data is submitted for its next meeting.

On ESCANABA Trough, SSP noted that no nearbottom sidescan data are presently available at Escanaba trough, although GLORIA coverage does exist. SSP strongly endorses the acquisition of high resolution SEAMARC-type data for this data package.

11. ATOLLS AND GUYOTS

Two revisions of Schlanger's and Winterer's proposals now exist, plus new USGS "Farnella" cruise data (Hein) just completed. SSP wishes to invite Hein to present at SSP's next meeting and also Winterer to be invited to attend or send a data package.

12. EASTERN EQUATORIAL PACIFIC

N. Pisias finished a cruise on R/V "Washington" with a data package for 12 potential drilling sites in the areas of the earlier proposal, plus 2 new locations. The data package for the proposed site locations: EEQ-1, EEQ-2, EEQ-3, EEQ-4(1), EEQ-4(2), WEQ-2, WEQ-3, WEQ-4, WEQ-5, WEQ-6 and WEQ-7; as defined after the R/V "Washington" cruise, contains all the data and information that SSP requires for approval. SSP approves the sites as presented through this data package but notes that care must be taken to collect good 3.5 KHz records on site approaches where the sediment is thinnest (e.g. WEQ-2). All sites should be checked by proponents for sediment thickness.

13. CHILE TRIPLE JUNCTION

Three suites of holes are proposed to address the three major thematic objectives endorsed by TECP at their October 1988 meeting.

SSP concluded for the Hannover meeting that the data package is regionally adequate but final site locations are still being refined. Apart from the CDP seismics and GLORIA, the regional data package can be considered as having been lodged with SSB. Detailed site specific data packages, including processed CDP and parts of GLORIA swaths are expected to be lodged as the final sites become defined. SSP noted that BSR's are a clear feature of many of the lines reviewed in Hannover.

14. NORTH PACIFIC NEOGENE

A new NPAC Neogene summary has been produced and new site locations have been inserted but the site numbers have been retained. All proponents should ensure that changes in site location are given new site numbers or suffices in order to flag these changes to SSP and

PPSP. Data for some of the new sites is very poor e.g. NN-3. There are some sites for which data appears sufficient for the palaeoceanographic objectives. Other sites are based on poor data and the possibility exists that the sections are not typically pelagic. SSP recommends that the proponents look to more recent USGE-EEZ survey data or to NGDC compilations.

15. BERING SEA

SSP noted that again there is a potential confusion arising from site numbering designation in the new Bering Sea proposal. Geophysical coordinates and other information is missing from the site summary forms. No new sites are involved. The USGS data package is sufficient.

16. LOWER CRUST AT 504B

The data package is considered complete at SSB and was previously approved by SSP.

17. ENGINEERING LEG 2

An SSP style survey matrix form was faxed by A. Meyer to Hannover following the TAMU pre-cruise planning meeting for this Leg held 17-18th October. SSP commented "that the drilling was now to take place and our only concern was to give general approval and provide any necessary recommendations on how the ship's visit to the sites could improve existing regional data sets in the area. Chairman was asked to request ODP to ensure that 3.5 KHz and digital high resolution seismic data was collected on approach and departure from each site. New Shatsky Rise data is of particular importance due to the lack of an existing high quality geophysical data set there."

18. Ten new proposals that have passed initial thematic and PCOM assessments with favourable reviews were assigned to SSP 'watchdogs'.

SSP HANNOVER MEETING

Action Item List

Item No.	Person	Action
1	LOUDEN/ D'OZOUVILLE	LOUDEN to check with Kate Moran on her status as liaison to SSP. She is invited and expected to attend SSP meetings. D'OZOUVILLE to check same about Jim Hedberg.
2	LOUDEN/LARSEN SUYEHIRO	ESF, Japan, Australia ship schedules are still requested for SSP Appendix I. LOUDEN, LARSEN and SUYEHIRO to check.
3	KIDD	Chairman's report to PCOM is to stress again the need for good underway geophysics and real-time navigation on JOIDES RESOLUTION.
4	KIDD	KIDD to include in his report for Panel Chairman's meeting ned for Panels to prioritize proposals, early. SSP needs more time for evaluation of site survey data.
5	ALL PANEL MEMBERS	All PANEL MEMBERS to note to national committees that SSP guidelines for proposals have been revised - see appendix II. New guidelines are presently being sent to all proponents by JOIDES Office.
6	D'OZOUVILLE/ BRENNER	D'OZOUVILLE to send all thematic panel minutes and working group reports to Data Bank as they are received. BRENNER to send any revised proposals and relevant reports as received to 'watchdogs'.
7	LEWIS	LEWIS to remind USGS proponents, especially Normark/Clague, to send Hawaii flexture and other data to the Data Bank.
8	LOUDEN	LOUDEN to request Cascadia proponents to send a near-site data compilation confirming that data necessary to delineate 3D structure of the faulting is available. This is to include all 3.5 KHz data that is available.
9	BRENNER	BRENNER to check whether Vancouver margin data in the Data Bank? If not, he is to 'torque' proponents, if so BRENNER is to send copies to Keith LOUDEN.
10	KIDD/LOUDEN	KIDD to request to PCOM chairman that Oregon and Vancouver site proponents be invited to next SSP meeting. LOUDEN to pass on information that invitations are likely.

11	LOUDEN	LOUDEN to request that a compilation map of core stations with logs, and physical processes data be submitted to SSP, for the completeness of the Middle Valley data set.
12	DUENNEBIER	DUENNEBIER to send updated Atolls & Guyots matrices and reports to KIDD, ASAP.
13	KIDD/ DUENNEBIER	KIDD to request PCOM chairman to invite Jim Hein and Jerry Winterer to present Atolls & Guyots data at next SSP meeting. DUENNEBIER to pass on information that an invitation is likely.
14	DUENNEBIER	DUENNEBIER to ensure ATOLLS & GUYOT's data is sent to Data Bank by Winterer & Hein and himself.
15	LARSEN	LARSEN to notify Neogene proponents that they should re-number sites when they are relocated or designate with a letter suffix. He will also pass on SSP's reservations over the quality of data at some sites.
16	LARSEN	LARSEN to check that al Bering Sea USGS data is with BRENNER in the SSB.
17	D'OZOUVILLE	D'OZOUVILLE to sent out the assigned Atlantic and WPAC proposals to SSP watchdogs from JOIDES Office.
18	KIDD	Chairman to add "culling" of watchdog list to the agenda of the Fall meeting of SSP.
19	KIDD	Chairman to request ODP to ensure that 3.5 KHz digital high resolution seismic systems are operating on approach and departure from each site on engineering. New Shatsky Rise data is of particular importance due to the lack of an existing high quality geophysical data set there.
20	BRENNER	BRENNER report on new proposals was very useful, but the Panel would like also to have a listing of data that is existent in the data bank from each area.
21	KIDD	KIDD to recommend to PCOM Chairman the following dates for the next SSP meeting: Monday - Wednesday 9-11 April 1990 at Menlo Park, California, to be hosted by LEWIS.

1. PRELIMINARY MATTERS

1.1 The meeting began at 08.45 on Monday 16th October with Site Survey Panel being welcomed to BGR by its President Prof. M. Kursten who traced the history of BGR back to the Prussian Geological Survey in the late 1900's. Chairman responded with thanks for the use of the institute's facilities and for Prof. Kursten's enthusiastic welcome.

Chairman introduced alternates, liaisons and observers present for the meeting and reported on the absence in particular of Carl BRENNER of SSB who had an ear infection which prevented him flying and Audrey MEYER of TAMU who had a conflicting planning meeting on the Engineering-2 Leg. Arrangements have been made to receive reports by Fax from both of these representatives. It was pointed out that Carl BRENNER was dispatching data direct to the meeting and that time would be allotted late on Monday afternoon for 'watchdogs' to assess and prepare their reports for the second day. Chairman noted that no information was available on whether J. HEDBERG (new member) and K. MORAN (SMP LIAISON) presently consider themselves part of SSP.

Action Item 1:

LOUDEN/D'OZOUVILLE: LOUDEN TO CHECK WITH KATE MORAN ON HER STATUS AS LIAISON TO SSP. SHE IS INVITED AND EXPECTED TO ATTEND SSP MEETINGS. D'OZOUVILLE TO CHECK SAME ABOUT JIM HEDBERG.

1.2 H. MEYER discussed logistics for the meeting and BGR's plans for presentations on the institute and for the Thursday fieldtrip.

1.3 No changes to previous minutes were considered necessary.

1.4 Updated ship schedules were received from US, UK, France, Canada and Germany (Appendix I), but none yet from Japan, ESF, and Australia.

Action Item 2:

LOUDEN/LARSEN/SUYEHIRO: ESF, JAPAN, AUSTRALIA SHIP SCHEDULES ARE STILL REQUESTED FOR SSP APPENDIX I. LOUDEN, LARSEN AND SUYEHIRO TO CHECK.

1.5 No other items were inserted for the Hannover Agenda.

2. REPORTS

2.1 PCOM (LANCELOT)

Yves LANCELOT noted that the overall budget for NSF geosciences has increased by 9%, but ODP received only a 4% increase. He suggested that this indicated that ODP was less strong than other major US natural science programmes. No new foreign members appear to be on the horizon. This is likely to put pressure on ODP continuation after the end of 1992.

The JOI Report to PCOM noted the criticism by the PEC Committee of JOIDES' apparent 'closed shop' but a motion to open the organisation to non-JOIDES members was heavily defeated. The Long-Range Planning Document is now with JOI. France had criticised its emphasis on the benefits for education and resources for the US and suggested a more 'global' wording. Discussion of links to other major programs, such as the Continental Drilling, Ridge and WOCE Programs was to be included in the text.

The most disturbing aspects of the TAMU operator report to PCOM was the overall WPAC loss of 10 BHA's plus two 'big' lengths of pipe. This problem of metal fatigue is being reviewed. Replacement orders for 5000 ft of drillpipe are now out to tender, and the commitment of these funds could affect the development of the DCS. The ship will now go to Singapore instead of Pusan to dry dock.

Discussion ensued on the problems of underway geophysics and real-time navigation on JOIDES RESOLUTION. Chairman is to emphasise the need for increased shipboard capability in these areas at the Panel Chairmans meeting with PCOM.

Action Item 3:

KIDD: CHAIRMAN'S REPORT TO PCOM IS TO STRESS AGAIN THE NEED FOR GOOD UNDERWAY GEOPHYSICS AND REAL-TIME NAVIGATION ON JOIDES RESOLUTION.

LANCELOT reported on PCOM discussion on science objectives for contentious legs and its own procedures in decision-making. The Panel was referred to R. MOBERLY's investigations of the ONTONG-JAVA issue. The outcome was that there now would be a PCOM representative at final pre-drilling prospectus meetings with co-chiefs.

Concerns by EXCOM as to the balance of soft- versus hard-rock drilling were discounted by PCOM arguing that lithosphere drilling is a prime objective of COSOD-II and takes more drilling time. Deep lithosphere drilling developments may involve choices between slim-hole diamond drilling (DCS) and normal size holes for logging. Reaming of slim-holes was discussed as another option. TAMU were recommended by PCOM to compromise by drilling 2 holes at such sites: one uncored mainly for logging and one a cored slim-hole.

The new ODP Publication Policy designed to allow shipboard scientists earlier publication of results outside the ODP reports, given certain provisos, was approved by PCOM and will be brought into operation after Leg 125. Two post-cruise meetings will be necessary, one mainly editorial for the Initial Report and the second, a full participants meeting for the Science Results volume.

SSP were interested in LANCELOT's suggestion at PCOM that co-chiefs selected for ODP Legs should be proponents and that, if necessary, shipboard representation clauses in MOU's should be revised to allow for this.

PCOM's planning for the Engineering-2 Leg was discussed and it was noted that an Engineering-3 Leg was likely to be inserted early in the CEPAC program to get further information on EPR and for 504 B hole cleaning.

Current PCOM plans for the start of the CEPAC program include Cascadia, EPR, Sedimented Ridges, Child Triple Junction, and 504 B; but where the Program goes from there is uncertain. Many new proposals from the Atlantic and Caribbean are arriving at the JOIDES office. PCOM will prepare a 4 year plan at its spring '90 meeting. SSP stresses the lead-time it needs for adequate data assessment. Thematic panels must be asked to prioritise proposals at an early stage. SSP will only begin work on proposals that have been indicated as favourable by them <u>and</u> PCOM. LANCELOT was questioned on PCOM's perception of the role of the DPG's in relation to SSP.

<u>Action Item 4</u>:

KIDD TO INCLUDE IN HIS REPORT FOR PANEL CHAIRMAN'S MEETING THE NEED FOR PANELS TO PRIORITISE PROPOSALS EARLY. SSP NEEDS MORE LEAD-TIME FOR EVALUATION OF SITE SURVEY DATA.

2.2 JOIDES Office (D'OZOUVILLE)

D'OZOUVILLE presented the final version of the JOIDES proposal guidelines (Appendix II) which will be sent out to all new proponents. It is slightly modified from JOIDES' one year old 'Blue Book'. National representatives were asked to advertise this fact in their own communities.

D'OZOUVILLE explained how the proposals are now handled by the JOIDES Office. Each proposal is sent to the four thematic panels for review. Copies are sent to JOI, Science Operator and Site Survey Databank and, depending on the topic of the proposal, to other panels for information. After the four thematic panels have reviewed the proposal, a copy of the review forms is mailed to the contact proponent as well as to JOI, Science Operator and Site Survey Databank. A list of proposals with favourable evaluations is reviewed by PCOM and then, transmitted to the Site Survey Databank for SSP action.

D'OZOUVILLE distributed a list of all the proposals received by the JOIDES Office since the inception of ODP (Appendix III). A list of abstracts of new proposals (Appendix IV) received by the JOIDES office from July to September 89 was also distributed. It was noted that there has been a large increase in the number of proposals received during this period.

D'OZOUVILLE also reported on a listing of proposals that has been prepared for PCOM by the old regional panels and the thematic panels of sites that have not been drilled or still had objectives not yet fulfilled. LARSEN asked whether JOIDES Office could send updated information such as this on to SSP 'watchdogs'. After discussion, it was agreed that JOIDES Office will be asked to send thematic and service panel minutes, as well as DPG minutes and reports to Carl BRENNER who will distribute them, as necessary from the Databank to SSP's most appropriate 'watchdogs'.

<u>Action Item 6</u>:

D'OZOUVILLE/BRENNER: D'OZOUVILLE TO SEND ALL THEMATIC PANEL MINUTES AND DETAILED WORKING GROUP REPORTS TO DATA BANK AS THEY ARE RECEIVED. BRENNER TO SEND ANY REVISED PROPOSALS AND RELEVANT MINUTES AND REPORTS TO ASSIGNED 'WATCHDOGS'.

D'OZOUVILLE pointed out that two important deadlines for PCOM decisions were approaching: 1) November 89: FY91 drilling program plan; 2) April 90: four year drilling program plan.

2.3 TAMU Report (A. MEYER written report)

I. Past Leg Results

Legs 125-127:
(MEYER enclosed Preliminary Reports from these Legs for detail).

Leg 128:

"This cruise is currently at sea, scheduled to end in Pusan, South Korea on 16th October. To date, they have conducted operations at three sites: (1) Site 798 (proposed site JS-2); (2) Site 794 (proposed site J1b, first occupied during Leg 127); and (3) Site 799 (proposed site J2a-1). Hole 799A bottomed at 468.7 mbsf in Pliocene siliceous claystone and porcellanite, and was successfully logged with the standard Schlumberger tools plus the formation microscanner (FMS). Coring at Hole 799B is currently at 1077.7 mbsf, with plans to continue 50m into basement before logging and starting into port."

II. Future Cruise Plan/Status

[See enclosed updated drilling schedule (8/7/89).]

Leg 129 (Old Pacific Crust):

"Additional pre-cruise site survey work was completed (by Roger Larson and Yves Lancelot in early September. They have finalised the locations of some of the sites proposed in the prospectus based on these new seismic data, and will soon forward the new data and site locations to ODP/TAMU and the Safety Panel. Once approved by the Safety Panel, we (ODP/TAMU) plan to put out a brief addendum to the existing scientific prospectus with updated site locations and data for each of the new sites. I believe Yves and Roger are going to ask the Safety Panel to approve a range of hotpoints at each of the proposed sites, because they are working hard to process the data before they sail on Leg 129 and want flexibility to move site locations a bit after safety review to accommodate the results of their processing efforts. [The Co-Chiefs for Leg 129 are Roger Larson and Yves Lancelot; Andy Fisher is the ODP Staff Scientist.]"

Leg 130 (Ontong Java Plateau):

"A meeting of interested parties (Wolf Berger, Loren Kroenke, Larry Mayer, Tom Shipley, and Jerry Winterer) was held in late June to pick sites for this Leg based on data collected earlier this year. These sites were subsequently approved by the Safety Panel, and incorporated into a draft scientific prospectus that was discussed at the Planning Committee meeting in August. Based on deliberations at the Planning Committee (see enclosed portions of the PCOM minutes), we are now revising the prospectus to reflect PCOM preferences for cruise proprities before publishing it. I expect the final prospectus to be out by the end of

ODP OPERATIONS SCHEDULE

Leg	Objective	Days At Sea*	Cruise Dates	Port
127	Japan Sea I	58	6/24-8/21	Pusan-8/21-8/25
128	Japan Sea 2	51	8/26-10/16	Pusan -10/16-10/17 (Leg 128 Scientists Off)
---	Transit	9	10/18-10/27	Singapore-10/27-11/11 (dry dock and port)
---	Transit	10	11/12-11/22	Guam I - 11/22-11/23 (Leg 129 Scientists On)
129	Old Pacific Crust	56	11/24-1/19/90	Guam II - 1/19-1/23
130	Ontong Java	62	1/24-3/27	Guam III - 3/27-3/31
131	Nankai	62	4/1-6/02	Pusan - 6/2-6/6
132	Engineering 2	55	6/7-8/1	Guam IV - 8/1-8/5
	Transit	7	8/6-8/13	Port Moresby-8/13-8/14
133	N.E. Australia	56?	8/15-10/10	Brisbane-10/10-10/14
134	Vanuatu	56?	10/15-12/10	Suva - 12/10-12/14
135	Lau Basin	56?	12/15-2/9/91	?

*Schedule subject to change pending detailed planning after Leg 131.

Revised 8/7/89

[illegible]

October. [The Co-Chiefs for Leg 130 are Wolf Berger (FRG) and Loren Kroenke; proponents Larry Mayer and Tom Shipley will also be on board; Tom Janecek is the ODP Staff Scientist.]"

Leg 131 (Nankai):

"The pre-cruise meeting for this Leg was held in early May, and a draft scientific prospectus was compiled at that time which described the drilling strategies that we hope to use at NKT-2 (accretionary prism site) and NKT-1 (reference site). [The Co-Chiefs for Leg 131 are Asakiko, Taira and Ian Hill; proponents Dan Karig, Miriam Kastner, Joris Gieskes, Greg Moore, and Makoto Yamano will also be on board; John Firth is the ODP Staff Scientist.]"

Leg 132 (Engineering Test Leg II):

"The "pre-cruise" meeting for this Leg will be held on October 17th, during your SSP meeting. Attending the pre-cruise meeting will be Jim Natland, Jerry Winterer, Bill Sliter, Brian Taylor, a number of ODP/TAMU engineers, and perhaps Marc Langseth (the PCOM "watchdog" for Leg 132). We intend to pick proposed drilling sites on Shatsky Rise and MIT Guyot and in the Bonin backarc basin during this meeting, and plan drilling strategies to complete the planned engineering tests of the diamond coring system (DCS). All scientists coming to this meeting have told me verbally that they believe we can find sites at each of these three locations that are sufficiently well defined to satisfy at least engineering and safety requirements; their hope, of course, is that some interesting science will also come out of the Leg. For your information, I will FAX you completed site survey matrices on the evening of October 17th; I feel confident that the sites we identify at the pre-cruise meeting will indeed adequately cover our engineering and safety requirements. [We have asked Jim Natland to serve as Co-Chief Scientist on this cruise, and we await his final decision on this matter. I expect to sail a scientific staff of maybe 6 or 7 folks, sufficient to get the core described and data collected that the engineers need to document what they are recovering.]"

Leg 133 (Northeast Australian Margin):

"The Co-Chiefs and Science Operations put together a preliminary scientific prospectus for this Leg several months ago (see enclosed copy), which we send to interested scientists enquiring about the cruise. I expect to invite the bulk of the scientific party for this cruise in the coming month or so, plan to hold the pre-cruise meeting sometime after the beginning of next year. [The Co-Chiefs for Leg 133 are Peter Davies and Judith McKenzie; the ODP Staff Scientist is as yet unnamed, but will probably be a new person that I hire around June 1990.]"

Leg 134 (Vanuatu) and Leg 135 (Lau Basin):

"The Co-Chiefs and Science Operations put together preliminary scientific prospectuses for these Legs several months ago (see enclosed copies), which we sent to interested scientists enquiring about the cruise. I expect to invite the bulk of the scientific parties for these cruises before the end of 1989, and to hold pre-cruise meetings in the spring of 1990. [The Co-Chiefs for Leg

134 are Jean-Yves Collot and Gary Greene; Laura Stokking is the ODP Staff Scientist. The Co-Chiefs for Leg 135 are Lindsay Parson and Jim Hawkins; James Allan is the ODP Staff Scientist."

III. Ship-Related Information

Free-fall funnels:

"One of the action items for ODP/TAMU from your last SSP meeting was for Jack Baldauf to send you a history of mini-cone (= free-fall funnel) deployment, which I believe he did early last summer. I have enclosed another copy of that information - Summary Statement SS-0200 ("Free Fall Funnel Reentry Capabilities and Recommendations"); also a copy of a memo from Ron Grout and Glen Foss, which summarizes when our Engineering and Operations Department feels it is appropriate to use a free-fall funnel."

(Now SSP-APPENDIX V).

Underway Geophysics:

"Update on the status report Suzanne O'Connell presented at your last meeting:

(1) SIOSEIS is now up and running on the ship, and has been used with no negative comment since Leg 125.

(2) We borrowed and tested LDGO's French high-speed streamer during Leg 128. Thus far, the ship reports no improvement over records collected with our existing streamer, but they have yet to test the high-speed streamer at speeds over 7 knots. They hope to get such a test in before the end of Leg 128.

(3) We have gone ahead with modifications to the sonar dome, and will indeed replace the existing 3.5-kHz transducers (arranged in an array in the sonar dome) with a single 10kw transducer, in an attempt to get records in the combination of deeper water and rougher sea state. These modifications will be completed during the upcoming dry dock period.

(4) We invited Magnavox to ODP to give us a presentation of their integrated real-time navigation system, and then sent a small group to LDGO and URI to look at their navigation systems. Following those activities, we sent out an RFP to various JOIDES institutions and several companies, asking for bids to develop a real-time navigation system for ODP. Though we received several responses, which were analysed by both technical and cost review teams, all the bids were for dollar amounts well over what we can currently afford to spend. At least for the time being, we have placed the idea of developing an ODP real-time navigation system "on hold". The Shipboard Measurements Panel has formed an informal subcommittee to look at our original RFP, and possibly make recommendations as to ways we could decrease our desired navigation system requirements so that the development costs might become more affordable."

2.4 PPSP (BALL)

PPSP continues to monitor clathrate studies in anticipation of drilling in proximity to bottom simulating reflections (BSR's) on Leg 131 in the Nankai Trough and in the Cascadia accretionary prism. Canadian proponents for clathrate studies, Roy Hyndman and Earl Davis, are now working in cooperation with John Miller and the Peruvian margin study group. PPSP is carefully following their progress.

ODP, at the request of PPSP, has taken steps to acquire expertise needed to ensure safe drilling in high temperature environments. A decision is pending on whether to create a separate panel to judge safety aspects of high temperature drilling or to add authorities on this subject to the present safety panel to meet its needs. A review of oil shows encountered in DSDP and ODP drilling, led by Barry Katz of Texaco, has shown that they are typically anomalous. The oil show at DSDP site 2 in cap rock of the Sigsbee Deep salt dome, Challenger Knoll, is an exception to this generalisation. The show in the Gulf of California was related to the occurrence of an igneous sill that provided a local heat source or maturation of hydrocarbons. Shows in the Tyrrhenian Basin resulted from this region's high heat flow and organic-rich sediments. Hydrocarbons at DSDP site 535 in western Florida Straits probably migrated laterally a considerable distance from the deep Gulf of Mexico. Katz was unable to substantiate some reported shows perhaps because the samples in question had not been properly sealed and frozen.

A critique of Exmouth Plateau drilling, led by Alistair Bent of British Petroleum, acknowledged the role of PPSP in the safe and scientifically successful drilling of sites 762 and 763. It is nevertheless clear that some members of PPSP continue to have misgivings concerning scientific drilling in known oil and gas provinces. The PPSP chairman is compiling a summary expressing opinions on this subject to be used as a guide for safety panel decisions, if similar situations are encountered in the future.

In the discussions of Leg 130, Ontong Java Plateau, it became apparent that sites ODP-5 and 5A had been approved by PPSP without having been considered by SSP. A similar situation exists regarding Leg 131, Nankai Trough, where 3 new sites, NKT 2A, 3 and 10 have been presented to and approved by PPSP without the consideration of SSP.

Members of SSP expressed concern at the above oversights and Chairman is asked to cover this in his November report to PCOM.

The next PPSP meeting in February will look at the Engineering-2 and NE Australia packages.

2.5 SMP (MORAN not present: comments by SMP member TOKUYAMA, alternate for SUYEHIRO)

TOKUYAMA noted that there had already been discussion at this meeting of underway geophysics but he said that SMP had recommended that TAMU purchase further processing software that was now common to many of the JOIDES institutions in the US and is free to IRIS institutions. SMP recommends that, if further new software is purchased by ODP an individual should be identified to sail on the ship and implement the system in real-time. Possibly TAMU has the opportunity in its new hiring to recruit a geophysical staff scientist, or perhaps someone associated with the Lamont Logging Group could assume this role.

2.6 DATA BANK (BRENNER written Report)

"Statistics for FY 1989 Data Bank activity are presented in SSP APPENDIX VI with a graphic representation of number of packages prepared over the last several years. A record number of packages were mailed out over last year, but the slightly large number has more to do with circumstances of "split" packages than anything else.

The Data Bank works at maximum capacity year after year, and the modest changes in the number of packages from year to year is more an artifact of how things got split up than an accurate reflection of true Data Bank activity. Nevertheless, these figures are useful in showing the consistency of Data Bank performance.

Summaries of some of the higher-ranked proposals that the JOIDES OFFICE said SSP should look at are enclosed for SSP 'watchdog' consideration (APPENDIX VII).

As far as "other" (non-possible for FY-91) CEPAC programs go, none of the data sets are fully prepared. Jerry Winterer expressed shock when I told him that the seismics from his A & G Survey were not yet in the Data Bank and promised to remedy that situation shortly. The data from Fred's survey are also not yet here. Both data sets should be ready for evaluation at our spring meeting if necessary. The USGS folks have been pretty lax about the NPac Neogene and Bering Sea data sets, probably because they know those programs are out of the running for FY'91. A spring review, however, seems reasonable. I imagine that the Hawaii Flexure data could be ready by the spring as well, though I have no idea how that proposal is being viewed in the community these days. Is TECP still interested? Finally, Shatsky appears dead in the water unless additional survey data is collected. The Shatsky data set that I sent to TAMU for the Leg 132 (Engineering Leg II) meeting is the definitive one at this point, at least as far as I know".

Action Item 7:

LEWIS TO REMIND USGS PROPONENTS, ESPECIALLY NORMARK/CLAGUE, TO SEND HAWAII FLEXURE AND OTHER DATA TO SSB.

3. SITE SURVEY UPDATES ON SCHEDULED LEGS

3.1 Leg 129 - Old Pacific (LANCELOT)

Yves Lancelot reviewed the history of 'OLDPAC' surveys up to the

Shipley/Meyer cruise in Pigafetta basin on the "Fred Moore" as reported at the last SSP. His update included the new Japanese and "SUROIT" data which have been used to refine drilling sites for Leg 129. Previous aeromagnetic surveys have now been supported by "SUROIT" data in identifying M-series anomalies in the Pigafetta and Marianas Basins. Geophysical interpretation of sediment sections is controlled by DSDP site 307 in Ptolemy Basin which shows that most of the Tertiary is missing and that basement there is late Cretaceous. A new selection of PIG sites was presented. New SRP and MCS seismic lines were presented but successful Sonobuoy stations are still being processed. Six water guns were in operation at one time in the French reflection system providing good resolution and penetration: The main effort was to find prime sites with enough sediment section above the indigenous chert to spud - in. Lancelot wants to start with a site on the identifiable anomalies and then to move into the magnetic Quiet Zone to the SE.

There is internal ringing on the airgun records, but not on the watergun records. Chert and basement reflectors are well shown except in the Quiet Zone. Smooth reflectors here may be siliceous limestone on basement if the sites have crossed the equatorial high productivity zone twice. Unconformities between basement and the lowermost sediment reflector are well resolved in places and become the main drilling targets at the prime sites; but processed data will not be available till just before the cruise.

LANCELOT's drilling strategy is to drill a pilot hole to date basement in the area of M-series anomalies (PIG 2A, M36) which has a sediment thickness of possibly 0.55 sec. Then the drilling would move to PIG - 3 or 4. SSP noted that one option might be to first drill a dome-like location near PIG 3A on profile 6 to date basement where there is clearly an attenuated section (0.25 sec). If the prime Leg objectives are to date and calibrate the M-series anomalies, the panel considers that this might be a useful initial investment in time on the cruise.

LARSEN commented that SSP can confirm that the best possible data set has now been collected; but must conclude at this stage that there remains a possibility that reflectors exist below the interpreted locations of basement; also that the uncertainty could still be sorted out after sonobuoy processing. SSP notes however that this Old Pacific Data set is received very late and, because the processing is still to be done, the set must still be considered essentially incomplete for drilling.

3.2 Leg 130 ONTONG - JAVA (H. MEYER)

Scientific objectives are:

1. a depth transect for high resolution Neogene Palaeoceanography and Palaeoclimatology;
2. Palaeogene and Mesozoic palaeoceanography, palaeoclimatology and anoxic events;
3. the age, nature and palaeolatitude of basement.

Leg planning:

In response to PCOM's directive, CEPAC and OHP prepared a one-leg program of 4 sites for the Neogene depth transect and one deep site for the palaeogene and basement objectives (merging of two proposals; Neogene, pre-Neogene and basement).

Status at last SSP Meeting (spring 1989: Hawaii):

Preliminary items for the Neogene objectives were approved. Correlations into NAURU Basin (3500-4000 m waterdepth) were not clear. Palaeocene to Mesozoic sequences and basement are not well imaged beneath a high amplitude chert reflector. Site 289/586 shows hiatus of 30 my. SSP hoped for better site selections after the processing of 300 cu in watergun results from the "Washington" cruise. SSP asked for sight of HIG data from 1970 and 1980 for the basement site packages. Cores from the "Washington" cruise were not to come available before May or June (still on the ship).

Developments since the last SSP:

6-89: Data bank (Carl Brenner), Mayer, Kroenke, Shipley and Winterer prepared a safety package for PPSP. The seismic lines for the four Neogene sites (as approved at the last SSP) are now processed. For the pre-Neogene (= deep basement) site there were only old analog-type records from SCRIPPS EURYDICE and from KANA KEOKI available. These lines were never discussed by SSP and Carl Brenner commented "SSP would probably not sanction this site if it were considered at a typical meeting".

7-89: PPSP approved all sites as proposed.

PCOM 8.89 extended the Leg to 62 days, because of the long transit from/to Guam. After several discussions regarding the priorities of the deep holes PCOM decided the following order of drilling: first the 4 Neogene and then deep basement site; also placement of deepest hole or Neogene transect (OJ3 or OJP6) was left open to decision by OHP;

3.3 Leg 131 - NANKAI TROUGH (TOKUYAMA for SUYEHIRO)

TOKUYAMA presented new IZANAGI sidescan and bathymetry data on the Nankai area and dicussion ensued on the nature of possible translational faults indicated by this data set and by the existing SEABEAM data. SSP approved the previous NANKAI package at its Swansea (September 1988) meeting, and at Hawaii (April 1989) it was noted that PPSP had approved the original sites. BALL commented once more that two new sites had been presented to PPSP at its July meeting (NKT-2A and NKT-10).

3.4 Leg 132 Engineering Leg 2 (Discussion deferred to Wednesday, Agenda Item 6).

3.5 Leg 133 N.E. Australia (Kidd)

This package was approved by SSP at its Swansea meeting. BRENNER has recently been working with Peter DAVIES in Australia and reports that the data is 'AOK' and is now considered 'lodged' with SSB. PPSP consideration is expected by BALL to be in mid-February. In terms of operations KIDD noted BRENNER's phone comments on the shallowness of some of the holes in an area of strong boundary currents.

3.6 Leg 134 - VANUATU (PAUTOT)

PAUTOT considered whether there are remaining specific SSP requirements for the bare rock drilling on the Vanuatu area. He commented that the observations during the submersible ('Nautile') cruise in March 1989 conducted by the ORSTOM team provide some new data:

1. Close to the proposed ODP sites DEZ 1 and DEZ 2, both the north d'Entrecasteaux Ridge and the toe of the arc slope are blanketed by greenish muds, also the deformation front is marked by a scarp that is 1 or 2 metres high and shows slightly indurated mudstones.

2. The arc slope is primarily composed of volcanic and volcaniclastic rocks, most likely shed from the arc. The bedding of the arc-slope rocks, dips steeply (40° - 80°) arcward near the contact of the colliding features. The arc-slope rocks are generally highly fractured and sheared and are incised by erosional channels and numerous fresh slump scars.

The Vanuatu data set has been already been approved by SSP. It was concluded at this meeting, however, that the diving data now showed that sufficient 'spud-in' sediment is present at all sites; no outcrop was observed in the dives near the sites.

3.7 Leg 135 - LAU BASIN (DUENNEBIER)

SSP has approved in general the data package on Lau Basin. All presently proposed sites have been reviewed and approved by SSP. Final review, including any new sites, must take place at the next SSP meeting. BRENNER must ensure that the data will be available. PPSP has not yet reviewed Lau Basin. A video of submersible dive observations in the Lau Basin was presented to the Panel in Hannover by M. WIEDICKE of BGR. None of these dives were in the vicinity of any of the proposed drillsites.

The first day of the Hannover meeting ended with a presentation by Dr. J. DRAXLER of BGR on the German Continental Drilling program (KTB). Dr. DRAXLER is responsible for borehole logging in KTB (the "Roger Anderson of KTB") and he commented on the joint workshops that are now held regularly between ODP and KTB. DMP had its last panel meeting at the KTB site. Ultimate objectives of KTB include a 1200 m hole through nappe complexes developed by the convergence of the African and European plates through southern Germany. Some ODP tools, like the slim-hole DCS, have ben tested in the KTB site. The present pilot hole is to 4000 m and already there are some surprises in downhole temperatures which suggest by extrapolation 300 C temperatures at 10000 m instead of at 14000 m. The timescale for the Superdeep Hole is July 90 - December 1994. The total KTB project budget is DM 500 million over 10 years and it is entirely funded within Germany (!).

SSP SECOND DAY - Tuesday October 17th

4. SITE SURVEY STATUS OF PACIFIC PROGRAMS

4.1 Cascadia Accretion: Oregon + Vancouver Margins (LOUDEN)

Both regions have recently had detailed MCS profiling completed. These data are necessary for final evaluation of site locations but were not available for this meeting. Processing of these data should concentrate on site locations so that proponents have it ready for the next SSP meeting in April 1990. Also noted for both regions was the importance of downhole logging measurements using the GEOPROPS tool which is still under development and will probably now not be available for the NANKAI Leg.

Oregon: this represents SSP's first review of the detailed Oregon data set but the MCS data collection is only recently completed and thus processed lines are not available. Based on SEAMARC sidescan coverage collected this summer there have been some slight moves of sites and some new sites have been added. Some of the site moves are in response to an initial preliminary review by PPSP. LOUDEN presented a summary of objectives of the present set of holes. He commented on proponent Vern KULM's response to SSP's request for detailed 3.5 KHz around the sites. KULM noted the general distribution of 3.5 KHz data but as yet has presented no detailed near-site 3.5 KHz data, although near bottom 3.5 KHz will have been collected during the SEAMARC survey. The proponents have essentially met the other requests from SSP's last assessment regarding High-resolution SCS and MCS. SSP is impressed with the regional coverage and this is certainly adequate; also the Panel notes that, in the vicinity of the sites, the data probably does exist to eventually trace the 3D structure of the thrust faulting after processing. However, in view of the fluid pathways objectives for this drilling, SSP requests that the proponents present for the next meeting a detailed near-site compilation of data tracks and types of data collected to demonstrate that the potential is there. SSP notes that the processing is unlikely to be available before decisions are made by PCOM on scheduling this drilling and also that true 3D processing is not possible with the existing track spacing.

Vancouver: LOUDEN presented an update on the Vancouver program noting the presence of BSR's and that the proponents would like to drill one of the BSR's to study their temperature/pressure implications and also their relationship to fluid migration.

There remains some question of whether all of the required downhole logging and measurement capability will be available for by the time of this drilling. Specific responses from proponent HYNDMAN to SSP's recommendations from its last meeting including questions about imaging of the BSR's have not been forthcoming. HYNDMAN says latter data has gone to the Data Bank but this has not arrived in Hannover. More seismic survey cruise work and nearbottom surveys are scheduled. LOUDEN recommended that Oregon and Vancouver proponents be invited to the next SSP meeting in April 1990.

Action Item 9:

BRENNER TO CHECK WHETHER VANCOUVER MARGIN DATA IN THE DATA BANK?

IF NOT, HE IS TO 'TORQUE' PROPONENTS, IF SO BRENNER IS TO SEND COPIES TO KEITH LOUDEN.

Action Item 10:

KIDD/LOUDEN: KIDD TO REQUEST TO PCOM CHAIRMAN THAT OREGON AND VANCOUVER SITE PROPONENTS BE INVITED TO NEXT SSP MEETING. LOUDEN TO PASS ON INFORMATION THAT INVITATIONS ARE LIKELY.

4.2 EPR Bare Rock Drilling (LEWIS)

The scientific goals of this proposal (JOIDES Proposal No. 321/E) to drill into the bare-rock and fast-spreading East Pacific Rise include:

1. Continuous sampling and borehole logging to deep crustal levels (1-1.5 km below the seafloor) very close to the axial magma chamber which has been identified by seismic reflection studies.

2. Insitu sampling of crustal fluids and determination of the physical properties (temperature gradients, pore pressures, permeability, etc) of the rock sequences, and quantify the chemical and physical reactions between hydrothermal fluids and crustal rocks.

3. Continuous sampling and logging of shallow (300-500 m) crustal holes spaced along the crest of a spreading ridge that includes an Overlapping Spreading Centre (OSC) at one end.

4. Establish a long-term "natural laboratory" for long-term monitoring of geological, geochemical, and biological processes associated with crustal accretion at a spreading center.

These scientific goals have been endorsed by COSOD I and COSOD II, and the technical means to accomplish the goals (bare-rock guidebase, narrow-kerf diamond drilling, etc.) are mostly in place to make such a program feasible.

Existing data:

A great deal of effort has gone into acquiring data in this segment of the East Pacific Rise for many years. There is no lack of surface and deep-towed acoustic data of all types. An ARGO cruise scheduled for November 1989 will acquire photographic and additional acoustic data over the proposed drillsites.

Existing data have been compiled through a synthesis project sponsored by JOI, Inc. (Updated matrices for EPR-1 and EPR-2 are included in Appendix VIII).

Other Programs:

A competing proposal, with many of the same objectives as this one, will most likely be submitted soon by J. Franchteau et al. for a region of the East Pacific Rise at 13 N. That proposal had not been received by the JOIDES Office as of October 12, 1989.

Lewis' conclusions are that site survey requirements are met by the present package except for video imagery to be collected with ARGO on the "Thomas Washington" in November 1989. SSP approves these sites with the provision that video imaging for guide base location will become available from the above cruise.

In an interval in the proceedings, Dr. H. DURBAUM kindly presented a resume of the activities of BGR to the Panel and was warmly thanked for providing us with some insights into the work of the institute and its involvemenT in ODP site survey work.

4.3 Sedimented Ridges (LOUDEN)

Most of the emphasis of the Sedimented Ridge Working Group is now on the Middle Valley and Escanaba Trough area, rather than the Gulf of California. The WG has put sites from both of these areas into a two-leg proposal. Much new data has now come through for SSP assessment. All that is missing presently is the processed MCS data, but Louden does not believe this is crucial to our approval of the sites. SSP has no information yet on the technical meeting that took place in April 1989 on the development of high temperature drilling capability for ODP.

On MIDDLE VALLEY, SSP approved the data set as adequate but requests that for completeness a compilation map of coring and rock drilling stations along with logs and physical properties data is submitted for its next meeting. These data may become important in later technical considerations.

On ESCANABA Trough, SSP noted that there was more emphasis here on coring data. Location of basement in the Trough is not easy because of side echoes, but it was noted that sites would actually be selected on dive data for verification of surface sediment type. Proponents Morton and Zierenberg (USGS) indicated that further seismic data is being prepared for data bank submission in early 1990. No nearbottom sidescan data are presently available at Escanaba trough, although GLORIA coverage does exist. SSP strongly endorses the acquisition of high resolution SEAMARC-type data for this data package. Lewis noted that there was potential for the collection of such a data set through a joint USGS/IOSDL cruise with TOBI. The GLORIA data should anyway be lodged with SSB.

Action Item 11:

LOUDEN TO REQUEST THAT A COMPILATION MAP OF CORE STATIONS WITH LOGS, AND PHYSICAL PROCESSES DATA BE SUBMITTED TO SSP, FOR THE COMPLETENESS OF THE MIDDLE VALLEY DATA SET.

4.4 Atolls and Guyots (DUENNEBIER)

Two revisions of Schlanger's and Winterer's proposals now exist, plus new USGS "Farnella" cruise data (Hein) just completed. DUENNEBIER will send written reports and new matrices to KIDD. Chairman should invite Hein to present at SSP's next meeting and also Winterer should be invited to attend or send a data package.

Action Item 12:

DUENNEBIER TO SEND UPDATES ATOLLS & GUYOTS MARTICES AND REPORTS TO KIDD, ASAP.

Action Item 13:

KIDD TO REQUEST PCOM CHAIRMAN TO INVITE JIM HEIN AND JERRY WINTERER TO PRESENT ATOLLS & GUYOTS DATA AT NEXT SSP MEETING. DUENNEBIER TO PASS ON INFORMATION THAT AN INVITATION IS LIKELY.

Action Item 14:

DUENNEBIER TO ENSURE ATOLLS & GUYOT'S DATA IS SENT TO DATA BANK BY WINTERER & HEIN AND HIMSELF.

4.5 Eastern Equatorial Pacific (H. MEYER)

Scientific objectives are:
- evaluation of equatorial circulation of the ocean and atmosphere;
- hemispherical symmetry/asymmetry of oceanic + atmospheric changes;
- Miocene and Pliocene variability in contrast to the Pleistocene;
- circulation before and after closing of Panamanian Seaway;
- the effects of the above on history of biological productivity;
- seen as a complement to the Ontong Java Plateau transect.

Drilling strategy is to: APC and XCB along two transects at 110°W and 95°W where the data is supported by incorporation of earlier DSDP sites 571 + 572 + 403.

The sites cover the following major oceanographic features:

NEC north equatorial current, SEC south equatorial current, ECC equatorial counter current, CAC California Current, PC Peru current, CHC Chile current, EUC equatorial undercurrent.

The two drillsite transects are aimed to provide a continuous record of these current systems throughout the past 8 million years.

PCOM 8.89: leg planned for 1991 program.

SSP developments:

Fall 1988: presentation of scientific objectives plus a lot of seismic lines, but none high quality, no high resolution seismics. Fall 1989: N. Pisias finished a cruise on R/V "Washington" with an excellent data package for 12 potential drilling sites in the areas of the earlier proposal, plus 2 new locations. The new data includes: analog single channel seismic (80 cu. in SSI watergun); on board processed digital seismic lines; 3.5 KHz records; SEABEAM contour maps; gravity and magnetics; piston core data.

Drill site (and core) locations were selected for maximum sediment thickness, but free from evidence of turbidites or other redepositional processes or erosion.

Status of the proposal EASTERN EQUATORIAL PACIFIC with all developments

site	original	1.prospectus			2.prosectus			after WASHINGTON cruise				
	221/E (86) (only cores no sites)	analog. seism. no HRS	water depth (m)	penetr (m)	mentioned	seism.lines (bad) V = VEMA RC= CONRAD GG= Glom. Chall.	crossings	latitude	longitude	wat.depth.	sed.thick	proposed as basem. site
EEQ-1	x	x	3950	200-500	x	V,RC	x			3720 m	325 m	
EEQ-1A	-	x			x	V,RC	x					
EEQ-2	x	x	3365	200-500	x	RC	-			3450 m	300 m	
EEQ-3	x	x	3255	250-500	x	RC	x			3355 m	330 m	x
EEQ-4	x	x	3109	500	x	RC,GG	x			3530 m	195 m	x
EEQ-4A	-	x			x	RC,GG	x			3330 m	450 m	
EEQ-5	x	x	3391	350	x	RC,V,GG	x			3550 m	240 m	x
EEQ-5A	-	x			x	RC,V,GG	x					
EEQ-6	x	-	-	-	-	-	-					x
WEQ-1	x	-	4000	100	x	-	-					x
WEQ-2	x	-	4000	100	x	-	-			3520 m	48 m	x
WEQ-3	x	x	3877	120(375	x	RC-	-			3880 m	135 m	x
WEQ-4	x	x	3731	300(600	x	V	-			3770 m	320 m	x
WEQ-5	x	-	-	-	-	-	-			3875 m	105 m	
WEQ-6	-	-	-	-	-	-	-	new		3850 m	325 m	
WEQ-7	-	-	-	-	-	-	-	new		3775 m	90 m	

The conclusions of the SSP meeting October 1989 are that the data package for the proposed site locations: EEQ-1, EEQ-2, EEQ-3, EEQ-4(1), EEQ-4(2), WEQ-2, WEQ-3, WEQ-4, WEQ-5, WEQ-6 and WEQ-7; as defined after the R/V Washington cruise, contains all the data and information that SSP requires for approval. SSP approves the sites as presented through this data package but notes that at site WEQ-2 with the thinnest sediment cover (48 m) the surveys could have done a better job of obtaining good 3.5 KHz records. The watergun records here are essentially useless because of ringing and the 3.5 KHz record poorly images basement. SSP recommends care be taken to use a slow site approach if drilling takes place here to ensure firstly a good 3.5 KHz record, secondly that there is sufficient sediment for spud-in and thirdly to control the position of the lowermost HPC coring. SSP also noted that sediment thickness calculations appeared incorrect for some sites e.g. WEQ-4 given as 325 m but with at least 0.5 sec of sediment cover. All sites should be checked by proponents for sediment thickness.

4.6 Chile Triple Junction (LEWIS)

The region of the Chile Trench between 46°S and 47°S latitude is the site of ridge-trench collision. The active Chile Ridge spreading system intersects the Chile Trench in a ridge-trench-trench triple junction involving the South American, Antarctic, and Nazca plates. This triple junction is one of only two such features on the globe that are presently active. Thematic goals of this program (JOIDES Proposal No. 8/E) include: (1) Investigation of the amounts and rates of subsidence of the forearc in the immediate vicinity of the triple junction; (2) Drilling into the Taitoa Ridge, a possible fragment of oceanic crust in the process of uplift and emplacement into the South American margin; (3) Investigation of the deformation associated with accretion of sediments at the base of the trench slope following ridge-trench collision. The Chile triple junction program is amongst the high priority programs of TECP for the Central and Eastern Pacific region.

Scientific Objectives: Plate reconstructions of the Pacific indicate that during the Tertiary numerous spreading ridges have been subducted at the surrounding trenches. The geological expressions of ridge/trench collision include: (1) rapid uplift and subsidence of the forearc region as the point of intersection of the ridge and trench migrate along the trench axis; (2) increased thermal gradients and resulting regional metamorphism; (3) cessation of arc magmatism, (4) anomalous near-trench magmatism, and (5) rapid tectonic erosion of the inner trench slope often followed by "rebuilding" of the margin following the collision. In addition, the Chile margin triple junction is the site of emplacement of a 3-my ophiolite sequence onto the South American margin.

Regional Setting: New SEABEAM bathymetric data and MCS seismic reflection profiles accurately delineate the present-day geometry and location of the ridge-trench collision near the Taitao Peninsula. North of about 46° 20'S, the Nazca plate is being subducted beneath the South American plate. South of that latitude the Antarctic plate is being subducted beneath South America. The rate of relative convergence between the Nazca and South American plates is about 90 mm/yr, while south of the triple junction the convergence rate between the South American and Antarctic plates is only about 20 mm/yr. The Nazca/Antarctic plate boundary is comprised of the Chile Ridge spreading center, which intersects the Chile Trench at 46°20'S, forming a ridge-trench-trench triple junction. The triple junction probably formed the southern limit of coseismic rupture during the great 1960 Mw = 9.1 Chile earthquake. The onland geology in the area near the triple junction is characterized by: (1) pre-Late Jurassic metamorphic rocks, forming pre-Andean South American basement, (2) the largely Mesozoic-aged Patagonian batholith, (3) Mesozoic and Cenozoic volcanic rocks associated with the Patagonian batholith, and (4) Neogene sedimentary and igneous rocks. Additional important, but areally limited, rock types include an unusual suite of young (Pliocene-Pleistocene) grandioritic plutons in and around the Golfo Tres Montes, within about 20 km of the trench axis and about 150 km seaward of the main axis of the Quaternary Andean volcanic arc, and a tilted but apparently coherent Pliocene-aged ophiolite sequence on the Taitao Peninsula.

Drilling Strategy: Three suites of holes are proposed to address the three major thematic objectives endorsed by TECP at their October 1988 meeting:

(1) subsidence, deformation, volcanism, and metamorphism within the collision zone,
(2) the processes of ophiolite emplacement at the Taitao Ridge, and
(3) the process of "rebuilding" the margin in the wake of the northward-migrating triple junction.

Following TECP recommendations, two drilling legs are anticipated to implement all of the components of this program.

Five primary sites and one low-priority alternate site to address the problems related to ridge subduction. Three of the sites, TJ-1, TJ-2, and TJ-3, form an east-west transect of the margin adjacent to the "rift contact zone". The other two primary sites, TJ-4 and TJ-5, together with TJ-1, form a north-south transect parallel to the margin along the base of the landward trench slope. Site TJ-6, is an alternate site to TJ-3, and Site TJ-4B is an alternate to site TJ-4.

One proposed drillsite, TJ-7, is located on the flank of the Taitao Ridge. This hole will confirm the oceanic affinity of the Taitoa Ridge inferred from magnetic anomaly interpretations, and address question regarding the mechanisms of ophiolite emplacement in the triple junction region.

Site TJ-9, TJ-9, TJ-10 and TJ-12 are located south of the triple junction, and are intended to address questions involving the rebuilding of the forearc and accretionary prism following the tectonic erosion associated with the actual ridge-trench collision. TJ-8 will sample the material exposed in the forearc in the wake of the triple junction, and represents the material that will become the backstop for the accretion of sediment further south. TJ-10, TJ-11 and TJ-12 together comprise an east-west transect that will sample the post-collision recovery zone south of the triple junction, where sdediment is being deformed and accreted to the margin.

Data for some of the new sites is very poor e.g. NN-3. There are some sites for which data appears sufficient for the palaeoceanographic objectives. Other sites are based on poor data and the possibility exists that the sections are not typically pelagic. SSP recommends that the proponents look to more recent USGE-EEZ survey data or to NGDC compilations. Updated NW Pacific site matrices are in Appendix VIII.

Action Item 15:

LARSEN TO NOTIFY NEOGENE PROPONENTS THAT THEY SHOULD RE-NUMBER SITES WHEN THEY ARE RELOCATED OR DESIGNATE WITH A LETTER SUFFIX. HE WILL ALSO PASS ON SSP'S RESERVATIONS OVER THE QUALITY OF DATA AT SOME SITES.

4.8 Bering Sea (LARSEN)

LARSEN noted that again there is a potential confusion arising from site numbering designation in the new Bering Sea proposal. Geophysical coordinates and other information is missing from the site summary forms. No new sites are involved. The USGS data package is sufficient.

Action Item 16:

LARSEN TO CHECK THAT ALL BERING SEA USGS DATA IS WITH BRENNER IN THE SSB.

The problem over the Shirshov Ridge site in Russian waters was again noted.

4.9 Shatsky Rise Anoxic Events (KIDD for SUYEHIRO)

Only the Engineering-2 drilling on Shatsky Rise has been considered in Hannover (See TAMU report).

4.10 Hawaii Flexure (PAUTOT)

No new data has been collected since our Hawaii meeting. The objectives of the proposal appear to be shifting to emphasise the gravity sliding, sedimentation in the moat and the lava fields as identified by the GLORIA surveys. PAUTOT requests access to USGS GLORIA coverage and the simultaneously collected SCS lines. LEWIS will follow up SSP's request to Cleque and Normark at USGS. (See Action item 7).

4.11 Lower Crust at 504B (KIDD for BRENNER)

Chairman reported that the data package is considered complete at SSB and was previously approved by SSP.

4.12 Young Hot Spots: LOIHI (DUENNEBIER)

No new data has been collected since the last SSP meeting. Probably a new SEAMARC-S survey will take place next year. This is a bare rock site destined to become a seismic monitoring station. AT and T has donated 18 km of cable to run from the seamount to the land which will be emplaced following the SEAMARC survey at the site.

TJ-13, TJ-14, and TJ-15 comprise a transect across the margin north of the triple junction and collision zone, and represent the state of the margin during "steady-state" subduction.

Site Survey Data

A series of single-channel seismic reflection profiles, accompanying geophysical data from R/V "Conrad" cruises 18-03, 21-07, and 23-04, and industry data support the original draft of this proposal. Nineteen heat flow measurements and 6 piston cores were available prior to the return to the Chile margin triple junction by the R/V Conrad in January and February, 1988. Data collected in 1988 include: (1) a SEABEAM bathymetric survey of the triple junction region, (2) approximately 1800 miles of 249-channel CDP seismic reflection profiles shot with a 4000 in^3 airgun source array in three regions along the margin, (3) continuous gravity and magnetics datalong track, (4) approximately 1200 miles of closely-spaced watergun single-channel digital seismic reflection data, and (5) sonobuoy seismic refraction profiles. Previous cruises to the triple junction region have acquired dredge samples, piston cores, single-channel seismic reflection profiles, and heat flow measurements along two transects across the trench slope. In addition, ENAP (Chilean National Oil Company) has made available an extensive grid of commercial CDP reflection data and information from two offshore wells on the shelf that are valuable for understanding ODP drilling results as part of a regional tectonic framework. KIDD reported from proponent Westbrook that a US Navy aeromagnetic survey is planned to take place in November 1989. [Note: Westbrook has since the Hannover Meeting submitted a copy of the recent RRS Darwin cruise report which included a GLORIA survey and 3.5KHz, SRP and MCS profiling plus gravity surveys. Proponents now expect four sites to be deleted from the original proposal and three to be shifted to 'better positions'. Three new sites will be added.]

Lewis concluded for the Hannover meeting that the data package is regionally adequate but final site locations are still being refined. Apart from the CDP seismics and GLORIA, the regional data package can be considered as having been lodged with SSB. Detailed site specific data packages, including processed CDP and parts of GLORIA swaths are expected to be lodged as the final sites become defined. SSP noted that the BSR problem is a clear feature of many of the lines reviewed in Hannover, but that safety of the sites is an eventual PPSP matter.

Updated SSP matrices for Chile Triple Junction are presented in Appendix VIII.

4.7 North Pacific Neogene (LARSEN)

A new NPAC Neogene summary has been produced and new site locations have been inserted but the site numbers have been retained.

SSP CONSENSUS: ALL PROPONENTS SHOULD ENSURE THAT CHANGES IN SITE LOCATION ARE GIVEN NEW SITE NUMBERS OR SUFFIXES IN ORDER TO FLAG THESE CHANGES TO SSP AND PPSP.

5. ASSIGNMENT OF NEW PROGRAMS FOR SSP 'WATCHDOG' ASSIGNMENT

Proposals listed by D'OZOUVILLE as having favourable evaluations were assigned thus:-

A. Pacific Proposals with Favourable Evaluations to 10/88

1. Axial Seamount, Juan de Fuca Ridge (290/E) - LOUDEN
2. Marquesas Island Chain (291-E) - DUENNEBIER
3. Reactivated Seamounts, Line Islands (308-E) - DUENNEBIER
4. West Pacific Gas Hydrate Hole (316-E) - KIDD
5. California Current transect (271-E) - LEWIS
6. Ross Sea/Antarctica (296-E) - LARSEN
7. Antarctic Pacific Margin (297-C + 353-C Revised) - LARSEN

B. Atlantic Proposals with Favourable Evaluations to 10/88

1. Geochem, Dipping Reflectors, E. Greenland (310-A) - LOUDEN
2. Sedim Equiv. Dipping Reflectors, Rockall (311-A) - MEYER
3. Arctic Ocean Drilling (305-F) - LOUDEN

C. Remaining WPAC Targets

1. Banda Sea and S. China Sea Basins - MEYER
2. Geochemical Reference Sites - KIDD
3. Nankai II - SUYEHIRO
4. S. China Margin - PAUTOT
5. Valu Fa Ridge - LEWIS
6. Vanuatu Back Arc Rifts - PAUTOT
7. Zenizu Ridge - SUYEHIRO

Pacific proposals were distributed to members by D'Ozouville and he will send out the remaining Atlantic and WPAC proposals to individuals from the JOIDES OFFICE.

Action Item 17:

D'OZOUVILLE TO SEND OUT THE ASSIGNED ATLANTIC AND WPAC PROPOSALS TO SSP WATCHDOGS FROM JOIDES OFFICE.

The Chairman distributed with these proposals copies of Brenner's initial assessment of what SSB holds on each. (Appendix VII) SSP notes PCOM's initial favourable assessment of the Ocean Floor Seismometer Network proposal, but will await information from PCOM on how the site survey data packages are to be finally assembled for assessment by SSP and PPSP.

Discussion ensued on the new SSP tracking procedure. At least an equal number of new assignments is expected to be necessary at the next SSP meeting. Duennebier recommended that SSP should "cull" or downgrade watchdog tasks in parallel with making new assignments. D'Ozouville commented that this can be done first only after PCOM's April meeting when PCOM will receive a list of priority programs from each thematic panel and expects to make a 4-year program at that stage. SSP will therefore be able to begin "culling" at its Fall 1990 meeting.

Action Item 18:

CHAIRMAN TO ADD "CULLING" OF WATCHDOG LIST TO THE AGENDA OF THE FALL MEETING OF THE SSP.

SSP THIRD DAY - Wednesday October 18th

Panel members reconvened at BGR on October 18th at 09.00.

6. UPDATE ON 17-18TH OCTOBER TAMU PLANING MEETING ON THE ENGINEERING-2 LEG (A. MEYER, FAX REPORT)

Only an SSP-style survey data matrix on the three Engineering-2 sites was received (See Appendix VIII): No written report was Faxed as had been expected. SSP members commented that the drilling was now to take place and our only concern was to give general approval and provide any necessary recommendations on how the ship's visit to the sites could improve existing regional data sets in the area.

Chairman was asked to request ODP to ensure that 3.5 KHz and digital high resolution seismic data was collected on approach and departure from each site. New Shatsky Rise data is of particular importance due to the lack of an existing high quality geophysical data set there.

Action Item 19:

CHAIRMAN TO REQUEST ODP TO ENSURE THAT 3.5 KHz DIGITAL HIGH RESOLUTION SEISMIC SYSTEMS ARE OPERATING ON APPROACH AND DEPARTURE FROM EACH SITE ON ENGINEERING. NEW SHATSKY RISE DATA IS OF PARTICULAR IMPORTANCE DUE TO THE LACK OF AN EXISTING HIGH QUALITY GEOPHYSICAL DATA SET THERE.

7. ITEMS FOR JOIDES PANEL CHAIRMAN'S MEETING, NOVEMBER 29TH AT WHOI

7.1 SSP Chairman will report on the Panel's new procedure for tracking proposals and demonstrate the periodicity of the Panel's workload. He will seek PCOM's comments on the new procedures in relation to their 4-year planning.

7.2 On the insertion of new NANKAI Sites and one extra ONTONG JAVA site (see PPSP Report), SSP recognises that PPSP has always moved sites within the regional data coverages that have been approved by SSP. But the new Nankai sites were not based on newly-collected data, neither were they placed on safety considerations. Ball commented that this resulted from the postponment of drilling and the proponents having more time to refine their objectives. SSP Chairman is to recommend to PCOM that proponents should be encouraged to submit a large number of alternate sites at the initial stage, rather than so late as in this case. Examples of good practice in this regard are the Bonins and Lau Basin.

7.3 Chairman is to refer PCOM to Action item 3 at underway Geophysics and real-time navigation for JOIDES Resolution.

7.4 Chairman is to refer PCOM to Action item 4 on early Thematic panel Prioritization of proposals.

7.5 Chairman is to refer PCOM to Action item 6 on SSB receiving Thematic Panel Minutes.

7.6 Chairman is to ask for PCOM to consider ways of ensuring that there is post-drilling assessment of the adequacy of site survey packages.

7.7 Chairman is to notify PCOM that it sees the attendance of a TAMU representative at its meetings as absolutely essential.

8. OTHER BUSINESS

A. Discussion of faxed Data Bank report.

Panel members commented that Brenner's initial proposal assessments (Appendix VII) along with D'Ozouville is original screening of proposals through to SSP has worked well this far. There were requests however that Carl adds a short listing to each assessment on what data was actually held in the SSB.

B. Feedback from Panel to Proponents

Discussion took place on 'feedback' mechanisms between SSP 'watchdogs' and proponents.

√O SSP CONSENSUS: ALL PROPONENTS WHO SEND DATA PACKAGES SHOULD BE INFORMED OF THEIR ARRIVAL, THAT ASSESSMENT TOOK PLACE AND THAT THE DATA WAS NOW LODGED WITH THE DATA BANK.

Further discussion ensued on whether proponents should be put in touch with SSP watchdogs at an early stage.

SSP CONSENSUS: MEMBERS WITH NEW WATCHDOG ASSIGNMENTS SHOULD MAKE INITIAL CONTACT WITH THE PROPONENTS OF THESE PROPOSALS.

C. Summary of SSP Status of projected early CEPAC Legs and the likely Agenda for the next SSP meeting.

SSP has effectively already approved the following potential 'early' CEPAC Legs:

Eastern Equatorial Pacific
Sedimented Ridges
504B Lower Crust

Proponents of the following are likely to attend the next SSP meeting for detailed next stage assessment:

Cascadia-Oregon and Vancouver
Atolls and Guyots
N. Pacific Neogene
Hawaii Flexure

If PCOM approves Chile Triple Junction and East Pacific Rise for the early CEPAC drilling at its November meeting, these two data packages must go through final evaluation at SSP's spring 1990 meeting.

9. SCHEDULE FOR NEXT MEETING

PCOM meets 24-26 April 1990 in Nice, France and SSP must meet and submit its minutes for that meeting. Best dates for the Chairman are after the end of the University of Wales Spring Term because of teaching commitments. This runs to 6 April. After discussion of the possible constraints of the Easter weekend holiday 13-16 April, SSP Panel agreed that its next meeting should be 9-11 April. It is requested that it takes place at USGS Menlo Park, hosted by Steve

Lewis. Key proponents for Eastern Pacific proposals will be encouraged to attend or to lodge updated data packages (see SSP Action item 5). USGS proponents in particular will be urged to lodge data with SSB. (See Action item 7). Lewis has agreed to arrange a local fieldtrip preferably prior to the meeting (Sunday 8th) with a view to holding open the 12th April for Chairman to complete the minutes for direct dispatch from Menlo Park to Hawaii.

The Panel was hosted to lunch and a tour of PRAKLA-SEISMOS AG by Dr. H. Jorg Dostmann in the early part of Wednesday afternoon.

The meeting ended, after further review of the Panel minutes, at 17.00 on 19th October.

SSP HANNOVER MEETING

LIST OF APPENDICES

APPENDIX I	Updated Ship Schedule
APPENDIX II	Latest ODP Proposal Guidelines - revised 22 May 1989
APPENDIX III	Full Listing on JOIDES Proposals to 29 September 1989
APPENDIX IV	Abstracts of latest Proposals received by JOIDES Office to July 1989
APPENDIX V	TAMU-ODP Summary Statement on Free Fall Funnel entry and recommendations
APPENDIX VI	Data Bank Statistics
APPENDIX VII	Preliminary Data Bank Assessment of Proposals Newly Assigned to SSP Watchdogs
APPENDIX VIII	Updated SSP Site Survey Matrices

CHANGES OF ADDRESS FOR SSP MEMBERS:-

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Fred Duennebier	808-949-0243
Rob Kidd (Cardiff)	222-874326

APPENDIX I

UPDATED SHIP SCHEDULE

10/?

ODP OPERATIONS SCHEDULE

Leg		Departs Location	Departs Date	Arrives Destination	Arrives Date	Days at Sea *	In Port
	Transit	Pusan	10/18/89	Singapore	10/27/89	9	10/27-11/11/89 (Dry dock and port)
	Transit	Singapore	11/12/89	Guam I	11/22/89	10	11/22-11/23/89 (Leg 129 Scientists On)
129	Old Pacific Crust	Guam	11/24/89	Guam II	1/19/90	56	1/19- 1/23/90
130	Ontong Java	Guam	1/24/89	Guam III	3/27/90	62	3/27- 3/31/90
131	Nankai	Guam	4/ 1/90	Pusan S. Korea	6/ 2/90	62	6/ 2- 6/ 6/90
132	Engineering 2	Pusan S. Korea	6/ 7/90	Guam IV	8/ 1/90	55	8/ 1- 8/ 5/90
	Transit	Guam	8/ 6/90	Port Moresby	8/13/90	7	8/13- 8/14/90
133	N. E. Australia	Port Moresby	8/15/90	Brisbane	10/10/90	56?	10/10-10/14/90
134	Vanuatu	Brisbane	10/15/90	Suva	12/10/90	56?	12/10-12/14/90
135	Lau Basin	Suva	12/15/90	?	2/9/91	56?	? ?

* Schedule subject to change pending detailed planning after Leg 131.

Revised 8/31/89

Posted: Fri, Oct 6, 1989 4:39 PM EDT Msg: GGIJ-4059-3473
From: NSF.OCE.ODP
To: joides.hig
Subj: Site Survey Panel mtg

To: Loren d'Ozouville
from: John Ladd
regarding Site Survey Panel Mtg
I understand that you will be attending the Site Survey Panel meeting in Hanover. The following table is the report from NSF describing upcoming marine geology and geophysics field programs that will occur in 1990. These programs were not necessarily designed with ODP in mind except for the ones noted with an asterisk (*):

Field Programs Funded by NSF MG&G and ODP Programs that will go to sea in calendar 1990

R/V MOANA WAVE		
Lundberg	Taiwan Collision	SeaMARC II
Sarewitz	Philipine Sea	SeaMARC II
R/V KNORR		
Paull	Blake Plateau	Deeptow
R/V THOMAS WASHINGTON		
Christie	Galapagos	SeaBeam, seismics, dredge
Orcutt/Forsyth/ Michael/Fox	Mid-Atl Ridge 40S Tristan de Cuhna	SeaBeam, seismics, dredge
Bloomer	northern Marianas	dredging
Johnson	Western Pacific	Deeptow, SeaBeam
Silver	Solomon Sea	SeaMARC II, coring
Lonsdale	Pacific-Antarctic Ridge	SeaMARC II, SeaBeam
MacDonald	East Pacific Rise	SeaMARC II, SeaBeam
M/V BERNIER		
Overpeck *	Cariaco Basin	piston coring, hydrocasts
Cochran	East Pacific Rise	Hydrosweep
Miller/Mountain *	US East Coast contl marg	MCS
Fox	South Atlantic	Hydrosweep
R/V ATLANTIS II		
Lonsdale	2N, 101W	Alvin
Keigwin	Gulf of California	sed traps & long piston core
C. Moore	Oregon margin	Alvin
SHIP UNKNOWN		
Delaney/Spiess *	Kane Fracture Zone	Deeptow

* funded in whole or in part by NSF Ocean Drilling Program (ODP)

Are you making any progress with the compilation of operational statistics to help evaluate engineering developments? Tom Pyle tells me that you plan to have this done for the spring EXCOM meeting. I'll be interested to see the results.

NERC RESEARCH SHIPS PROGRAMMES 1990 '91

Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar

RRS Charles Darwin

02 — 24	27 — 22	25 — 19	21 — 26	28 29 — 22	25 — 21	25 — 13	18 — 24	27 — 21	21 - - - 15	15 — 18	22 — 24	27 — 30
BARRY	BARRY	BARRY	BARRY	LONDON	TROON	TROON	BARRY	LISBON	LISBON	LISBON	FREETOWN	TENERIFE
45	46	47	48	50	51	52	53	54		55	56	57
RVS	Savidge	Burkill	Edwards	Saunders	Pollard	Masson	Shimmield	Wilson		Whitmarsh	Kidd	Searle
	Queens	PML	BGS	IOSDL	IOSDL	IOSDL	Edinburgh	IOSDL	Re-cert'n	IOSDL	Cardiff	Durham
Eq. Trials	BOFS	BOFS	Geophys	Physics	Physics	Geophysics	BOFS	Geochem		Geophysics	Geophysics	Geophysics
Atlantic	NE Atlantic	NE Atlantic		NE Atlantic	Iceland/ Faeroes	Rockall Plateau	NE Atlantic	NE Atlantic		Offshr Ghana	NW Africa	Mid Atlantic

TE

RRS Discovery

08 14 —	8 11 —	07 10 —	27 30 —	01 04 —	02 05 —	05
BARRY	BARRY	BARRY	BARRY	BARRY	TENERIFE	UK PORT
190	191	192	193	194	195	
Watson	Angel	Turner	Pingree	Herring/Rice	Herring	
PML	IOSDL	PML	PML	IOSDL / Abdn	IOSDL	Commence Vessel Conversion
BOFS	BOFS	BOFS	Physics	Biology	Biology	
NE Atlantic	NE Atlantic	NE Atlantic	NE Atlantic	NE Atlantic	NE Atlantic	

RRS Challenger

03 —	03 06 —	17 20 —	18 21 —	05 08 —	23 26 —	07 10 —	27 30 —	17 20 —	19 - - -	14 —	03 06 —	19 - - -	14 —	03 06 — 02	
TROON	GY	GY	GY	TROON	BARRY	GY	TROON	GY	GY	TROON	TROON	BARRY	BARRY	TROON	BA
64	65	66	67	68	69	70	71	72		73	74		75	76	
Owens	Morris	Prandle	Ellett	Hill	Morris	Dando	Ellett	Prandle		Simpson	Ellett		Ellett	Van den Berg	
PML	PML	POL	DML	UCNW	PML	PML	DML	POL	Re-cert'n	UCNW	DML	Available for charter or laid-up	DML	Liverpool	
Biochem	Chem	Physics	Physics	Physics	Chem	Biochm	Physics	Physics		Physics	Physics		Physics	Biogeochem	
N Sea	N Sea	N Sea	NW Scotland	Irsh Sea	N Sea	N Sea	NW Scotland	N Sea		W Scotland	NW Scotland		NW Scotland	NE Atlantic	

Charter Ships

(26)+6	(15)+4	(23)+2	(28)+6	(25)+8
UK Port UK Port	UK Port UK Port	US Port US Port	UK Port UK Port	? ?
Kenyon	Fannin	Masson	Parson	Parson
IOSDL	BGS	IOSDL	IOSDL	IOSDL
Geophysics	Geol/Bio	Geophysics	Geo-phys/chem	Swath Bathymetry
Rhone Fan. Med.	NE Atlantic	Mont.Fan Offshr.Calif.	N Atlantic	Area to be determined

Final Version (20 Sept 1989)

Charter ship allocations shown are for information only. Actual cruise dates and charter vessels are to be determined.

Proposition de programme des moyens navals

1990

N/O JEAN CHARCOT/NOF

CAMPAGNES	*DUREE*	*PERIODE*	*MOYENS*	*DISCIPLINE*	*THEME*	*CHEF DE PROJET*
MESEA 1	36	01/02	SEA BEAM SISM. LEGERE	GGMO	CARTOGRAPHIE ZEE	G.BOILLOT/ CEROV
SARA	35	04/05	SEA BEAM SISM. LEGERE	GGMO	ETUDE DE DORSALE MEDIO OCEANIQUE	P. PATRIAT IPG/P
EROS 2000	28	06	-	OPC	CYCLES BIOCHIMIQUES DE MATIERES ORGANIQUES	M. MARTIN INST.BIOCHIM MARINE
MEDIPROD 6	28	07	-	BPA	ETUDE CHIMIQUE ET BIOLOG. DES EAUX DU COURANT ALGERIEN	P. RAIMBAULT CENT.OCEANO. LUMINY
MESEA 2	15	11	SOND. MULTIFA. SISM. LEGERE	GGMO	CARTOGRAPHIE ZEE	G. BOILLOT CEROV
EUMELI 2	42	11/12	EPAULARD	BPA	BIOMASSE ET PROCESSUS CHIMIQUE	M. SIBUET DERO/EP
DORMASIS	20	12/01 1991	S.M.T.	GGMO	STRUCTURE PROFONDE DE LA CROUTE OCEANIQUE	H. NEEDHAM DERO/EP

N/O NADIR

CAMPAGNES	DUREE	PERIODE	MOYENS	DISCIPLINE	THEME	CHEF DE PROJET
EQUASIS	18	04	S.M.T. REFLEXION	GGMO	MARGES TRANSFORMANTES	J. MASCLE GEMC
EQUAREF	25	04/05	S.M.T. REFRACTION	GGMO	MARGES TRANSFORMANTES	B. PONTOISE ORSTOM
ESSNAUT	15	06/07	NAUTILE	-	ESSAIS NAUTILE APRES CARENAGE	IFREMER/DIT
LUSIGAL	27	07/08	S.M.T. REFLEXION	GGMO	RIFTOGENESE	G. BOILLOT GEMC
ESCONAUT	25	08/09	NAUTILE	-	ESSAIS TECHNIQUES/OUTILLAGE NAUTILE	-
DIANAUT	32	09/10	NAUTILE NADIA	GGMO	CROUTE OCEANIQUE	R. GABLE BRGM
SISMOBS 1	14	10/11	NAUTILE NADIA	GGMO	MISE EN PLACE SISMO DANS PUITS ODP	B.ROMANOWICZ IPG/P
NAUTIPER	32	11/12	NAUTILE	GGMO	MARGES ACTIVES	J. BOURGOIS UPMC
SISMOBS 2	15	12	NAUTILE	GGMO	REPRISE SISMO.	B.ROMANOWICZ IPG/P

N/O LE SUROIT

CAMPAGNES	DUREE	PERIODE	MOYENS	DISCIPLINE	THEME	CHEF DE PROJET
SURTROPAC 13	33	12/89-01/90	-	OPC	INTERACTION OCEAN/ATMOSPH.	C. HENIN ORSTOM
ANTIQUAL	15	03	-	ENV.	ENVIRON. ANTILLES FRANC.	M. KEMPF DERO/EL
ORIENTE	35	04/05	SAR	GGMO	LIMITES DE PLAQUES EN COULISSEMENT	MERCIER DE LEPINAY/UNIV NICE
IGMAR	20	06	-	GGMO	VALORISATION DE RESSOURCES ANTILLES FRANCAISES	C. AUGRIS DERO/GM
DIAPISAR	27	09	SAR	GGMO	MARGES ACTIVES, PRISME D'ACCRETION	M. VERNETTE IGBA
FAGUAD	29	10	SAR	GGMO	ARC INSULAIRE, HYDROTHERM.	P. BOUYSSE BRGM
GUYANTE 2	30	11	-	GGMO	FLUX MATERIEL TERRIGENE	M. PUJOS IGBA

N/O LE NOROIT

CAMPAGNES	DUREE	PERIODE	MOYENS	DISCIPLINE	THEME	CHEF DE PROJET
ECODIV 1	10	02	-	-	ESSAIS D'INSTRUMENTATION	IFREMER/DIT
ESCOCYAN	15	02/03	CYANA	-	MISE AU POINT EQUIPEMENTS POUR SOUS MARINS	IFREMER/DIT
CYANECO 2	14	03	CYANA	BPA/GGMO	ENVIRONNEMENT DES MARGES	J. SOYER BANYULS
TOMOFRONT	15	03/04	-	BPA	FRONT HYDROLOG. PRODUCTIF	S. DALLOT CEROV
VICOMED	20	04	-	GGMO	HYDROGEOCHIMIE	C. PIERRE UPMC
ECOFER 2	16	05	-	GGMO/BPA	ENVIRONNEMENT DES MARGES	J.C.RELEXANS UNI.BORDEAUX
GYROUEST	8	06	-	ENV	ETUDE PHYSIOLOGIQUE DE GYRODINIUM	P. GENTIEN DERO/ENV
GYROCYAN	15	07	CYANA	BPA	MACROPLANCTON GELATINEUX	PH. LAVAL CEROV
CYANECO 3	15	08	CYANA	BPA/GGMO	ENVIRONNEMENT DES MARGES	J. SOYER BANYULS
ECOCYAN	10	08	CYANA	-	EQUIP. POUR SOUS MARINS	IFREMER/DIT
TRAMANOR	20	09/10	-	OPC	ANALYSE DE TRACEURS RADIOACTIFS	P.GUEGUENIAT CEA
ECOFER 3	16	10	-	GGMO/BPA	ENVIRONNEMENT DES MARGES	JC RELEYANS UNI.BORDEAUX
ECODIV 2	10	11	-	-	MISE AU POINT DE MATERIEL	IFREMER/DIT

N/O CAPRICORNE

CAMPAGNES	DUREE	PERIODE	MOYENS	DISCIPLINE	THEME	CHEF DE
SURTROPAC 14	33	07	-	OPC	INTERACTION OCEAN/ATMOSPHERE	C. HENIN ORSTOM
SANTA CRUZ	45	08/09	-	GGMO	BASSIN MARGINAL ACTIF	B. PELLETIER ORSTOM

N/O THALASSA

CAMPAGNES	DUREE	PERIODE	MOYENS	DISCIPLINE	THEME	CHEF DE
IYFS	30	01/02	-	BPA	INVENTAIRE DE JEUNES POISSONS	A. SOUPLET DRV/RH
DAAG	15	04	-	BPA	ANCHOIS EN GOLFE DE GASCOGNE	P. PROUZET DRV:RH
EVHOE	53	04/05/06	-	BPA	RESSOURCES A L'OUEST DE L'EUROPE	JC POULARD DRV/RH
ETAP	21	06	-	BPA	TECHNOLOGIE ACOUSTIQUE	N. DINER DIT/TNP
AURA	20	07	-	BPA	TRANSFORMATION EN SURIMI	L. HAN CHING DRV/UVP

N/O CRYOS

CAMPAGNES	DUREE	PERIODE	MOYENS	DISCIPLINE	THEME	CHEF DE
ERHAPS	36	02/03	-	BPA	RESSOURCES EN SECTEUR 3PS	J. BERTRAND DRV/RH
ECLIPSE	36	07/08	-	BPA	ECHANTILLONNAGE DE ZOOPLANCTON	BOURDILLON LUMINY

IFREMER

PROPOSITION DE
PROGRAMME DES MOYENS NAVALS

COMMISSION FLOTTE
DU 30 MAI 1989

1990	JANVIER	FEVRIER	MARS	AVRIL	MAI	JUIN	JUILLET	AOUT	SEPTEMBRE	OCTOBRE	NOVEMBRE	DECEM.

CHARCOT
NESEA 1 DESARMEMENT T SARA EROS 2000 MEDIPROD 6 DESARMEMENT M O F NESEA 2 EUMELI 2
TL 36 TL TL PD 35 TL 28 TL 28 TL TL 15 TL 42

NADIR
ARRET TECHNIQUE T EQUASIS EQUAREF T DESARM. ESSNAUT LUSIGAL ESCONAUT T DIANAUT T SISMO1 NAUTIPER SI
TL 14 ABJ 18 ABJ 25 ABJ TL TL 15 TL 27 TL 25 TL LPS 32 FDF PMA 14 CAO 32 CAO15

SUROIT
T A.T. T ANTIQUAL ORIENTE A.T. IGMAR DESARMEMENT DIAPISAR FAGUAD GUYANTE 2 T
NMA PPT 25 FDF 15 FDF 35 PRC 20 PAP PAP 27 PAP 29 FDF 30 CYN

NOROIT
DESARM. ECOB. ESCOCY. CYAN.2 TONOFR. VICOM. TV ECOFER A.T. GYROG. T GYROCY. CYAN3 ECOCY. TV TRANAMOR ECOF.3 ECODIV DESARM
TL 10 TL 15 TL 14 TL 15 TL 20 TL BX 16 BR 8 BR TL 15 TL 15 TL 10TL BR 20 BR 16BR 10BR

CAPRIC.
DESARMEMENT T SURTROPAC 14 SANTA CRUZ DESARMEMENT
SNZ NMA 33 NMA 45 NMA

THALAS.
DESARM. IYFS DESARM. DAAG EVHOE ETAP AURA DESARMEMENT
NTS 30 NTS 15 NTS NTS 53 NTS 21 NTS 20 NTS

CRYOS
T ERHAPS T DESARMEMENT ECLIPSE DESARMEMENT
SNZ SPM 36 SPM SNZ SNZ 36 SNZ

NAUTILE
ESSNAUT ESCONAUT DIANAUT SISMO1 NAUTIPER SI
15 25 32 14 32

CYANA
ESCOCYAN CYANECO2 GYROCYAN CYANEC3 ECOCYAN
15 14 15 15 10

SAR
ORIENTE HUDSAR DIAPISAR FAGUAD
35 28 27 29

S.M.T.
EQUASIS EQUAREF LUSIGAL DORM.
18 30 27

NAV.OC TOULON
ESSNAUT ESCONAUT DIANAUT NAUTIPER

NAVIS TOULON
CYANA CYANA

NAV.OC. BREST
HUDSAR DIAPISAR EUMELI 2

PORTS

TL : TOULON	BR : BREST	BX : BORDEAUX	FDF : FORT/FRANCE	BA : BUENOS AIRES	LPS : LAS PALMAS	CAO : CALLAO
NTS : NANTES	SNZ : ST NAZAIRE	SPM : ST PIERRE	DK : DAKAR	PAP : POINTE/PITRE	ABJ : ABIDJAN	MZO : MANZANI
NMA : NOUMEA	NKA : NUKUALOFA	CYN : CAYENNE	PRC : PORTO RICO	PMA : PANAMA	PD : PONTA DELGADA	

F.S.SONNE Operations-schedule 1989-1991

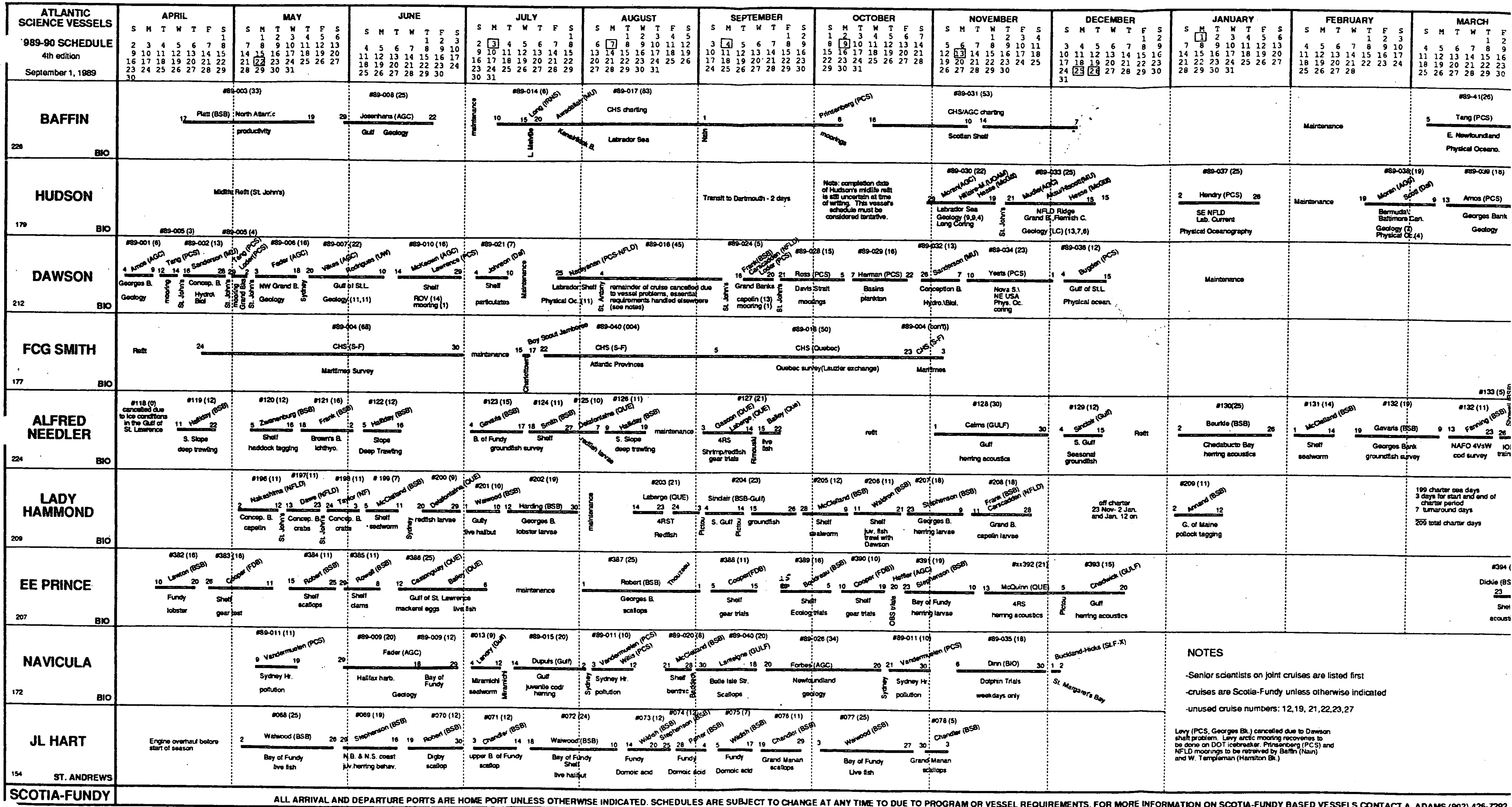
cruise	dep. - arr.	from - to: (area)	Program (Charter)
SO-64	9-89 — 10-89	-Callao	Uni Hamburg [DISCOL Biology and Geology environmental st. ,Central Pacific
SO-65	10-89-- 12-89	-Tahiti	Uni Kiel [MIDPLATE 2,Hydrthermal studies in south.centr.Pacific and Geophys.Tahiti
SO-66	12-89-- 2-90	-Fidji Isl.	TU Clausthal [MIDPAC 4, Hydrthermal stud.within the area of KIRIBATI/equatorial Pacific
SO-67	2-90-- 4-90	-Fidji Isl.	BGR [Geology of the Manihiki Plateau,geolgical and hydroth. studies in the Lau Basin, training CCOP/SOPAC
SO-68	4-90— 6-90	-Fidji Isl.	Uni Marburg
SO-69	6-90— 8-90	-Guam	Uni Kiel /Marianen Back Arc
SO-70	8-90— 9-90	-Guam	Uni Hamburg/Marianen Graben
SO-71	9-90— 10-90	-Naha	TU Clausthal / Hydromin 2
SO-72	10-90— 12-90	-Singapur	Uni Hamburg/ South China Sea

F.S. POLARSTERN Operations-schedule 1989 - 1990

cruise	dep. arriv.	from - to	area/program
ANT VIII/2	9/89-10/89	Puerto Madryn - Kapstadt	Weddel Sea/Meteorol.Oceanogr.
ANT VIII/3	10/89-11/89	-Punta Arenas	Antarc.Converg.
ANT VIII/4	11/89-12/89	-Ushuaya	Antarc.Peninsula
ANT VIII/5	12/89- 3/90	-Kapstadt	east.Weddel Sea,Filchner
ANT VIII/6	3/90- 4/90	-Kapstadt	Astrid Ridge/Geophysics and marin
ARK VII/1	6/90- 7/90	Oslo -Tromsoe	Jan Mayen,Scresbysund
ARK VII/2	7/90- 8/90	-Tromsoe	Framstreet,Greenland Sea
ARK VII/3	8/90-10/90	Tromsoe-Bremerhaven	Svalbard,Scoresbysund
ANT IX/1	10/90-11/90	Bremerhaven-Puntas Arenas	
ANT IX/2	11/90-12/90	-Kapstadt	north. Weddel Sea
ANT IX/3	1/91- 4/91	-Kapstadt	south-west. Weddel Sea
ANT IX/4	4/91- 4/91	-Bremerhaven	

F.S. METEOR Operations-schedule 1989 - 1991

M11/1	10.89- 10.89	Hamburg -Pt.Delgade	nordeast Atlantic/Paleoceanog.
M11/2	10.89- 11.89	-Rio de Janeiro	Atlant.Transect/
M11/3	11.89- 12.89	-Montevideo	Patagonischer Shelf/fish.biologie
M11/4	12.89- 1.90	-Ushuaia	Antarct.Peninsula/Krill,Biomass.
M11/5	1.89- 3.90	-Capetown	Circumpolar drift,Tracerphysics
M12/1	3.90- 4.90	-Funchal	East.Atlantic/Sedimentation
M12/2	4.90- 5.90	-Las Palma	Centr.Atlantic Seamounts/Geophys.,Petrolo
M12/3	5.90- 6.90	-Hamburg	East.Northatlantic/Biotrans.
M13/1	7.90- 7.90	Hamburg -Tromsoe	Norweg.Sea
M13/2	7.90- 8.90	-Hamburg	Norweg.Sea
M14/1	9.90- 10.90	Hamburg -Cape Verde	Biskaya/Test of Rainmeter
M14/2	10.90- 10.90	-Receife	equatorial.Atlantic/tropic.Circulation
M14/3	10.90- 12.90	-Rio de Janeiro	Southameric.Eastcoast/Geophys.,Seismic
M15/1	12.90- 2.91	-Rio de Janeiro	centr.Southatlant./Brazilstream,Geol.,Bio
M15/2	2.91- 3.91	-Libreville	subtrop.Southatlant./Oceanograph.
M16/1	3.91- 4.91	-Recife	Southatlantic/Geoscience
M16/2	4.91- 5.91	-Balem	Southatlantic/Doescience
M16/3	5.91- 6.91	-Las Palmas	offshore Brazil/Oceanograph.
M16/4	7.91	-Hamburg	?
M17/1	7.91- 8.91	Hamburg- Hamburg	Norweg.Sea
M18	8.91- 9.91	Hamburg- Hamburg	Northatlantic
M19	9.91- 10.91	Hamburg- Hamburg	Northsea



ATLANTIC SCIENCE VESSELS
1989-90 SCHEDULE
4th edition
September 1, 1989
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH
BAFFIN
226 BIO
HUDSON
179 BIO
DAWSON
212 BIO
FCG SMITH
177 BIO
ALFRED NEEDLER
224 BIO
LADY HAMMOND
209 BIO
EE PRINCE
207 BIO
NAVICULA
172 BIO
JL HART
154 ST. ANDREWS
SCOTIA-FUNDY
NOTES
-Senior scientists on joint cruises are listed first
-cruises are Scotia-Fundy unless otherwise indicated
-unused cruise numbers: 12,19, 21,22,23,27
Levy (PCS, Georges Bk.) cancelled due to Dawson shaft problem. Levy arctic mooring recoveries to be done on DOT icebreaker. Prinsenberg (PCS) and NFLD moorings to be retreived by Baffin (Nain) and W. Templeman (Hamilton Bk.)
199 charter sea days
3 days for start and end of charter period
7 turnaround days
209 total charter days
ALL ARRIVAL AND DEPARTURE PORTS ARE HOME PORT UNLESS OTHERWISE INDICATED. SCHEDULES ARE SUBJECT TO CHANGE AT ANY TIME TO DUE TO PROGRAM OR VESSEL REQUIREMENTS. FOR MORE INFORMATION ON SCOTIA-FUNDY BASED VESSELS CONTACT A. ADAMS (902) 426-7292

APPENDIX II

LATEST ODP PROPOSAL GUIDELINES - REVISED 22 MAY 1989

APPENDIX II.

Rev. 22 May 1989

OCEAN DRILLING PROGRAM

GUIDELINES FOR THE SUBMISSION OF PROPOSALS AND IDEAS

INTRODUCTION

The purpose of the JOIDES scientific advisory structure is to formulate the most productive plan for drilling in the oceans to aid in answering scientific questions, mainly about present-day and earlier processes of the earth. Drilling is based on suggestions and proposals from the entire scientific community.

Before a specific proposal or set of proposals leads to drilling, JOIDES must be convinced that:

a. the scientific objectives are of high priority;
b. drill sites are located to address those objectives in the best and safest manner possible, and
c. the operational plan to drill them has a reasonable chance of success.

The Planning Committee (PCOM) depends mainly on its thematic panels for advice on scientific objectives. Service panels, detailed planning groups, the Science Operator (TAMU), Wireline Logging Services (LDGO), and Site Survey Data Bank (LDGO) provide advice on optimum and safe drill sites.

JOIDES accepts proposals by individuals or groups into the planning process as:

Preliminary Proposals. These are ideas or suggestions for scientific ocean drilling. Examples are objectives aimed at a specific process, general drilling targets, or experiments in the borehole. Such proposals may lack a strong scientific focus, geographic specificity, or site-survey data.

Mature Drilling Proposals. These are proposals to address specific scientific themes by drilling in specific areas.

Proposals are reviewed and set into priority by one or more JOIDES advisory panels. Only mature proposals may ultimately be prioritized by the Planning Committee for actual drilling. Thus, ideas which become part of the drilling program do so either by evolving proposal with multiple objectives, or by being incorporated into an existing proposal with multiple objectives. Maturity is gained by obtaining a favorable thematic evaluation, and meeting certain site-specific requirements.

1. GENERAL INFORMATIONS

A. Review Process

Proposals submitted to the JOIDES Office are logged and acknowledged, and forwarded to each of the four thematic panels for review of their science content (Fig.1: copy of Log Sheet). Although it is unlikely that all panels have an interest in any specific proposal, in a proposal-generated, thematically-controlled program the only fair assessment is by having all thematic panels review all proposals.

Proposals may also be sent to service panels or detailed planning groups if so requested by the proponent or if deemed appropriate by the JOIDES Office. Informational copies are sent to JOI, the Science Operator at TAMU, and the Site Survey Data Bank .

Thematic evaluations are based on the experience and judgement of the panel members, and in the context of the panel White Papers, COSOD I and II, and other reports. Panels may request additional information from the proponents and may suggest that the proposal be modified to enhance its scientific merit. A copy of the Proposal Review Sheet used in evaluating a proposal is attached as Figure 2.

Proposals of limited scope may be incorporated by the advisory panels into a proposal of broader scope. Proposals receiving favorable thematic evaluations will be considered further by JOIDES.

As the proposal matures and proceeds through the system, service panels may make recommendations regarding the technical aspects of the proposed drilling (e.g., site survey review, safety review, downhole measurements review, shipboard measurements review, etc.).

The Planning Committee monitors and directs the proposal review process, reviews the recommendations made by the advisory panels, decides the fate of proposals, and ultimately integrates approved proposals into a detailed drilling plan and ship track.

Figure 3 is a schematic representation of the lead time and review process.

C. Proposal Submission

The time required for a proposal to be processed by the JOIDES scientific advisory structure and become a part of the drilling plan will depend on the scientific value of the proposal and the completeness of the required data when submitted. Proponents are therefore urged to submit as complete a package as possible.

Ten copies of proposals should be submitted to the JOIDES Office.

The **first page** shoud be an **abstract.**

D. Minimum Requirements

1. Mature Proposals

A mature proposal should discuss the following items:

a. Specific scientific objectives with priorities.

b. Proposed site locations and alternative sites.

c. Background information, including regional and local geological setting and identification of existing geophysical and geological data.

d. Drilling requirements for each objective (e.g. estimated drilling time, steaming time, water depth, drill string length to deepest objective, reentry, etc.). The Science Operator at TAMU can provides tables with the necessary information.

e. Logging as well as downhole experiments and other supplementary programs (with estimated time, specialized tools, etc.).Wireline Logging Services at LDGO can provide assistance.

f. Explanation of known deficiencies in data required for the location of drilled sites (site surveys), and data required for the interpretation and the extrapolation of drilling results (regional geophysics). ODP standards for site-survey data are given in chapter 2. Contact the ODP Site Survey Data Bank at LDGO for additional information.

g. Statement of potential safety problems in implementing proposed drilling (see Guidelines for Safety Review in chapter 3).

h. Other potential problems (weather window, territorial jurisdiction, etc.).

i. The name and address of a person assigned as the proponent for each site, who will serve as a contact for JOIDES when additional information is required.

Proponents are also required to submit a Site Proposal Summary Form for each proposed drilling site (Figure 4). Copies of all forms which should be included with a proposal can be obtained from the JOIDES Office.

2. Data Availability and Deposition

Proponents are asked to identify available data in three categories:

a. Primary data necessary and sufficient to support the scientific proposal. The ODP Data Bank is authorized to duplicate and distribute these data as needed for ODP evaluation and planning procedures.

b. Other data relevant to the proposal that may be obtained from publicly accessible data bases.

c. Data that will eventually be available for public access but has release clauses imposed by the data holder. These data can not normally be considered in evaluating the scientific merit of the proposal; they may, however, be used to support safety considerations.

It is emphasized that supporting data for proposals in the above categories must be deposited in the ODP Data Bank to ensure that a proposal is considered mature. Guidelines for submission of data to the Databank. are detailed in chapter 2.

3. Special Submission

Letters of Intent to Submit may be sent to the JOIDES Office at any time. Revised proposals and supplemental information should reference the original log number assigned by the JOIDES Office, and may also be sent to the JOIDES Office at any time. A proposal sent directly to a panel will not be considered before it is received and logged at the JOIDES Office. In fiscal years 1989 and 1990, the address is:

JOIDES Office
Hawaii Institute of Geophysics
University of Hawaii
2525 Correa Road
Honolulu, Hawaii 96822
Telephone: 808-948-7939 Telex: 7238861/HIGCY HR
Telemail: JOIDES.HIG FAX: 808-949-0243

Note: In summer 1989, telephones will change to: 808-956-7939, FAX: 808- ? -0243

E. Preliminary Time Estimates for Coring and Logging Operations

Guidelines have been prepared by both the Science Operator and the Wireline Logging Services Contractor for estimating coring and logging times. TAMU has revised and compiled curves for estimating these times in the following publication:

Preliminary Time Estimates for Coring Operations, ODP Technical Note No.1 (Revised December 1986).

In this publication, drill string and wireline trip time curves reflect actual operating times on ODP Legs 103 through 108 (excluding Leg 106, which was not representative of routine operations). Curves for drill string trip time and rotary (RCB), advanced piston (APC), and extended core barrel (XCB) coring cycles are included. They can be used for estimating time in both single-bit and re-entry holes. The curve in Figure 5, for instance, plots the average time for a complete APC coring cycle.

The curves, along with procedures to calculate approximate coring and logging times, are available to assist proponents in developing realistic drilling times. Whenever possible, time estimates for ODP holes should be based on data from similar locations and lithologies.

Because of the complexity of ODP operations, however, these estimates should not be used for detailed operational planning. Once a site has been approved and its objectives defined, detailed planning becomes the responsability of the Science Operator.

2. SITE SURVEY DATA BANK

A. Introduction

The ODP Site Survey Data Bank is located at the Lamont-Doherty Geological Observatory (LDGO). It has served the JOIDES community since 1975 by archiving and distributing site survey and other geophysical data to various panels and individuals associated with scientific ocean drilling.

The most important tasks of the Site Survey Data Bank are as follows:

1. Assisting the JOIDES Site Survey Panel in the preparation and the development of the Site Survey Program.

   This entails synthesis of the geophysical data submitted by drilling proponents and presentation of data packages to Site Survey Panel (SSP) members for evaluation and assessment. The Data Bank serves as the primary operational of this panel.

2. Assisting the Pollution Prevention and Safety Panel (PPSP) by preparing data packages and other information prior to each meeting of the panel.

3. Providing data packages to Co-Chief Scientists for every drilling leg.

   These packages contain sub-bottom and bathymetry profiles gathered during site survey work, and any other pertinent data contributed to the Data Bank. Also provided are digests, charts, and reports from areas in which the drillship will operate. In all, four complete sets are provided in hard copy: two for use on the ship, and two for shorebased of the Science Operator.

4. Preparing packages of site survey and other geophysical data for JOIDES panels and working groups to aid in the proper planning and evaluation of drilling operations.

5. Providing data upon request to the Science Operator (TAMU) to aid in the planning of future ODP legs. The Data Bank also provides facilities for post-cruise syntheses and for regional syntheses, which are encouraged by the COSOD reports.

Oversight for the Site Survey Data Bank is provided by SSP, which promotes international cooperation as well as providing an independent view of the Data Bank's activities.

A major data resource has been built up, and continues to grow, as data from mature drilling proposals are deposited at the Data Bank, providing a geophysical data resource akin to the core repositories.

SITE SURVEY DATA STANDARDS

TARGET

TECHNIQUE		A Paleoenvironment or Submarine Fan	B Passive Margin	C Active Margin	D Ocean Crust (> 400 m sediment cover)	E Ocean Crust (< 400 m sediment cover)	F Bare-rock Drilling	G Aseismic Ridge, Plateau or Seamount
1	Deep Penetration SCS	(X)	(X)	X or 3	X or 3		(X)*	(X)*
2	High Resolution SCS	X	(X)	(X)	(X)	X	(X)	X
3	MCS & Velocity Determination		X	X or 1	X or 1		(X)*	(X)*
4	Grid of Intersecting Seismic Lines	(X)*	X	X	(X)*	(X)	(X)	(X)*
5	Refraction		(X)*	(X)*	(X)*	(X)	(X)*	(X)*
6	3.5 or 12 KHz	X	X	X	X	X	X	X
7	Multi-Beam Bathymetry	(X)*	(X)*	X or 8	(X)	X or 8	X	(X)* or 8
8	High Resolution Imagery	(X)*		X or 7		(X)*	X	(X)
9	Heat Flow		(X)*	(X)*		(X), H	(X), H	
10	Magnetics & Gravity		(X)	(X)	(X)*	(X)*	X	(X)
11	Cores: paleoenvironment geotechnical	X	(X) R	(X) R	R	R,H		(X)* R
12	Dredging					(X)*	X	(X)*
13	Current Meter (for bottom shear)	(X)*	(X)*	(X)*			(X)*	(X)*

X = Vital
(X)* = Desirable, but may be required in some cases
(X) = Desirable
R = Vital for re-entry sites
H = Required for high temperature environments
1 = Technique

11/17/88

Table 1. Site Survey Data Standards

B. Site Survey Data

The most commonly used techniques for site surveying have been bathymetry, magnetic and gravimetry field measurements, coring and dredging, heat flow, single- and multi-channel seismic reflection profiling, and crustal seismic refraction and wide angle reflection sonobuoy measurements.

In recent years, more advanced surveying techniques such as SEABEAM, various side scan sonar systems, and submersibles have become common place.

TARGETS

"TARGET" categories describes broad types of drilling objectives. Individual sites with multiple objectives may need to meet the requirements of two "TARGETS" categories. Frequently, sites will have shallow APC objectives (TARGET A) and deeper sedimentary and basement objectives (TARGET D or E).

TARGET A - Generally APC/XCB penetration.

TARGET B - Greater penetration than a few hundred meters on a passive margin .

TARGET C - Greater penetration than a few hundred meters on an accretionary wedge, fore-arc, or sheared margin.

TARGET D - Greater penetration than a few hundred meters in deep ocean environment. Often includes basement penetration.

TARGET E - Sediment thicknesses of less than a few hundred meters in a deep ocean ridge crest or fracture zone environment. Often includes basement penetration.

TARGET F - Bare rock drilling, probably on zero age crust.

TARGET G - Elevated features with widely varying sediment thicknesses. Sediment slumping may be a problem on flanks. Basement is often an objective

TECHNIQUES

All geophysical methods are not appropriate for all sites, and specific combinations are chosen to get the maximum useful information for the minimum cost. Table 1 shows site survey requirements for each TARGET environment.

1) Deep penetration SCS - Large source single-channel seismic.

2) High resolution SCS - Watergun single channel seismic or small chamber airgun in some situations. Digital acquisition preferred, but usually not necessary

3) MCS and Velocity Determination - Multi-channel seismic including velocity determination (stacking velocities and semblance plots) when accurate depths are critical. Velocity analysis to determine sediment thickness over proposed sites.

4) Grid of intersecting seismic lines - A seismic grid and/or crossing lines over the proposed site. Density of the seismic grid required depends on each particular situation.

5) Refraction - Sonobuoy or ocean bottom seismometer refraction profiles. Expanding spread profiles or wide-angle refraction profiles.

6) 3.5 kHz - High frequency data for near-bottom high resolution to resolve small scale features and give some indication of sediment type.

7) Multibeam bathymetry - SEABEAM or SeaMARC II bathymetry or equivalent. In some cases the greater resolution of SEABEAM may be required. Areas where slumping may occur should have multibeam bathymetry and/or side scan sonar.

8) High resolution imagery - High resolution imagery-acoustical reflectivity or optical images recorded on film or video from towed devices or submersibles are needed to fully interpret multibeam bathymetric data on fans and in topographically complex terrains. Surveys conducted from submersibles may be desirable data where a re-entry cone or bare rock guidebase is to be placed in an area of complex seafloor relief. In such cases, proponents should be prepared to submit photographic survey material, geotechnical measurements and other data resulting from submersible dives.

9) Heat flow - Pogo type profiles or piston core heat flow measurements in detail appropriate to the scientific problem.

10) Magnetics and gravity - Regional magnetics should be available on any location for which the magnetic age of ocean crust is important. Gravity is seldom an absolute requirement, but should be obtained on any profiles for which subsidence studies are planned. SEASAT derived gravity information often complements the regional magnetic picture.

11) Coring - Cores should be taken near all paleoenvironmental sites. All re-entry sites should be supported by cores, core descriptions and geotechnical measurements. The two limiting factors for re-entry operations are:

a. Sufficient sediment thickness;
b. Ability to wash through the sediment section.

Site proponents should contact the Science Operator (TAMU) for further clarification on the geotechnical requirements for their particular circumstances.

12) Dredging - May be required when basement drilling is included in the objectives.

13) Current meters - Information on bottom currents will be required when bottom shear might be a problem. Shallow water sites may need tidal current information as well.

Figure 6 is the site survey summary sheet required for the review by the Site Survey Panel.

C. Guidelines for Submission of Geophysical and Site Survey Data

Site Survey data must be presented in a reasonable format. Data presented should include, at a minimum, a track line map at a working scale in the region of proposed sites (including enough data to correlate with seismic lines, bathymetric maps, and other data along track. In many situations, structural and isopach maps may be required for use by the various panels prior to approval for drilling. Digital seismic data should be processed to a reasonable level; the more processing the better. Data at each step of processing should be part of the data package.

Data should be submitted in the following forms:

1) Digital magnetic tape of underway geophysical data values (topography, magnetics, gravity) merged with smoothed final navigation. The preferred format is MGD77, which expects a "header" record as well as data records

2) Cruise report describing in detail the results of surveys.

3) Large sepia or mylar copies (suitable for ozalid reproduction) of single-channel seismic reflection profiles. The preferred format for 3.5 kHz records is on 35 mm film negative.

4) Large sepia copies or mylar (suitable for ozalid reproduction) of processed multi-channel seismic reflection profiles.

5) Large photographic negatives of any side scan sonar data (GLORIA, Seamarc I and II) collected.

6) Large sepia copies (suitable for ozalid reproduction) of any SEABEAM data presented at a countour interval deemed appropriate.

7) Large sepia or mylar copies (suitable for ozalid reproduction) of any "specialized" data sets (such as sediment thickness maps, bathymetry/magnetic contour charts, velocity analyses, etc.) developed in the course of a cruise report. The format and nature of the presentation of these data will be variable and will be dependent upon the nature of specific interest at each site.

Data should be deposited at:

ODP Site Survey Databank
Lamont-Doherty Geological Observatory
Palisades, New York 10964
U S A Telephone: (914) 359-2900

D. Data Availability

At the Site Survey Data Bank, underway geophysical data are stored digitally in NGDC or MGD77 format, and are available in the form of magnetic tapes or in various geophysical data display methods (annotation of geophysical values along ship track, profiles along ship track, etc.). In addition, seismic profiles collected during site surveys are also archived. Contour maps, heat flow

charts, bottom photographs, and other forms of data presentation compiled in preparation of cruise reports are also available.

Single channel seismic profiles are generally available in the form of large photocopies; multi-channel seismics are usually presented in analog form and are reproduced by diazo processing. In most cases the Data Bank does not have access to original digital tapes of seismic data. Side scan sonar data are available as glossy photographs, sometimes in mosaic form, and SEABEAM data are presented in the form of large contour maps.

In addition to data collected explicitly for ODP, the Data Bank maintains a vast amount of background geophysical data and seismic data collected by academic institutions from all over the world. These data are a valuable supplement to the site survey data and are often included in packages prepared for JOIDES panels and individuals during the course of Data Bank operations.

Proponents should be aware that they have the prime responsability for obtaining and providing data in support of their drilling proposals. However, the Data Bank is frequently able to supplement the data holdings of proponents. Any individual seeking data in support of a drilling proposal, or for post cruise studies, is encouraged to request data from the Site Survey Data Bank.

3- GUIDELINES FOR SAFETY REVIEWS

A. Introduction

Safety reviews are a critical element in the process of planning a drilling leg. In addition to the JOIDES Pollution Prevention and Safety Panel (PPSP) , the Science Operator (TAMU) also has an independent group of safety advisors. Advice and recommendations from both groups are incorporated into the final decision on whether or not a proposed site will be drilled.

Although the risk of encountering oil or gas while drilling into the seafloor can rarely be eliminated, it is critically important that it be reduced to an absolute minimum. The potential impact of an ocean polluting incident on ODP could be very severe, leading perhaps to an interruption in the drilling schedule, or worse, termination of the program.

The primary responsibility for documenting hazardous sub-seafloor conditions rests with the Co-Chief Scientists. They are ultimately responsible for ensuring that adequate technical data are obtained, and for processing these data for examination by the safety panels. Failure to document safety considerations in a thorough manner could result in rejection of a site by the safety panels.

B. Geological drilling hazards

The most critical safety and pollution hazards in ocean drilling are the possible release of hydrocarbons from a subsurface reservoir, or penetration into a superheated hydrothermal system.

In most deep sea regions, the risk of hydrocarbon release can be reduced or eliminated by careful planning, judicious choice of drilling locations based on proper site surveys, and by taking special precautions when coring at potentially hazardous sites.

C. Safety drilling procedures

Safety panel review is a complex procedure which varies from leg to leg, depending on the geological setting of the drill sites, and the quantity and quality of data available. These guidelines provide only the overall scope of the review which should include a synthesis of the geological, geochemical and geophysical data at each site.

Material for safety panel review is usually presented in two stages. The first stage consists of material mailed to members of the JOIDES and the TAMU safety advisors approximately two weeks prior to a formal review meeting. This material should acquaint them with the location, elements of structure and stratigraphy, any safety problems which may exist at each site, and include a Safety Review Checksheet (Fig. 7) for each site. These documents allow individual panel members time to research their own files and the literature on possible hydrocarbon or other hazards for the various sites.

The second stage is a formal presentation of all the data available data at a safety review meeting. In preparation for this meeting no effort should be spared in compiling all data of possible significance. The panels are necessary reluctant to approve sites where data are insufficient to support a safety evaluation. Avoiding reference to negative data could be a greater deterrent to panel approval than bringing such data into the open where its merits can be judged relative to the overall safety aspects of a site.

It should be noted that proposals to drill on structural highs will generally be rejected; relocation of the site off-structure may be recommended. The panels are also likely to relocate drill sites to cross-points of seismic reflection lines, especially on continental margins and where structure may be a factor.

Much of the data required for safety review is also required to suppport submission of a formal mature proposal to JOIDES. Data which should be submitted to the ODP Site Survey Data Bank and data requirement format are described in chapter 2.

D. Schedules for safety review

The program schedule requires safety reviews to be held at least three months before a leg begins. It is advisable, however, to conduct the review even earlier if possible, so that if a site is rejected, it is still possible to obtain new geological, geophysical and geochemical data for alternate sites.

Both JOIDES and TAMU safety panels are present at a safety review meeting. In reviewing the data, questioning the proponents, and discussing problems, there is no distinction between the two panels. However, the panels arrive at independent conclusions which are not necessarily identical. If there is a difference of opinion between the two panels, the more conservative advice is followed.

<u>Preliminary Safety Reviews</u>

If, early in their planning, the proponents of a drilling program or of a single site, anticipate serious concern about safety, they are urged to request a preliminary safety review. This entails submission of initial reconnaissance information and allows preliminary assessment of the problem before a major commitment of time and money is made. A preliminary review can be done at

a scheduled safety review, or can be accomplished by mail canvassing of the JOIDES safety panel members. In any event, the matter should be discussed with the PPSP Chairman before any arrangements are attempted.

E. Safety Panel Recommendations

At the formal safety review meeeting, the panels will draw conclusions on the safety of each proposed site, and will advise the Co-Chief Scientists that the site:

a. is approved as proposed;
b. should be moved to a location which minimizes the risk but which is still compatible with the scientific objectives;
c. is rejected due to inadequate data or inherent risk.

The safety panels may recommend a preferred order of drilling if safety is a factor, and also specify any conditions of approval, such as maximum depth of penetration, or special monitoring requirements.

F. Documentation for Safety Review

<u>Documentation Required for Mailing to Safety Panel Members</u>

1. Small scale regional map showing bathymetry, nearest land area and location of proposed sites. One map may serve for all sites.

2. Track chart showing track lines and location of proposed sites. Specific lines, or segments of lines, submitted for review should be indicated.

3. Cross-tie seismic reflection lines of sufficient length and detail to define all possible elements of closure. The following annotations should appear on these lines:

a. site number, location and penetration depth;
b. direction of traverse;
c. horizontal scale in kilometers;
d. vertical scale in seconds (unless depth section);
e. major course corrections;
f. important reflections and their identification;
g. intersection point of cross-tie lines.

Seismic events on the profiler line should be legible at least to the depth of penetration proposed for the site. With this in mind, these data can sometimes be presented on photographic prints. When using prints, suitable negatives, together with annotation, should be sent to the ODP Site Survey Data Bank.

4. Sketch of major structural elements. The major tectonic features should be indicated, as well as structural lows, sediment thicks and thins, and zones of particular reflection character.

5. JOIDES Safety Review Checksheets (Fig.7) completed by the Co-Chief Scientists. Material submitted for each site should be indexed and annoted for ready identification of regional

structural features line locations, line directions, and locations of other data, such as wells, grab samples, piston cores, etc.

For the sake of consistency, all measurements in safety review documents should be in the metric system.

Documentation for Formal Safety Review

At the formal safety review meeting, Co-Chief Scientists are expected to briefly present the scientific objectives of the leg, using regional maps, sections and published materials as appropriate. This presentation should provide a comprehensive regional picture within which the scientific objectives and safety hazards of each site can be evaluated. For each site, the Co-Chief Scientists will present geological characteristics and identify possible hazards.

Required items for all sites include:

1. Bathymetric Data. As much bathymetric data as is available should be provided.

2. Track Charts. Locations of all geological , geophysical ,and geochemical data; locations of example lines, and proposed sites must be clearly shown.

3. Maps. Structure contour maps, sediment thickness maps, and depth to clathrate layer maps are essential requirements.

4. Seismic Reflection Data. All seismic lines necessary to defend a site will be brought to review meetings by the Co-Chiefs Scientists or site proponent. In the event either panel recommends moving a site location, it is necessary to have sufficient seismic data to support the new location.

Documentation should also be provided for any alternate locations. The panels will not approve drilling penetration below the depth of resolution on the seismic records. All available velocity information should be provided.

5. Seismic Refraction, Gravity, and Magnetic Data.

6. Hydrocarbon Occurences. Occurences of hydrocarbons, or lack thereof, at nearby boreholes and exploration wells should be tabulated. Oil companies should be encouraged to release such data. Potential source rocks should be identified and mapped if possible.

7. International Jurisdiction and Extent of Nearby Oil Leases.

8. Other site Survey Data. Lithologic descriptions of any piston cores or dredge samples recovered near the drill site, and bottom water and sediment analysis for the presence of hydrocarbons should be provided.

9. Regional Geologic or Cross-sections. For sites whose anticipated stratigraphic sequence can be compared with nearby onshore or other drilled sequences, a surface geologic map and/or cross-section is useful in evaluating a site. If available, source or reservoir rock data should be included.

Rev. Oct. 1988

ODP PROPOSAL LOG SHEET

No.________

TITLE	PROPONENT(S) (with name and address of contact)
Area Approx. No. of sites	

Action	Date	Comments and Decisions
RECEIVED BY JOIDES OFFICE		Cross reference to similar titles or proponents
Submitted to Thematic Panels; Copied to JOI, SS Data Bank, Sci. Operator; Ack. to Proponents; also copied to:________		
Initial evaluation received by JOIDES Office		
LITHP		
OHP		
SGPP		
TECP		
(Other)		
Review to Proponents (copied to JOI, SS Data Bank, Sci. Operator)		
If thematic evaluation generally favorable:		
..mit to SSP for evaluation (incl. obvious safety concerns)		
Initial SSP eval. rec. at JOIDES		
Subsequent rankings & decisions by Thematic Panels, DPGs, etc. 1.		
2.		
3.		attach sheets as necessary
PPSP pre-review		
If PCOM incorporates in Program Plan:		
Submitted to JOI		
cc: NSF/ DMP/ODP-TAMU/ODP-LDGO		
Proponents informed		
Incorporated in Leg No.		
PPSP submission and action		
Final ODP action		
Proponents informed		

Figure 1: ODP Proposal Log Sheet

PROPOSAL REVIEW

Number:

Title:

Proponents:

Evaluation by ______________________ Panel (Check as appropriate)

[ ] 1. Not within the mandate of this panel.

[ ] 2. Does not address high-priority thematic objective.

[ ] 2a. Does, however, have secondary interest to us if it is of high priority to some other thematic panel.

[ ] 3. Addresses thematic objectives, but with deficiencies.

[ ] 4. Addresses high-priority objectives of this panel.

For 2a and 3: Provide brief statement:

Other comments:

Date ___________________________

Return to: **JOIDES Planning Office**
Hawaii Institute of Geophysics
University of Hawaii
2525 Correa Road
Honolulu, Hawaii 96822

A copy will be sent to the proponent(s).

Figure 2. Proposal Review Sheet

Time to Drilling		Panel
4 yrs.	General ship track determined	PCOM
	Proposal submitted to JOIDES Office	
3 yrs.	Initial Evaluation	Thematic panels
	First Review	PCOM begins tracking proposals with favorable thematic evaluation
	Data Bank searches authorized	
	Preliminary data assessment	Site Survey Panel
	Prioritization and merging	Thematic panels and Detailed Planning Groups
	Specific site survey recommendations	
	Supplemental site survey conducted	
	Preliminary safety review if required by proponent	Pollution Prevention & Safety Panel
2 yrs. to 1.5 yrs.	Inclusion in drilling program	PCOM planning decision at Annual Meeting
	Science Operator prepares for drilling	
1 yr.	Data assessment	Site Survey Panel
6 mos.	Safety review	Pollution Prevention & Safety Panel
	Final approval (if necessary after PPSP changes)	PCOM

DRILLING

Figure 3: Process and approximate timeline for review and development of JOIDES proposals.

ODP PROPOSAL : SITE SUMMARY FORM

(Submit 10 copies of proposal)

Proposed Site: General Area: Position (Lat./Long.): Alternate Site:	General Objective: Thematic Panel Interest:

Specific Objectives:
....
....
....

Background Information (Indicate status of data as outlined in the guidelines):

1- Regional Geophysical Data:
SeismicProfiles..
....
Other Data..
....

2- Site Survey Specific Data:
Seismic Profiles ....
....
Other Data..

Operational Considerations:

Water Depth (m): .... Sedi.Thickness (m): .... Total Penetration (m): ....

HPC: .... Double HPC: .... Rotary Drill: .... Single Bit: .... Reentry: ....

Logging: ....

Nature of Sediments: ....
Rocks anticipated: ....

Weather Conditions: ....
Windows: ....

Territorial Jurisdiction: ....

Other: ....

Special Requirements (staffing,instrumentation,etc.): ....
....
....

Proponent (address,phone & electr. mail) ....
....

Figure 4: Site Proposal Summary Form

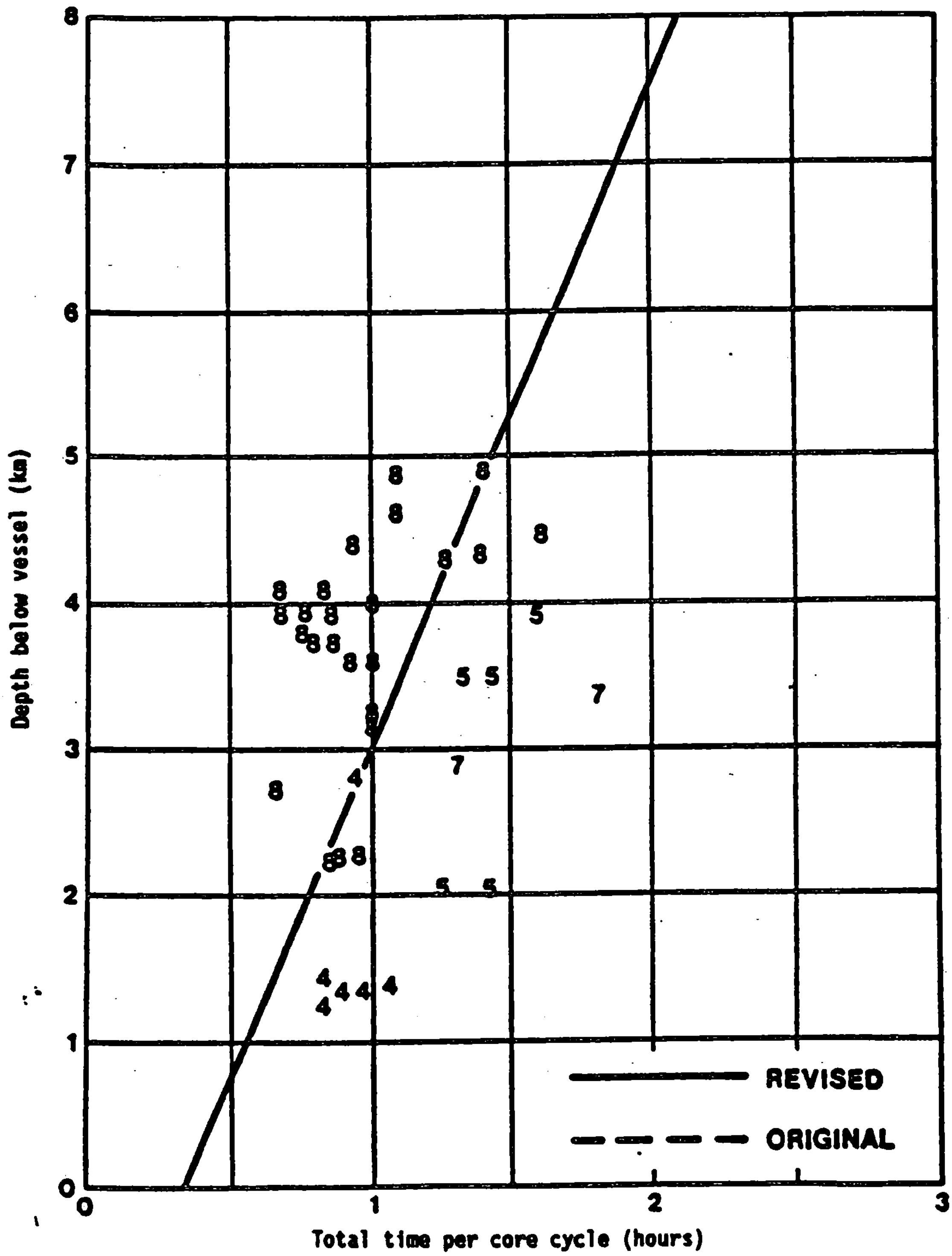


Figure 5. Advanced Piston Corer (APC) Round Trip. As there is theoretically no rotating time involved in piston coring operations, the data points (which represent the last digit of ODP leg numbers) show complete coring cycle times. Time spent on orientation and temperature measurements is included. In this case, the revised curve is coincident with one based on the last two years of DSDP operations

SITE SURVEY DATA SUMMARY. AREA ______________

TARGET SITE:			
Latitude: Longitude: Region:			
Environment: Water Depth, m: Sed. Thickness(m): Penetration(m):			
TECHNIQUE:			
1. Single-Channel Seismic: Deep Penetration			
2. Single-Channel Seismic: High Resolution			
3. MCS & Velocity Determination			
4. Grid of Intersecting Seismic Lines			
5. Seismic Refraction			
6. 3.5 kHz			
7. Multi-Beam Bathymetry			
8. High Resolution Imagery			
9. Heat Flow			
10. Magnetics and Gravity			
11. Cores: paleoenvironment geotechnical			
12. Dredging			
13. Current Meter (for bottom shear)			

Figure 6. Site Survey Data Summary Sheet

Rev. April 1981

CHECK SHEET
JOIDES SAFETY REVIEW

Leg. __________ Site No. __________ Lat. __________ Long. __________

Water Depth (m) __________ Dist. from Land (n. mi.) __________ Jurisdiction __________

General location or geomorphic province __________

Upon what geophysical and/or geological data was this site selection made?

Seismic lines __________

Piston cores __________

DSDP holes __________

Other __________

Proposed total penetration (m) __________ Probable thickness of sediments __________

From previous DSDP drilling in this area, list all hydrocarbon occurrences of greater than background levels, give nature of show, age and depth of rock:

From available information, list all commercial drilling in this area that produced or yielded significant shows; give depths and ages of hydrocarbon bearing deposits:

Is there any indication of gas hydrates at this location?

Is there any reason to expect any hydrocarbon accumulation at this site? Please comment.

Figure 7-a. Safety Review Check Sheet.

What is your proposed drilling program?

____

____

____

____

What is your proposed logging program?

____

____

____

____

What "special" precautions will be taken during drilling?

____

____

____

____

What abandonment procedures do you plan to follow? (see Safety Manual, Sec. VIII, p.22

____

____

____

____

<u>Summary</u>: What do you consider to be the major risks in drilling at this site?

____

____

____

____

____

____

Please answer each question as carefully as possible, using extra pages if need be. The information you provide here will be an important factor in the Safety Review.

Figure 7-b. Safety Review Check Sheet

GRAPHIC SUMMARY, SITE ____________

[illegible]bottom depth (m)	Key reflectors, uncomformities, faults, etc.	Age	Assumed velocity km/sec	Lithology	Paleo-environment	Average rate of sediment accumulation	Comments

Figure 7-c. Safety review Check Sheet

APPENDIX III

FULL LISTING ON JOIDES PROPOSALS TO 29 SEPTEMBER 1989

Appendix III

LISTING OF PROPOSALS

Revised: 9/29/89

JOIDES No	Title	Proponents	Country	Date
71	[idea proposal]	-	-	
1/A	Pre-m. Cretac. history of SE Gulf of Mexico	Phair & al.	US	12/82
2/E	Middle America trench and Costa Rica margin	Crowe & al.	US	12/82
4/E	Tuamoto Archipelago (French Polynesia)	Okal & al.	US	6/83
5/A	Struc. & sedim. carbonate platforms	Mullins & al.	US	7/83
7/A	Gulf of Mexico & Yucatan	Buffler & al.	US	8/83
8/E	Southern Chile trench	Cande	US	9/83
9/A	Pre-Messinian hist. of the Mediterranean	Hsu & al.	ESF	1/84
11/A	Porto & Virgo seamounts, Iberian margin	Kidd & al.	UK/FR	1/84
12/A	Tyrrhenian back-arc basin transect	Cita & al.	ESF	1/84
13/F	Water column research lab	Wiebe	US	1/84
14/E	Zero age drilling: EPR 13°N	Bougault	FR	1/84
15/A	Formation of the Atlantic Ocean	Herbin	FR	1/84
16/A	Atlantic-Mediterranean relationship	Faugeres	FR	1/84
17/A	Gorringe Bank, deep crust & mantle	Mevel	FR	1/84
19/A	Eleuthera fan, Bahamas	Ravenne & al.	FR	1/84
20/A	Subduction collision: Outher Hellenic Arc	J.Mascle	FR	1/84
22/A	Rhone deep sea fan	Bellaiche & al.	FR	1/84
23/A	Carribean basins	A.Mascle & al.	FR	1/84
24/A	Barbados transects	A.Mascle & al.	FR	1/84
25/D	New Hebrides arc	ORSTOM team	FR	1/84
28/D	South China Sea	Letouzey & al.	FR	1/84
29/D	Ryukyu Island & Okinawa backarc basin	Letouzey	FR	1/84
31/B	Red Sea, paleoenvironmental history	Guennoc	FR	1/84
32/A	Yucatan basin	Rosencrantz & al.	US	1/84
33/A	Mediterranean drilling [same as 9/A]	Hsu	ESF	1/84
35/A	Barbados ridge accretionary complex	Westbrook	UK	2/84
38/A	Gulf of Mexico (DeSoto Canyon)	Kennett & al.	US	2/84
39/A	Cape Verde drilling	Hill	UK	2/84
40/A	Logging of site 534 (Blake-Bahamas basins)	Sheridan & al.	US	2/84
34/E	Pacific-Aleutian-Bering Sea (Pac-A-Bers)	D.W. Scholl & al.	US	3/84
41/A	N Barbados forearc: Struc. & hydrology	C.Moore	FR/US	3/84
42/D	Sunda Straits area	Huchon	FR	3/84
43/D	SW Pacific drilling outline	Falvey	AUS	3/84
44/B	Andaman Sea: Tectonic evolution	Peltzer & al.	FR	3/84
45/A	Equatorian Atlantic: Paleoenvironment	Ruddiman	US	3/84
47/D	Manila trench, S.China Sea	Lewis & al.	US	3/84
49/D	Eastern Banda arc/Arafura Sea	Schluter & al.	G	3/84
52/D	Solomon Sea	Milsom	AUS	3/84
53/F	Vertical Seismic Profiling	Phillips & al.	US	3/84
54/C	Sub-Antarctic & Weddell Sea sites	Kennett	US	3/84
55/B	Makran forearc, Pakistan	Leggett	UK	3/84
57/B	Deformation of African-Arabian margin	Stein	US	3/84
58/A	West Baffin Bay	Grant & al.	CAN	3/84
59/A	Continental margin instability testing	Weaver & al.	UK	3/84
60/A	Newfoundland basin: E. Canadian margin	Masson	UK	4/84
6/A	Labrador Sea, ocean crust & paleoceanogr.	Gradstein & al.	CAN	5/84
36/A	Norwegian Sea	Hinz & al.	G	5/84
18/A	Off Galicia Bank	Mauffret & al.	FR	6/84
63/A	Madeira abyssal plain	E.J.T. Duin & al.	NETH	6/84
64/A	Site NJ-6	Poag	US	6/84
67/D	Tonga-Lord Howe Rise transect	Falvey & al.	AUS	7/84
68/A	Deep basins of the Mediterranean	L.Montadert	FR	7/84

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69/F	Rock stress meas. in part of Norwegian Sea	Stephansson	ESF	7/84
70/F	Borehole seismic experim. at 417 & 603	Stephen & al.	US	7/84
72/A	Two-leg transect on Lesser Antilles forearc	Speed & al.	CONSOR.	7/84
37/E	Costa Rica, test of duplex model	Shipley & al.	US	8/84
74/A	Continental margin of Morocco, NW Africa	Winterer & al.	US	8/84
75/E	Gulf of California	K.Becker & al.	US	8/84
77/B	Seychelles bank & Amirante trough	Mart	US	8/84
78/B	Indus fan	Kolla	US	8/84
79/B	Tethyan stratigraphy & oceanic crust	Coffin & al.	US	8/84
81/A	Ionian Sea transect, Mediterranean	Hieke & al.	G	9/84
82/D	Sulu Sea	Thunell	US	9/84
84/E	Peru margin	Kulm & al.	US	9/84
85/A	Margin of Morocco, NW Africa	D.Hayes & al.	US	9/84
56/B	Intraplate deformation	Weissel et al.	US	10/84
61/B	Madagscar & E Africa conjugate margins	Coffin & al.	US	10/84
65/B	S. Australian margin: Magnetic quiet zone	Mutter & al.	US	10/84
80/D	Sunda & Banda arc	Karig & al.	US	10/84
87/B	Carlsberg Ridge, Arabian Sea: Basalt obj.	J.Natland	US	10/84
90/B	SE Indian Ocean Ridge transect	Duncan	US	10/84
91/B	SE Indian Ocean Oceanic Crust	Langmuir	US	10/84
93/B	W Arabian Sea: upwelling, salinity etc.	Prell	US	10/84
94/B	Owen Ridge: History of upwelling	Prell	US	10/84
95/B	Asian monsoon, Bay of Bengal	D.Cullen & al.	US	10/84
96/B	Bengal Fan (Indus & Ganges Fans)	Klein	US	10/84
98/B	History of atmosph. circ. (Austral. desert)	D.Rea	US	10/84
99/B	Agulhas Basin paleoceanogr. clim. dynamics	W.Coulbourn	US	10/84
100/B	SE Indian Ridge transect: Stratigr. section	J.Hays & al.	US	10/84
101/B	Ridge crest hydrothermal activity	Owen & al.	US	10/84
102/B	Somali Basin	Matthias	US	10/84
103/B	Laxmi Ridge, NW Indian Ocean	Heirtzler	US	10/84
104/B	90° E Ridge transect	Curray & al.	US	10/84
105/B	Timor, arc-continent collision	Karig	US	10/84
106/B	Broken Ridge, Indian Ocean	Curray & al.	US	10/84
107/B	SE Indian Ridge: Stress in ocean lithosph.	Forsyth	US	10/84
108/C	E. Antarctic continental margin (Prydz Bay)	SOP-Kennett	US	10/84
109/C	Kerguelen - Heard Plateau	SOP-Kennett	US	10/84
110/C	Wilkesland - Adelie continental margin	SOP-Kennett	US/FR	10/84
111/C	SE Indian Ocean Ridge transect (subantarc.)	SOP-Kennett	US	10/84
112/B	Lithosphere targets	SOP-Kennett	US	10/84
113/B	Agulhas Plateau	SOP-Kennett	?	10/84
114/C	Crozet Plateau	SOP-Kennett	FR	10/84
117/B	Northern Red Sea	Cochran	US	10/84
118/B	Cenozoic history of E. Africa	Kennett & al.	US	11/84
76/E	Proposal for axial drilling on the EPR at 13°N	R. Hekinian & al	FR	11/84
62/B	Davie Fracture Zone	Coffin & al.	CONSOR.	12/84
119/B	Early opening of Gulf of Aden	Stein	US	12/84
120/B	Red Sea, Atlantis II deep	Zierenberg & al.	US	12/84
122/A	Kane fracture zone	Karson	US	12/84
123/E	Studies at site 501/504	Mottl	US	12/84
124/E	To deepen Hole 504B	LITHP-K.Becker	US	1/85
125/A	Bare-rock drilling at the Mid-Atl. Ridge	Bryan & al.	US	1/85
126/D	Drilling in the Australasian region	Crook & al.	AUS	1/85
127/D	E Sunda arc & NW Austral. collision	Reed & al.	US	1/85

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128/F	Phys.props. in accretionary prisms	Karig	US	1/85
130/D	Evolution of the SW Pacific (N of New Zeal.)	J.Eade	NZ	1/85
131/D	Banda Sea basin: Trapped ocean crust etc.	Silver	US	3/85
132/D	TTT-Type triple junction off Bosco,Japan	Ogawa & al.	J	3/85
133/F	In-situ sampling of pore fluids	McDuff & al.	US	3/85
135/B	Broken Ridge: Thermo-Mechanical Models	Weissel & al.	US/UK	3/85
10/A	Cenozoic circulation off NW Afric	Sarnthein & al.	G/US	4/85
115/B	Agulhas Plateau and adj. basins	Herb & al.	ESF	4/85
116/B	E & Chagos-Laccadive Ridge drilling	Oberhansli & al.	ESF	4/85
142/E	Ontong-Java Pl.:Equat. Pacific depth trans.	L.Mayer & al.	CAN/US	4/85
88/B	Chagos-Laccadive-Mascarene volc. lineament	Duncan & al.	US	5/85
147/D	South China Sea	Wang & al.	CHINA	6/85
179/D	Daito ridges region: NW Philippines Sea	Tokuyama & al.	J	6/85
21/A	Thyrrenian Basin: Rifting, stretching,accr.	Rehault & al.	FR	7/85
51/D	Sea of Japan	Tamaki & al.	J	7/85
97/B	Equatorial Indian Ocean:Fertil.& carb.comp.	Peterson	US	7/85
136/C	Kerguelen - Heard Plateau	Schlich & al.	FR	7/85
146/D	Toyamu fan, E Japan Sea	Klein	US	7/85
150/B	90°E Ridge & Kerg.-Gaussb. Ridge: hard rock	Frey & al.	US	7/85
151/D	Japan Sea: Mantle plume origin	Wakita	J	7/85
152/F	Borehole seismic experim., Tyrrhenian Sea	Avedik & al.	FR/US	7/85
153/E	Three sites in the SE Pacific	J.Hays	US	7/85
154/D	Banda-Celebes-Sulu basin entrapment	Hilde	US	7/85
156/D	Kita-Yamam. trough, Japan Sea: Massive sulf.	Urabe	J	7/85
157/D	Japan Sea paleoceanography	Koizumi & al.	J	7/85
158/D	Japan Sea & trench: Geochem & sedimentol.	Matsumoto & al.	J	7/85
159/F	Phys.cond. across trench: Izu-Mariana-...	Kinoshita & al.	J	7/85
160/F	Geophys. cond. of lithosp. plate, Weddell Sea	Kinoshita & al.	J	7/85
161/F	Magn.field & water flow measurement	Kinoshita & al.	J	7/85
162/F	Offset VSP on the SW IO Ridge fract.zones	Stephen	US	7/85
164/D	Japan trench & Japan-Kuril trenches juntion	Jolivet & al.	FR	7/85
165/D	Shikoku basin ocean crust	Chamot-Rooke & al.	FR	7/85
166/D	Japan Sea: Evolution of the mantle wedge	Tatsumi & al.	J	7/85
168/D	Japan Sea: Sedim. of siliceous sediments	Iijima & al.	J	7/85
169/C	South Tasman Rise	Hinz & al.	G	7/85
170/D	Valu Fa Ridge, Lau Basin: Back-arc spread.	Morton & al.	US	7/85
30/B	Davie Ridge & Malagasy margin, Indian Ocean	Clocchiatti & al.	FR	8/85
50/D	Nankai trough & Shikoku forearc	Kagami & al.	J	8/85
73/C	Antarctic margin off Adelie coast	Wannesson & al.	FR	8/85
92/B	Crozet Basin, seismic observatory	Butler & al.	US	8/85
137/B	Fossil ridges in the Indian Ocean	Schlich & al.	FR	8/85
138/B	Rodrigues triple junction, Indian Ocean	Schlich & al.	FR	8/85
139/B	Agulhas Plateau, SW Indian Ocean	Jacquart & al.	FR	8/85
140/B	Central & N. Red Sea axial areas	Pautot & al.	FR	8/85
141/B	Indus Fan	Jacquart & al.	FR	8/85
172/D	Mariana forearc, arc & back-arc basin	P.Fryer	US	8/85
173/B	Seychelles, Mascarene Pl., NW Indian Ocean	Patriat & al.	FR	8/85
174/D	Japan Sea: Forearc tectonics	Otsuki	J	8/85
175/D	Japan Trench: Origin of Inner Wall	Niitsuma & al.	J	8/85
176/D	S.Japan Trench: Migration of Triple Junction	Niitsuma	J	8/85
178/D	Nankai trough forearc	Shiki & al.	J	8/85
180/D	N.Philippines Sea: Kita-Amami basin & plat.	Shiki	J	8/85
181/D	Izu-Ogasaw.-Mariana forearc:Crust & mantle	Ishii	J	8/85

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182/E	Sounder Ridge,Bering Sea: Stratigraphy	A. Taira	J	8/85
184/D	Papua New Guinea/Bismark Sea Region	N.Exon & al.	AUS/US	8/85
185/C	Kerguelen Plateau: Origin, evol. & paleo.	Coffin & al.	AUS	8/85
186/F	SW Ind.Ocean fracture zones hydrology etc.	von Herzen	US	8/85
86/B	Red Sea	Bonatti	US	9/85
187/D	New Hebrides arc region, SW Pacific	F.Taylor & al.	US	9/85
188/F	395A boreh.geophys. & 418A drill.& geophysics	M.Salisbury	CAN	9/85
189/D	Tonga Ridge and Lau Ridge Region	A.Stevenson & al.	US	10/85
191/D	Solomon Isl.: Arc-plateau coll. & intra arc	Vedder & al.	US	10/85
192/E	Baranoff fan, SE Gulf of Alaska	Stevenson & al.	US	10/85
193/F	Upper ocean partic.fluxes in Weddell Sea	Biggs	US	11/85
3/E Rev/1	Flexural moat, Hawaiian Islands	A.B. Watts & al	US	11/85
143/F	In-situ magnet. susc. measurements	Krammer & al.	G	12/85
195/E	Paleoenv. & Paleoclim. in the Bering Sea	C. Sancetta & al.	US	12/85
196/B	90°E Ridge: Impact of India on Asia	J.Peirce	CAN	12/85
197/B	Otway Basin/W.Tasman region	Wilcox & al.	AUS	12/85
198/D	Ulleung Basin: Neogene tectonics & sedim.	Chough & al.	COREA	12/85
199/E	Pelagic sediments in the sub Artic gyre (N.Pacific)	T.R. Janecek & al.	US	12/85
200/F	Borehole magnet. logging on leg 109 (MARK)	Bosum	G	12/85
201/F	High-precision borehole temp. measurements	Kopietz	G	12/85
205/A	Bahamas: Carb.fans, escarpm.erosion & roots	Schlager & al.	ESF	12/85
202/E	N.Marshall Isl. carbonate banks	S.O. Schlanger	US	1/86
203/E	Guyots in the central Pacific	E.L. Winterer & al.	US	1/86
207/E	Bering Sea basin & Aleutian ridge tectonics	Rubenstone	US	1/86
208/B	Ancestral triple junction, Indian Ocean	Natland & al.	US	1/86
209/C	Eltanin fracture zone	Dunn	US	1/86
210/E	NE Gulf of Alaska: Yakutat cont. margin	Lagoe & al.	US	1/86
211/B	Deep stratigraphic tests	SOHP -Arthur	US	1/86
212/E	Off northern & central California	Greene	US	1/86
213/E	Aleutian subduction: accret. controlling p.	McCarthy & al.	US	1/86
214/E	Central Aleutian forearc:Trench-slope break	Ryan & al.	US	1/86
215/B	Red Sea: Sedim. & paleoceanogr. history	Richardson & al.	US	2/86
216/D	South China Sea	Rangin & al.	FR	2/86
217/D	Lord Howe Rise	Mauffret & al.	FR	2/86
218/D	Manila trench & Taiwan collis.zone, SCS	Lewis & al.	US	2/86
219/B	Gulf of Aden evolution	Simpson	US	3/86
220/D	Three sites in the Lau Basin	J. Hawkins	US	3/86
222/E	Ontong-Java Pl.: Origin, sedim. & tectonics	Kroenke & al.	US	3/86
221/E	Equatorial Pacific: late Cenoz. Paleoenv.	N.G. Pisias	US	3/86
83/D	Izu-Ogasawara (Bonin) arc transect	Okada & al.	J	4/86
134/B	Gulf of Aden	Girdler	UK	4/86
171/D	Bonin region: Intra-oceanic arc-trench dev.	B.Taylor	US	4/86
223/B	Central Indian Ocean fracture zone	Natland & al.	US	4/86
225/E	Aleutian Basin, Bering Sea	A.K.Cooper & al.	US	4/86
224/E	Escanaba Trough (Gorda Ridge), NE Pacific	M. Lyle & al	US	4/86
89/B	SWIR, mantle heterogeneity	Dick & al.	US	5/86
121/B	Exmouth & Wallaby Pl. & Argo Abys. Plain	U.von Rad & al.	US	5/86
129/C	Bounty trough	Davey	NZ	5/86
227/E	Aleutian Ridge, subsidence and fragment.	Vallier & al.	US	5/86
228/C	Weddell Sea (E Antarctic contin. margin)	Hinz & al.	G	5/86
229/E	Bering sea, Beringian conti. slope & rise	A.K. Cooper & al.	US	5/86
230/C	Wilkes Land margin, E Antarctica	Eittreim & al.	US/J	5/86
231/E	North Pacific magnetic quiet zone	Mammerickx & al.	US	5/86

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232/E	N.Juan de Fuca R.: High temp.zero age crust	E.Davis & al.	CAN	5/86
26/D	Tonga-Kermadec arc	Pelletier & al.	FR	6/86
144/D	Kuril forearc off Hokkaido: Arc-arc collis.	Seno & al.	J	6/86
145/D	Ryukyu arc: Left-lateral dislocation	Ujiie	J	6/86
148/D	Near TTT-type triple junction off Japan	Ogawa et al.	J	6/86
149/D	Yamoto Basin,Sea of Japan: Active Spreading	Kimura & al.	J	6/86
167/D	Okinawa trough & Ryukyu trench	Uyeda & al.	J	6/86
234/E	Aleutian trench: Kinematics of plate cover.	von Huene & al.	US	6/86
235/D	Solomon Sea: Arc-trench dev., back-arc...	Honza & al.	CONSOR.	6/86
236/E	N.Gulf of Alaska	Bruns & al.	US	6/86
237/E	Active margin off Vancouver Isl., NE Pac.	Brandon & al.	CAN/US	6/86
238/F	Pore pressure in the Makran subduction z.	Wang & al.	US	6/86
239/D	Two sites in the Lau Basin	D.Cronan	UK	6/86
214/E	Gulf of Alaska (Yakutat block) & Zodiak fan	Heller	US	6/86
243/D	Outer Tonga trench	Bloomer & al.	US	6/86
240/B	Argo abyssal Plain	Gradstein	CONSOR.	7/86
245/E	Transform margin of California	Howell & al.	US	7/86
246/B	Mesozoic upwelling off the S.Arabian margin	Jansa	CAN	7/86
247/E	NE Pacific: Oceanogr.,climatic & volc. evol.	D. Rea & al.	US/CAN	7/86
226/B	Equat.Indian Ocean: carb. system & circul.	Prell & al.	US	8/86
244/C	Western Ross Sea	Cooper & al.	US/NZ	8/86
248/E	Ontong-Java Plateau	Ben-Avraham & al.	US	8/86
249/E	Sedimentation in the Aleutian trench	Underwood	US	8/86
250/E	Navy fan, California borderland	M..B. Underwood	US	8/86
251/B	Seychelles-Mascarene-Saya de Mayha region	S.N. Khanna	SEYCH.	8/86
253/E	Shatsky Rise:Black shales in ancestr. Pac.	S.O. Schlanger & al.	US	8/86
254/A	NW Africa: Black shales in pelagic realm	Parrish & al.	US	8/86
255/A	Black shales in the Gulf of Guinea	Herbin & al.	FR/US	8/86
256/E	Queen Charlotte Transform fault	Hyndman & al.	CAN	9/86
257/E	Farallon Basin, Gulf of California	L. Lawver & al.	US	9/86
204/A	Florida escarpment transect	Paull & al.	US	10/86
252/E Rev.	Loihi Seamount, Hawaii	H. Staudigel & al.	US	10/86
258/E	Stockwork zone on Galapagos Ridge	R. Embley & al	US	10/86
260/D	Ogasawara Plateau, near Bonin arc	T. Saito & al.	J	10/86
261/E	Mesozoic Pacific Ocean	R.L. Larson & al.	US/FR	10/86
262/B	Mid Indus Fan	B.Haq	US	11/86
263/E	S.Explorer Ridge, NE Pacific	R.L. Chase & al.	CAN	11/86
206/D	Great Barrier R.: Mixed carb/epiclast.shelf	Davies & al.	AUS	12/86
264/A	Montagnais impact struct.,Scotia Sh.	Grieve & al.	US	12/86
265/D	Western Woodlark Basin	S.D. Scott & al.	CAN/AUS/PNG	12/86
266/D	Lau Basin	Lau Group	CONSOR.	12/86
267/F	Old crust at converg. margins: Argo & W.Pac	C.H. Langmuir & al	US	12/86
268/D	Hydrothermal ore deposition, Queensland Pl.	Jansa et al.	CAN	12/86
269/E	Aleutian pyroclastic flows in marine envir.	Stix	CAN	12/86
27/D Rev.	Sulu Sea marginal basin	Cl. Rangin & al	FR	1/87
48/D Add.	Sulu Sea transect	Cl. Rangin	G/FR	1/87
270/F	Tomographic imaging of hydrotherm. circul.	Nobes	CAN	1/87
271/E	Paleoceanogr. trans. of California current	Barron & al.	US	2/87
272/F	Long-term downh. measurem.in seas a. Japan	Kinoshita	J	2/87
183/D	Periplatform ooze, Maldives, Indian Ocean	Droxler & al.	US	3/87
259/E Rev.	Meiji sediment drift, NE Pacific	L.D. Keigwin	US	3/87
274/D	South China Sea	Zaoshu & al.	CHINA	3/87
275/E	Gulf of California (composite proposal)	Simoneit & al.	US	3/87

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232/E Add.	Clay miner. & geoch.: Juan de Fuca Ridge	B. Blaise & al.	CAN/FR	3/87
276/A	Equat. Atlantic transform margins	J.Mascle	FR	4/87
277/E	Aseismic slip in the Cascadia margin	Brandon	US	4/87
278/E	Blanco transf. fault: Alter., layer three.	R. Hart & al	US	5/87
279/E	Anatomy of a seamount: Seamount 6 near EPR	R.Batiza	US	5/87
280/E	Cretac.Geisha Seamounts & guyots, W-Pac	P.R. Vogt et al.	US	6/87
281/D	Accret.prisms at Kuril/Japan trench&Nankai Tr.	Y. Okumura & al.	J	6/87
282/E	Tracing the Hawaiian hotspot	N. Niitsuma & al.	J	6/87
283/E	Kuroshio current and plate motion history	R.D.Jacobi & al.	US	6/87
284/E	Escanaba Trough,S-Gorda Ridge Hydrothermalism	Zierenberg & al.	US	7/87
285/E	Jurassic quiet zone ,Western Pacific	Handschumacher & al.	US	7/87
286/E	Return to 504/B to core & log layer 2/3 trans.	K.Becker	US	7/87
287/E	Deep drilling in the M-Series,Western Pacific	D. Handschumacher & al.	US	8/87
288/B	Repositioning of EP2 to EP12,Exmouth Plateau	Mutter & al.	US	8/87
289/E	Mass budget in Japan Arc-10Be Geochemical Ref.	S. Sacks & al.	US/J	8/87
66/F Rev.	Laboratory rock studies to reveal stress	N.R. Brereton	UK	9/87
76/E Rev.	EPR: oceanic crust at the axis	R. Hekinian	FR	9/87
177/D Rev.	Zenisu Ridge: Intra-oceanic plate shortening	A. Taira & al.	J/FR	9/87
224/E Rev.	Escanaba trough (Gorda Ridge), NE Pacific	M. Lyle & al	US	9/87
242/D	Backthrusting & back arc thrust., Sunda arc	Silver & al.	US	9/87
290/E	Axial Seamount, Juan de Fuca Ridge	P.Johnson & al.	US	9/87
291/E	Drilling in the Marquesas Islands chain.	J.H. Natland & al.	US	9/87
292/D	Drilling in the SE Sulu Sea	Hinz & al.	G	9/87
293/D	Drilling in the Celebes Sea	K. Hinz & al.	G	9/87
155/F Rev/1	Downhole measurt.in the Japan Sea	T. Suyehiro & al	J	9/87
294/D	Ophiolite analogues in the Aoba Basin,Vanuatu	J.W.Shervais	US	10/87
46/D	South China Sea margin history	D.Hayes & al.	US	11/87
273/C	Southern Kerguelen Plateau	Schlich et al.	FR/AUS	11/87
295/D	Hydrogeol.& structure,Nankai accr.complex	J.M. Gieskes & al.	US	12/87
296/C	Ross Sea, Antarctica	Cooper & al.	US/NZ/G	12/87
297/C	Pacific Margin of Antartic Peninsula	P.F. Barker	UK	12/87
247/E Rev.	NE Pacific: Oceanogr.,climatic & volc.evol.	B.D. Bornhold	CAN/US	1/88
298/F	Vertical seismic prof. in Nankai Tr. ODP Sites	G.F. Moore	US	1/88
299/F	Self-bor. p-meter: study deform.in accr. sed.	M.Brandon & al.	US/CAN	2/88
300/B	Return to site 735B-SW Indian Ridge	H. Dick & al.	US/CAN	2/88
301/D	Integrated proposal: Nankai forearc	J.Gieskes & al.	US/J	3/88
302/F	Electrical conductivity structure,E-Japan Sea	Y.Hamano & al.	J	3/88
194/D Rev/2	South China Sea	K.J. Hsü & al.	CHINA	4/88
303/E	Fracturing /volcanism on Hawaiian swell	B.Keating	US	4/88
190/D Add.	New Hebrides (Vanuatu) arc-ridge collision	Fisher & al.	US/FR	5/88
163/D Rev.	Zenisu Ridge: Intraplate deformation	S. Lallemant & al	FR	6/88
221/E Suppl.	Equatorial Pacific: L.Cenozoic paleoenviron.	N. Pisias & al.	US	6/88
304/F	ODP Nankai downhole observatory	H.Kinoshita & al.	J	6/88
305/F	Artic Ocean drilling	P.J. Mudie & al.	CAN	6/88
306/E	Old Pacific History	Y.Lancelot & al.	FR/US	6/88
233/E Rev.	Oregon accr. complex: fluid proc. & struct.	L.D. Kulm & al.	US	7/88
307/E	Cross Seamount, Hawaiian swell	B. Keating	US	7/88
308/E	Reactivated Seamounts,Line Island chain.	B.Keating	US	7/88
3/E Add.	Drilling in vicinity of Hawaiian Islands	R.S.Detrick & al	US	7/88
222/E Rev.	Ontong Java Pl.: origin. sedim. & tectonics.	J. Mahoney & al.	US	7/88
155/F Rev/2	Downhole measurement in the Japan Sea	T. Suyehiro & al	J	8/88
309/F	VSP Program at sites Bon-2 and Bon-1	P.Cooper	US	9/88

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JOIDES No	Title	Proponents	Country	Date
310/A	Geochemical sampling ,dippings ,E-Groenland	A.Morton & al.	UK	9/88
311/A	Sedim. equivalent of dippings ,Rockall	D.Masson & al.	UK	9/88
312/A	Potential of drilling on Reykjanes Ridge	J.Cann & al.	UK	9/88
313/A	Evolution of oceanog. pathway: The Equat. Atlan.	E.Jones & al.	UK	9/88
314/D	Fluid flow & mechan. response, Nankai	D.Karig & al.	US	9/88
316/E	To drill a gaz-hydrate hole (West Pacific)	R. Hesse & al.	CONSOR.	9/88
59/A Rev.	Continental margin sediment instability	P.P.E.Weaver & al	UK/NETH/CAN	9/88
3/E Rev/2	Flexural moats, Hawaiian Islands	A.B. Watts & al.	US	10/88
315/F	Network of perm. ocean floor broad band seism.	G.M. Purdy & al.	US	10/88
275/E Rev.	Drilling the Gulf of California	Simoneit (ed.) & al	US	10/88
271/E Rev.	Paleocean. transect of California current	J.A. Barron & al	US	10/88
195/E Suppl.	Paleoenviron. and paleoclim. in the Bering Sea	D.W. Scholl & al	US	10/88
199/E Suppl.	High latitude paleoceanography	D.W. Scholl & al	US	10/88
231/E Suppl.	Plate reconstr. & Hawaiian hotpsot fixity.	D.W. Scholl	US	10/88
225/E Suppl.	Plate-Reconstr.: Bering Sea	D.W. Scholl & al.	US	10/88
317/E Rev.	Northern Cascadian Subduction Zone	R.D.Hyndman & al.	CAN	12/88
318/E Rev.	Chile Margin Triple Junction	S.C.Cande & al	US	1/89
319/E Rev.	An extinct hydrotherm. syst., East Galapagos	M.R. Perfit & al	US/CAN	2/89
320/A	High Northern latitude paleoceano. & paleoclim.	E. Jansen & al	NOR/SWED.	3/89
321/E	The EPR ridge crest near 9°40' N	D.J. Fornari & al	US	3/89
322/E	Ontong Java Plateau-pipelike structures.	P.H. Nixon	UK	3/89
323/A	Gibraltar Arc	M.C. Comas & al	CONSOR	4/89
324/A	Tecton. evol. of W. & E. Mediterr. since Mesozoic	P. Casero & al.	IT/G	4/89
142/E Rev.	The Ontong Java Plateau	L. Mayer & al.	CAN/US/UK	4/89
325/E	High temp. hydrother. site N. Juan de Fuca Ridge	H.P. Johnson & al	US/CAN/UK	5/89
326/A	Contineneta1 margin of Northwest Morocco	K. Hinz & al	G	5/89
327/A	Argentine continental rise	K. Hinz & al	G/ARG	5/89
203/E Rev.	Cretaceous guyots in the Northwest Pacific	E. L. Winterer & al	US	5/89
328/A	Continental margin of East Greenland	K. Hinz & al	G	6/89
329/A Rev.	Paleocommunication between N & S Atlantic	J.P. Herbin & al.	FR	7/89
330/A	Mediterranean ridge, accretionary prism	M.B. Cita & al.	I/G	7/89
331/A	"Zero-age" drilling: Aegir ridge	R.B. Whitmarsh & al.	UK/G/FR	7/89
332/A	Florida escarpment drilling transect	C.K. Paull & al.	US	7/89
333/A	Tectonic and magmatic evolution: Carribean sea	B.Mercier de Lepinay &al.	FR/US	7/89
334/A	The Galicia margin new challenge	G. Boillot & al.	FR/SP	7/89
335/E Rev.	Drowned atolls of the Marshall Islands.	S.O. Schlanger & al.	US	7/89
336/A	Artic to north Atantic gateways	J. Thiede	G	7/89
337/D	To test the sedim. architect. Exxon sea-level curve	R.M. Carter & al.	A/NZ/US	7/89
338/D	Neogene sea-level fluctuations: NE Australia	C.J. Pigram	A	8/89
339/A	Drilling transects of the Benguela current	L. Diester-Haass & al.	G/US	8/89
340/D	Evolution of foreland basins: N. Australia	M. Apthorpe & al.	A	8/89
341/A	Global climatic change-Holocene	J.P.M. Syvitski	CAN	8/89
342/A	The Barbados accretionary prism	R.C. Speed & al.	US/UK/FR	8/89
343/A	Drill in window Cret. volc. form. Caribbean	A. Mauffret & al.	FR	8/89
344/A	Western N. Atl. Jurassic magnetic quiet zone	R.E. Sheridan	US	8/89
345/A	Sea level and paleoclim. West Florida margin	J.E. Joyce & al.	US	8/89
346/A Rev.	The Equatorial Atlantic transform margin	J.Mascle & al.	FR	8/89
347/A	Late Cenozoic paleocean., S.Equat.Atlantic	G. Wefer & al.	G/US	8/89
348/A	Upper Paleoc. to Neog. sequence: mid Atl. margin	K.G. Miller & al.	US	8/89
349/A	Clastic apron of Gran Canaria.	H.-U. Schmincke & al.	G/US/UK	8/89
350/E	Gorda deformation zone off N. Calif.	M. Lyle & al.	US	9/89
351/C	Bransfield Strait	D.C. Storey & al.	UK/US/G	9/89
352/E	Drilling into Layer 3, Mathemat. Ridge	D.S. Stakes & al.	US	9/89

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JOIDES No	Title	Proponents	Country	Date
353/C Rev.	Antarctic Peninsula, Pac. margin	P.F. Barker & al.	UK	9/89
354/A	Angola/Namibia upwelling system	G. Wefer & al.	G/US	9/89
355/E	Formation of a gaz hydrate	R. von Huene & al.	G/US	9/89
271/E Rev/2	APC coring seamounts off California.	J. Barron	US	9/89
233/E Rev/2	Oregon accretionary complex	L.D. Kulm & al.	US/G	9/89

APPENDIX IV

ABSTRACTS OF LATEST PROPOSALS RECEIVED BY JOIDES OFFICE TO JULY 1989

APPENDIX 10. 10 July 89.

JOIDES Number: 142/E Rev.
Title: **The Ontong Java Plateau – a Proposed Program (PRELIMINARY)**
Proponents: **L. Mayer, N. Shackleton, W. Berger, L. Kroenke, J. Mahoney and J. Resig**

One of the most intriguing results of recent central equatorial drilling is the identification of a series of seismic events that are synchronous over a large area of the central equatorial Pacific. These events appear to correlate with major reorganizations of the oceanic circulation system that are the result of fundamental paleoceanographic changes. Even more intriguing is the apparent correlation of these seismic events with global hiatuses and with the "sea level" events seen in continental margin sections. It is proposed a drilling program that takes advantage of the unique characteristics of the Ontong Java Plateau to directly address these issues. In addition to these "Neogene" objectives, it is proposed to address a number of key questions relating to the origin of the plateau and to its pre-Neogene paleoceanographic history. Five detailed site surveys have been conducted between 17 and 31 december 1988 to select sites for the Neogene objectives of the drilling program. Criteria used to select potential sites include:the avoidance of those sites showing evidence of modern or past erosion, displacement or disruption in the sediment column, major faulting and seismic anomalies.

JOIDES Number: 325/E
Title: **A Proposal to Drill a High-Temperature Hydrothermal Site on the Endeavor Segment: Northern Juan de Fuca Ridge**
Proponents: **H. Johnson, J. Franklin, J. Cann, R. Von Herzen**

The authors propose to examine in detail the sub-surface properties of a high-temperature hydrothermal system, using drilling as part of an integrated, long-term, interdisciplinary study of seafloor hydrothermal processes. The most important objectives of drilling into an active hydrothermal upflow zone at a spreading center are to characterize both the tectonic/geochemical/physical environment in which the flow is embedded, and the dynamic characteristics and parameters of the flow itself. Specific objectives are to determine: (1) What physical and chemical processes control the flow rate and residence time of fluids within a hydrothermal system; (2) to what depth and in what amount do fluids penetrate to the top of a magma chamber (cracking front) and what sequential mineral assemblages are forming with depth within an active system; and (3) what interactions are taking place between high temperature metalliferous fluids and locally advecting unmodified seawater with the wall rocks in the discharge zone. To accomplish these objectives a series of three re-entry and single-bit holes will be drilled on the Endeavour Segment of the northern Juan de Fuca Ridge. Samples of rock and fluid from the sub-surface region, together with simultaneous measurements of the physical and chemical environment of the sampled region will be placed in their full geologic context with a set of companion time-series, co-registered geophysical measurements adjacent to the drill holes. At the Endeavor site, drilling below the surface in the center of this active field has the distinct possibility of initiating a new high-temperature vent system, a prospect that has a wide range of scientific opportunities that this program is prepared to explore.

JOIDES Number: 326/A
Title: **Proposal for ODP Drilling on the Continental Margin of Morocco/Northwest Africa**
Proponents: **K. Hinz, H. Roeser and W. Weigel**

This proposal reinforces proposal JOIDES Number 74, of the same title, by Winterer and Hinz. A supplemental drill site at the oceanic end of the Morocco transect, in the region between the Tafelney Terrace in the south and the Mazagan Plateau in the north, is proposed for the purpose of determining the nature and age of the oldest volcanic/magmatic products associated with the opening of the Atlantic Ocean.

JOIDES Number: 327/A
Title: **Proposal for ODP Drilling on the Argentine Continental Rise**
Proponents: **K. Hinz, R. Stein, M. Block, M. Hemmerich, H. Meyer and C. Ronda**

Two sites are proposed for the Argentine continental margin to sample regional seismic unconformities, Mesozoic black shales, and the wedge of seaward-dipping reflectors and its substratum. Specific objectives for a site on the Argentine Rise are the age and nature of a pronounced regional seismic unconformity, which marks a change in the paleoceanography and the depositional environment in the South Atlantic and determination of the litho- and biostratigraphy of a giant drift. Specific objectives for a site on the Argentine continental margin are to obtain a section through the oldest portion of a wedge of seaward-dipping reflectors; at this site the base of the section could be reached. Further, the sampling of black Mesozoic shales and the confirmation of age and nature of the regional seismic unconformities observed at the first site are proposed.

JOIDES Number: 203/E Rev.
Title: **Proposal for Drilling of Guyots in the Central Pacific**
Proponents: **E.L. Winterer, J. Natland, M. McNutt and W. Sager**

This proposal replaces preliminary proposal 203/E, of the same title, which was submitted in June, 1986, as part of the report of the USSAC-sponsored Workshop on Carbonate Banks and Guyots. Proponents for 203E seek to drill eight holes at the summits of five carbonate-capped guyots in the Mid-Pacific Mountains, Wake Seamounts and Japanese Seamounts in the central and western tropical Pacific. The drilling will address a number of important problems of broad thematic interest including: Early Cretaceous sea-level fluctuations; causes and timing of mid-Cretaceous carbonate platform drowning; extent, magnitude and timing of regional uplift associated with massive mid-plate volcanism in Western Pacific; Early Cretaceous Pacific plate latitudinal changes and plate kinematics; fixity of hot spots; longevity and stability of the "Dupal" anomaly in mantle composition; and, Cretaceous history of the South Pacific "Superswell" and the Darwin Rise. Preliminary targets are: Allison Guyot, and "Huevo" and "Caprina" guyots in the central and western Mid-Pacific Mountains, respectively; "M.I.T." Seamount in the west-central Pacific between Japanese (Geisha) and Wake seamounts; and Charlie Johnson Guyot at the eastern end of the Japanese Seamount chain.

JOIDES Number: 328/A
Title: **Proposal for ODP Drilling on the Continental Margin of East Greenland, North Atlantic**
Proponents: **K. Hinz, H. Meyer, H. Roeser, M. Block, M. Hemmerich and H. Miller**

Drilling at two sites on the East Greenland continental margin is proposed in order to sample the outer wedge of seaward-dipping reflectors and the regional seismic unconformities observed there. Objectives for the two sites include: (1) Differentiation between kinematic models for the emplacement of seaward-dipping structures (reflectors); (2) investigation of the relationships between dipping-reflector sequences and continental flood basalt, and magnetic anomalies; (3) study of conjugate volcanic features of the East Greenland and Norwegian continental margins; (4) obtain samples of all major volcanic periods/zones, necessary to determine the petrological, geochemical, magnetic and kinematic variability of extrusive igneous rocks of the Early Tertiary "North Atlantic Volcanic Event" in space and time.

JOIDES Number: 329/A Rev.
Title: **Cretaceous Paleocommunication Between the North and South Atlantic Seas: Formation of the Atlantic Ocean**
Proponents: **J. Herbin, J. Mascle, L. Montadert, M. Moullade and C. Robert**

In order to study the Cretaceous paleocommunication between the North and South Atlantic seas, the recovery of Mesozoic rocks is proposed from three sites off the intermediate oceanic margins of Sierra Leone, Liberia, and on the Demerara Rise in the largely unexplored Equatorial Atlantic. These sites would provide new and essential data to determine the kinematic and structural evolution and the paleoceanographic, paleoclimatic, and paleoenvironmental conditions. The main objectives for drilling in this region are: (1) To discover the nature and age of the first sediments deposited on the oceanic crust, as well as the age of the crust itself, and to reconstruct the initial position of the continental masses; (2) to study the formation of sedimentary facies during the opening phase as consequences of the kinematic evolution and particularly the black shales that were deposited at one and the same time in the North and South Atlantic up to the Turonian-early Coniacian; and (3) to understand better the relationships between volcanism, sedimentation and tectonic events during the movements of the equatorial fracture zone.

JOIDES Number: 330/A
Title: **Mediterranean Ridge: An Accretionary Prism in a Collisional Context**
Proponents: **M. Cita, A. Camerlenghi, L. Mirabile, G. Pellis, B. Della Vedova, W. Hieke, S. Nuti and M. Croce**

The study of two accretionary prisms has been planned by ODP for 1989-90 (Nankai Trough and Cascadia Trench). The need to study a wide spectrum of prisms in order to compare data from different tectonic settings provides the framework for this proposal to drill in the Eastern Mediterranean region. Preliminary sites are located along the crest of the Mediterranean Ridge and outer slope of an accretionary prism (southern transect); on the Ionian abyssal plain, outer slope of an accretionary prism and re-occupying DSDP Site 125 (southwest transect); and on the crest and flank of the Mediterranean Ridge (western transect). This proposal will be updated, and additional drill sites will be proposed after the completion of two surveys planned for the Fall of 1989 and mid-1990. General objectives are: (1) deformation pattern and fluid circulation in an accretionary prism; (2); fluid circulation in an accretionary prism versus brine circulation; (3) Plio-Pleistocene paleoceanography; (4) the comparison of stress and fluid circulation in areas of different deformational styles; and (5) the history of sapropels and explosive volcanic activity.

JOIDES Number: 331/A
Title: **"Zero-Age" Drilling on an Extinct Spreading Axis: The Aegir Ridge, Norwegian Sea**
Proponents: **R. Whitmarsh, W. Weigel, H. Miller and F. Avedik**

By drilling at the center of the Aegir Ridge, a sediment-covered, but no longer active (circa 32-26 Ma) mid-ocean ridge in the Norwegian Sea, the proponents hope to avoid problems caused by high temperatures and corrosive hydrothermal fluids anticipated at actively spreading ridges. This work is proposed as a strategic intermediate step pending the development of equipment to overcome the practical problems mentioned above. General objectives are the study of magma processes and hydrothermal processes associated with crustal accretion, and investigation of the structure and composition of the lower oceanic crust and upper mantle. A preliminary site is proposed to drill into the frozen magma chamber (2000-3000 mbsf), into crust which has not undergone substantial normal faulting and within which the fissures have been sealed by secondary hydrothermal mineralization, as well as to sample the result of decaying axial hydrothermalism on sediments in the "dying" rift. The final choice of site will be constrained by sediment thickness in the median valley axis, pending further site survey work.

JOIDES Number: 332/A
Title: **Florida Escarpment Drilling Transect**
Proponents: **C. Paull and M. Kastner**

The drilling of a three-site, east-west transect across the edge of the western Florida continental margin at 26°01'N is proposed. The objectives of the transect are to determine: (1) Patterns of fluid circulation through the carbonate platform and rates of lateral exchange with seawater, (2) the diagenetic history of the platform edge as it relates to the patterns of fluid circulation, (3) the effects and geologic record of seafloor brine seeps with respect to sulfide mineralization, deposition of chemosynthetically produced organic carbon-rich layers, and the escarpment's erosional history, (4) the stratigraphic development and facies succession across a carbonate continental margin, (5) the paleoceanographic history of the Gulf of Mexico and (6) the facies pattern in the distal submarine fan. A Florida Escarpment drilling program will elucidate the geological and geochemical processes which form and modify carbonate continental margins. Drilling these sections to recover the fluids which circulate between the oceans and its edges should be within the capabilities of the JOIDES Resolution. This drilling program was recommended by the ODP working group on carbonate banks and atolls. (1 Leg)

JOIDES Number: **333/A**
Title: **Tectonic and Magmatic Evolution of a Pull-apart Basin: A Drilling Transect Across the Cayman Trough, Caribbean Sea**
Proponents: **B. Mercier de Lepinay, E. Calais, P. Mann, E. Rosencrantz, M. Perfit and T. Juteau**

This proposal presents a drilling program of six sites for the Cayman Trough, a 1400-km long pull-apart basin and present transform boundary in the Northern Caribbean. The central and eastern parts of the basin are sediment-starved, hence basement structure is accessible to drilling. Drilling in the eastern end of the Cayman Trough (2 sites) provides a unique opportunity to examine the timing and direction of propagation of faulting in a pull-apart setting. Information on age of subsidence, subsidence patterns and basement lithology would assist both in the interpretation of the basement structure of deeply buried (inaccessible) pull-aparts, as well as the interpretation of exhumed and deformed pull-aparts in ancient mountain belts. Drilling on the eastern and western sides of the trough (3 sites) will provide information about the inception and controls on a spreading ridge and a magmatic history test of depth versus age relations. The objectives for a single site in the mid-Cayman Spreading Center is direct sampling of layer 3 and its magmatic evolution. Additional objectives for all sites are the state of stress in strike-slip zones and Caribbean paleoceanography-constant versus episodic plate motions. (1.5 Legs)

JOIDES Number: **334/A**
Title: **The Galicia Margin New Challenge: Drilling Through Detachment Faults, Lower Crust and Crust-mantle Boundary**
Proponents: **G. Boillot, E. Banda and M.C. Comas**

Extensive drilling of basement at the Galicia Margin, N.E. Atlantic, is proposed for two sites, one on the west Galicia Margin and the other on the Iberian Abyssal Plain. Proposed work seeks answers to major geodynamic questions raised by previous drilling at the Galicia margin, Leg 103, concerning the upper lithosphere and the ocean-continent crustal transition. The general thematic objectives of the proposal are: (1) To test the simple shear model for the stretching of the lithosphere during rifting; on the Galicia Margin, the best candidate for this shear zone is the S seismic reflector; (2) to determine by sampling the nature of the basement beneath the S reflector; depending on models and hypotheses, it could be underplated gabbros, stretched lower continental crust, or serpentinite resulting from alteration of the uppermost mantle by synrift and/or postrift hydrothermal activity; and (3) to estimate the westward extension of the serpentinite seafloor.

JOIDES Number: **335/E**
Title: **Drowned Atolls of the Marshall Islands: Paleoceanographic, Lithospheric and Tectonic Implications**
Proponents: **S.O. Schlanger and F.K. Duennebier**

This drilling program in the northern Marshall Islands consists of eight proposed sites atop drowned atolls of Eocene (Harrie Guyot), Cretaceous (Sylvania Guyot) and unknown (SCH Guyot) age now at depths of 1300-1400 m and at nearby deep-water archipelagic apron settings. This proposal replaces JOIDES Number 202/E, entitled "Geologic Evolution of the Northern Marshall Islands," submitted to JOIDES on 9 January 1986 as part of the report of the USSAC workshop on carbonate platforms. Information from proposed sites will by applicable to a broad set of major problems: (1) Drilling atop Sylvania and Harrie Guyots will provide informati[illegible] the chronology of reef growth and drowning related to sea-level paleolatitudinal history and vertical tectonics; (2) investigate the "paradox of drowned reefs"; (3) determine the chronology of volcanic events in the region as related to the passage of the Marshall Islands over thermal anomalies; (4) obtain reliable paleolatitudes and formation dates for these edifices; (5) determine the sources of Marshall Islands basalts and their relationship to the DUPAL/SOPITA anomalies; and (6) drilling at Sylvania, Harrie and related archipelagic apron sites will provide a data base for studies of depositional and diagenetic histories of archipelagic carbonate sequences and the chronostratigraphy of acoustic reflection horizons as related to paleoceanography. (1 Leg)

JOIDES Number: **336/A**
Title: **Arctic to North Atlantic Gateways, Oceanic Circulation and Northern Hemisphere Cooling**
Proponent: **J. Thiede**

The target areas proposed for drilling are arranged in terms of two transects: One transect extends from the Fram Strait along the East Greenland continental margin to the Denmark Strait following the eastern boundary of the East Greenland Current. The other transect extends from the northern Iceland Plateau to the south of the Iceland-Faeroe Ridge. Drilling in the central Fram Strait will provide data on the depth of evolution of the oceanographic gateway and the initiation and evolution of shallow- and deep-water flow through this passage. Proposed sites at the East Greenland continental margin are intended to (1) date the onset of the East-Greenland Current, monitor the deep-water formation and surface waters in the Greenland-Iceland Sea, (3) determine their influence on the variability of the polar front and northern hemisphere paleoclimate, and (4) decipher the evolution of the Greenland ice sheet. Sites on the Iceland Plateau are proposed to describe the paleoenvironmental conditions following the very early rifting stages of the Norwegian Basin. Proposed drilling of the Iceland-Faeroe Ridge will yield key information on the early spreading stages of the southern Norwegian Sea, the subsidence history of the Iceland-Faeroe Ridge and the early phases of warm surface-water inflow from the North Atlantic-a key parameter for northern hemipshere climate. Drilling in the Denmark Strait is proposed for a better understanding of the development of oceanic gateways and their influence on oceanic circulation patterns and climatic conditions during Cenozoic times in the Nordic Seas; it is aimed at determining the exchange rates of water masses between the Nordic Sea basins and the North Atlantic.

JOIDES Number: **337/D**
Title: **Ocean Drilling Program Tests of the Sedimentary Architecture of the Exxon Sea-level Curve**
Proponents: **R. Carter, C. Fulthorpe, L. Carter, J. Beggs, K. Miller and G. Mountain**

A multiple-leg program is proposed consisting of four groups of sites in the New Zealand region. A transect consisting of four sites will cross known mid-late Pleistocene shelf-margin sequences, offshore Wanganui Basin, western North Island. The main objective there is to establish the sedimentary architecture of known sea-level controlled sequence systems tracts, both for its intrinsic importance and for comparison to pre-Neogene sequences. A second transect will cross identified Miocene Exxon-type seismic sequences in Canterbury Basin, eastern South Island. The objectives for this transect are threefold: To establish the facies architecture of presumed pre-Plio-

Pleistoc. sea-level controlled seismic sequences, to test the global applicability of the mid-miocene part of the Exxon sea-level curve, and to establish the validity, and document the sedimentology, of a high-frequency part of the Exxon sea-level curve. Two sites, one on the Canterbury shelf platform and one on the flank of the Campbell Plateau, are proposed to establish the paleoceanographic nature of the 29 Ma event in the southwest Pacific. Lastly, a pair of sites in the Great South Basin, southeast of South Island, are intended at establish a high-resolution stratigraphic record through well developed southern hemisphere Paleocene sequences.

JOIDES Number: **338/D**
Title: **Absolute Amplitude of Neogene Sea-Level Fluctuations from Carbonate Platforms of the Marion Plateau, Northeast Australia**
Proponents: **C. Pigram, P. Davies, D. Feary, P. Symonds and G. Chaproniere**

Drilling is proposed along an E-W transect of five sites on the Marion Plateau, the most southerly of the marginal plateaus located along the northeastern margin of Australia. The principal objective of the proposal is to determine the amplitude of Neogene second- and third-order sea-level cycles. This objective, identified in the OH panel white paper, COSOD II, and the El Paso Workshop (EOS, March, 1989), can be achieved in this region because sites that have undergone identical subsidence histories can be located within two phases of platform accretion. Furthermore the Marion Plateau is a low-relief carbonate bank-slope-basin system that OHP considers essential for comparison with proposed Pacific atoll transects. As subsidence can be eliminated as a control on the Marion Plateau, it is an ideal area in which to define the amplitude of Neogene glacioeustatic events. A further objective is to obtain information on the changes in oceanography and climate as the world's ocean changes from an equatorial to a gyral circulation pattern. This information will help decipher the history of evolution of the East Australian Current and the effects of these factors in the development of subtropical platforms.

JOIDES Number: 339/A
Title: **Paleoceanographic Record of the Benguela Current and Associated High-Productivity Areas: a Proposal for Drilling Transects on the Southwest African Margin.**
Proponents: **L. Diester-Haass, P.A. Meyers, G. Wefer and H. Oberhansli**

Four transects totaling eleven APC/XCB sites are proposed on the upper slope and outer shelf of the southwest African margin. The purpose of these sites is to expand and to refine the partial record provided by DSDP Site 362/532 of the paleoceanographic and paleoclimatic changes associated with the development of the Benguela Current system since early Miocene times. The current itself evidently has increased its northward extension across the Cape Basin and into the Angola Basin over this time, partially due to strengthening of the Agulhas Current and partially due to changes in the Antartic polar front. As the Benguela Current moved northward and intensified, the zone of coastward upwelling and associated high productivity shifted and potentially expanded. Furthermore, the extent and intensity of the Benguela Current directly influence the South Atlantic Equatorial Current and its transport of heat across the Atlantic. At DSDP Site 362/532, the effects of southern hemisphere glacial-interglacial cycles appear as carbonate dissolution cycles, productivity cycles, and continental sedimentation cycles. Both sealevel changes and climatic changes are recorded in these cycles. The proposed transects, located above the CCD in a passive margin area of high sedimentation rates, can provide high-resolution records of these important processes, and they add important new dimensions to the single-site record now available.

JOIDES Number: **340/D**
Title: **Evolution of Foreland Basins - a Record of Tectonic, Climatic and Oceanographic Change from the Northern Australian Margin**
Proponents: **M. Apthorpe, M. Bradshaw, P.J. Davies, D.A. Feary, R. Hillis, D. Jongsma, C.J. Pigram, M.G. Swift and P.A. Symonds**

This drilling proposal is divided into two sub-proposals.
1) Neogene/Quaternary collisional tectonism and foreland basin development across the northern australian margin. This region is probably the only place on earth where ocean drilling can be used to understand the early tectono-stratigraphic evolution of foreland basins. Also this region is a modern analogue of the anciant orogens in western North America and Europe. (5 sites).
2) Cenozoic global climate evolution - the record across the northern Australian margin. The stable isotope record within sedimentary sequences across the northern Australian margin will document many of the major events in the dramatic evolution of global climates during the Cenozoic related to the nortward movement of Australia folowing breakup with Antarctica. A separate objective will be to obtain a Late Cretaceous biostratigraphic reference section for the eastern Indian Ocean. (5 sites).

JOIDES Number: **341/A**
Title: **Global Climatic Change as Measured trough a Continuous Late Wisconsinan Quaternary Record with Special Emphasis on the Holocene**
Proponents: **J.P.M. Syvitski**

This proposal presents a drilling program of two sites in the Saguenay Fiord and in the St. Lawrence Estuary (Laurentian Trough). Both sites have an extensive supporting database of high-resolution geophysics, have an expanded (thick) sequence of fluvially transported and pelagically-deposited Holocene sediment that past research suggests to be resolvable at an annual level of resolution. Geophysical data also suggests at least one, if not two, deglacial sequences that properly analyzed could provide a measure of the rates of climate change going into and out of the last glaciation and its associated ablation.

JOIDES Number: **342/A**
Title: **Growth Mechanics and Fluids Evolution of the Barbados Accretionary Prism**
Proponents: **R.C. Speed, G.K. Westbrook, J.C. Moore, A. Mascle, X. Le Pichon, S. Dreiss, D. Karig, M. Langseth**

This drilling program in the Barbados addresses the mechanics and fluids evolution of accretionary forearcs, emphasizing mechanisms and episodicity of acccretionary prism growth and progressive deformation; sources, pathways, and rates of flowing fluid; and time dependence of events and physical properties. Sites proposed for these investigations are in partial transects across the Barbados forearc and the immediately adjacent Atlantic ocean floor. The questions posed are global and applicable to an understanding of the tectonic evolution of convergent margins and some ancient orogenic belts in general, materials budgets, and processes of consolidation and defluidization of sediments under compression. It is believed that a maximum advance toward solutions can be gained by drilling within a single forearc whose features change systematically in response to lateral changes of major controlling variables. The Barbados forearc amply provides such a natural laboratory because of large changes on strike in the major variables, thicknesss, rheology, and permeability of incoming sediment. (3 to 4 legs).

JOIDES Number: **343/A**
Title: **Drill in a Window of the Cretaceous Volcanic Formation in the Caribbean Sea**
Proponents: **A. Mauffret and A. Mascle**

The evidences of a window in the Cretaceous volcanic flow give the opportunity to reach the oceanic basement at a moderate depth of penetration (1 sec. max., 1100 m) and to solve the main problems posed in the Caribbean region as defined during the ODP symposium on Caribbean (nov. 1987). The first objective is to study the composition of the volcanic rocks below the Coniacian volcanic flow. A second objective is to drill (0.8 sec., 900 m)is to reach the rough basement at the top of Pecos Fault Zone so as to complete the sampling of the Caribbean crust and also to precise the neotectonics. (7 sites).

JOIDES Number: **344/A**
Title: **Proposal to Study the Western North Atlantic Jurassic Magnetic Quiet Zone by Ocean Drilling**
Proponents: **R.E. Sheridan**

The origin of the Jurassic magnetic quiet zone remains problematic. Possible origins now include 1) typical oceanic crust spreading when the earth'smagnetic field had a constant normal polarity for an extended interval (10-15 my), 2) typical oceanic crust spreading when the earth's magnetic field had a rapidly reversing polarity (greater than 7.5 reversals/my), or 3) typical oceanic crust spreading when the earth's magnetic field was either of constant normal polarity or rapidly reversing, but with a weaker magnetic field intensity. It is proposed that Site be reentered and drilled through 500 m of basaltic flows to get a good probability that a reversed polarity be detected. Another site should be drilled into basement as further verification and it is proposed a new site close to the Site 603 of DSDP

JOIDES Number: **345/A**
Title: **Drilling Proposal for the West Florida Continental Margin, Gulf of Mexico: Sea Level and Paleoclimatic history**
Proponents: **J.E Joyce, H.T. Mullins, L.R.C. Tjalsma and S.W. Wise**

Carbonate ramps offer unique opportunities to study the interactions between ocean basins and surrounding land masses, and evaluate the timing and amplitude of global sea level change. The West Florida margin is an excellent example of a carbonate ramp which meets the general requirements for a potential drilling area to address sea level change. A transect of 6-7 sites, strategically positioned along an optimal, high-resolution seismic reflection profile extending from shallow (90 m.) to deep water (1125 m.), will provide documentation of the timing of sea level change and bracket amplitudes of Cenozoic sea levels. The proposed deep-water sites provide the basis for multi-disciplinary paleoclimate studies addressing 1) the timing and magnitude of Pliocene meltwater discharge from mid-latitude ice sheets, 2) the extent of phosphorite deposits along the West Florida margin especially within the Tertiary, and 3) the history of Loop Current circulation in the eastern basin.

JOIDES Number: **346/A**
Title: **A Proposal for Scientific Drilling on the Equatorial Atlantic Transform Margin**
Proponents: **J. Mascle, Ch. Basile, J.P. Herbin, M. Moullade and Ch. Robert**

This proposal is dealing with both the evolution of transform margin and gateways within the Equatorial Atlantic. It intends to promote a better understanding of sedimentary, tectonic, and others processes (diagenesis, vertical motion, magmatism) appearing to be specific at transform extensional margins. This drilling proposal is part of an integrated program devoted to the structure and evolution of the Ivory coast-Ghana margin, considered as one of the best example of transform margin. (7 sites).

JOIDES Number: **347/A**
Title: **Late Cenozoic Paleoceanography, South-Equatorial Atlantic**
Proponents: **G. Wefer and W.H. Berger**

Drilling is proposed along 3 transects in the area of the equatorial Atlantic: east and west of the south-equatorial MOR and south-east of São Paulo. The purpose is to reconstruct the dynamics of the transequatorial heat transport in relation to the North Atlantic Deep Water (NADW) formation, intermediate curents, and productivity variations throughout the Neogene. Comparison of records from eastern and western transects allows assessment of east-west asymmetries in the productivity, and of strength of surface circulation. At depth, these comparisons allow reconstruction of NADW and AABW transport patterns. The transect near São Paulo is to recover the record of heat import of the North Atlantic through the South Equatorial Current. Also, a north-south comparison in the west-equatorial region will give clues to the vigour of NADW flow, from the inclination of the abyssal thermocline separating NADW and AABW.(1 leg).

JOIDES Number: **348/A**
Title: **Upper Paleogene to Neogene sequence stratigraphy: the Ice House world and the U.S. Middle Atlantic Margin**
Proponents: **K.G. Miller, N. Christie-Blick and G.S. Mountain**

The upper Paleogene to Neogene section of the U.S. middle Atlantic margin is ideally suited for the study of changes in relative sea level recorded in passive margin sediments. Features unique to the region during this time interval include:

- rapid sedimentation (occasionally above 200m/m.y.) that provides an unusually high-resolution record during a time of known glacio-eustatic change;
- tectonic stability that simplifies subsidence considerations;
- mid-latitude setting that optimizes biostratigraphic potential , and yields sufficient carbonate for Sr-isotope stratigraphy; and
- abundant reconaissance -quality seismic profiles, well samples and logs, boreholes and outcrops that can guide efforts to concentrate on features that best reveal the record of sea-level change.

These unique possibilities will be exploited in drilling 11 possible sites on the shelf and upper slope of the Mid-Atlantic continental margin. The objective will be to determine the geometry and age of Oligocene to Miocene depositional sequences, and to evaluate the role of relative sea-level changes in developing this record. It will be evaluated possible causal links between ice-volume (glacio-eustatic) changes inferred from the deep sea ∂18O record and depositional sequences dating from this Oligocene to Miocene "Ice house world". This program should define precisely the ages of these depositional sequences and test models of sedimentation and relative sea-level changes.

JOIDES Number: **349/A**
Title: **Drilling into the Clastic Apron of Gran Canaria: Evolution of a Linked System Volcanic Ocean Island-Sedimentary Basin**
Proponents: **H.-U. Schmincke, U. Bednarz, A. Freundt, P.v.d. Bogaard, K. Hoernle, M. Menzies, W. Weiger and G. Wissmann**

This proposal presents a drilling program of five holes into the volcanic oceanic island of Gran Canaria (Canary Islands). The drilling targets are the ultimate aim of the interdisciplinary research project **VICAP** = *Volcanic Island Clastic Apron Project.* The purpose of this project is to study the physical and chemical evolution of a confined system "asthenophere - lithosphere - seamount - volcanic island - sedimentary basin" by drilling into the proximal, medial and distal facies of a volcanic apron, which formed by submarine volcanic activity during the early seamount stage, explosive volcanic activity in shallow water and on land, lava flows and pyroclastic flows enterin g the sea, and erosional activity.
The clastic apron is expected to contain material from throughout the entire evolution of the volcanic complex, including material no longer present on the island and - most importantly - material from the unexposed and unaccessible submarine stage. A major element of the program will be high precision single-crystal age dating with the aim of monitoring the island and basin evolution in time slices as detailed as 100.000 years.

JOIDES Number: **350/E**
Title: **Plio-Pleistocene Sedimentation and Plate Deformation : Gorda Zone Deformation off Northern California.**
Proponents: **M. Lyle, R. Jarrard, S. Halgedahl and R. Karlin**

This proposal is to study the processes of deformation in young ocean crust by examining rotation of crust in the Gorda Deformation Zone through a series of 3 holes along an isochron approximately 4 millions years old. Sedimentary studies will be used to determine the history of rotation of different crustal regions within the plate. It could also be possible to measure the present state of stress in the crust. The Gorda Deformation Zone is also well-located for the study of both palaeoceanographic history of the Californian Current system and the evolution of the chemistry of temperate north Pacific deep waters. Finally, Late Pleistocene turbidite sections can be found nearby to hemipelagic sediment sites of paleoceanographic interests, and sampling of the coupled sites will be important to study the history of turbidite deposition from the northwest coast of North America. (1/4 leg).

JOIDES Number: **351/C**
Title: **ODP Proposal for Bransfield Strait**
Proponents: **J.B. Anderson, P.F. Barker, I.W.D. Dalziel, M.R. Fisk, J.D. Jeffers, R.A. Keller, R.D. Larter, R. Meissner and J.L. Smellie**

This proposal presents a drilling program in the Branfield Strait -an young active back-arc basin that formed during the past 4 Ma along the remaining active portion of the Antartic Pacific margin. Sedimentation is dominated by glacial marine processes and their associated lithologies. It forms an ideal natural laboratory for a multidisciplinary, multinational drilling project. The main objectives are :

- Continental lithosphere extension in a convergent margin setting.
- Driving forces responsible for the formation of ensialic back-arc.
- Petrogenetic processes operating during initial back-arc rifting.
- Global climatic, environmental and sea level changes.
- Hydrothermal systems in active back-arc basins.
- Aspects of Andean-type orogenesis.

It is proposed to address these problems by drilling through sediment into crystalline basement to get a complete sedimentary record of the opening of the strait as well as samples of crystalline basement for geochemical and petrological studies of the transition from continental to oceanic crust in a back-arc setting. This would set Bransfield Strait as a example of an ensialic suprasubduction zone back-arc basin. (10 sites).

JOIDES Number: **352/E**
Title: **Drilling into Layer 3 of East Pacific Crust at the Mathematician ridge.**
Proponents: **D.S. Stakes and D.A. Vanko**

The phenomenal drilling results of ODP Leg 118 dramatically illustrated the advantages of drilling into gabbro that has been tectonically unroofed. The proponents present a drilling program into oceanic crust created at a fast-spreading center, the

Mathem...ian Ridge, a failed rift in the Eastern Pacific which may provide the best "tectonic windows" for fast-spread crust. Also the Mathematician Ridge is far from any large offset transform intersections and thus avoids the inherent ambiguity of ridge - transform intersection. The main objective to drill this site will be to recover a continuous section of oceanic Layer 3 and the optimal site will start at or near the dike-gabbro boundary to avoid ambiguity of lithostratigraphic horizon. A second major objective of a drillsite for the Mathematician Ridge would be to determine the role of ductile normal faults in young plutonic rocks created at fast-spreading centers. A third objective would be to study the mechanics of rift failure. The relationship between the axial structures and post-rift failure structures and magmas could be determined. (1 site).

JOIDES Number: **353/C Rev.**
Title: **Antartica Peninsula, Pacific Margin**
Proponents: **P.F. Barker and R.D. Larker**

A length of the Pacific margin of the Antartic Peninsula has subducted a series of ridge crests of the Pacific-Phœnix plate boundary. The ridge crest collision event migrated along the margin, from the SW 50Ma ago to the last collision in the NE 3-5.5Ma ago. Subduction before collision had a simple geometry and, after collision, subduction stopped. Thus, the evidence of this event is well preserved, in the young ocean floor and in margin sediments. Since collision the margin has gently subsided (rather like a young passive margin) and glacial erosion has provided sediment to a large prograded wedge which extends the outer shelf.

Drilling on the Antartic Peninsula Pacific Margin would investigate:

1. the history of uplift and subsidence of the fore-arc resulting from subduction of a ridge crest. Fore-arc regional thermal metamorphism, from the same event, and heat flow;
2. the assumption that global eustatic sea-level change through the Plio-Pleistocene has been caused by changes in grounded ice volume;
3. the history of Antartic Peninsula glaciation over the past 5 to 10Ma;
4. the usefulness of continental rise turbidites and hemipelagics as indicators of cyclicity in continental glaciation.

JOIDES Number: **354/A**
Title: **Late Cenozoic History of the Angola/Namibia Upwelling System.**
Proponents: **G. Wefer and W.H. Berger**

It is proposed to drill 4 transects off Angola and Namibia, in order to reconstruct the upwelling history of the region between 5°S and 25°S, for the last 6 millions years. The region represents one of the most important upwelling systems in the ocean. The northnmost transect is to recover the record of productivity variations in a complex area, dominated by river input (Zaire), seasonal upwelling, and a pelagic offshore divergence. The transect off mid-Angola provides a "low-productivity" standart for comparison, with the possibility of detailed correlation between the margin record and the pelagic record. The transect off southern Angola targets the northern end of the continuous, high productivity portion of the Angola/Namibia upwelling system. The Namibia transect, finally, is to provide the record of maximum upwelling in this region.

JOIDES Number: **355/E**
Title: **Formation of a Gas Hydrate-its Effect on Pore Fluid Chemistry, its Modulation of Geophysical Properties, and Fluid Flow.**
Proponents: **R. von Huene, E. Suess, K. Kvenvolden and T. Shipley**

This proposal presents a drilling program through the base of a gas hydrate at a site where this can be accomplished safely. Such drilling is needed to understand the formation of gas hydrate in the marine environment and to improve the grounds on which the safety of ODP continental margin drillsites are judged.
The Peru margin has sites where the lower gas hydrate boundary can be penetrated without undue risk. Proposed sites are in the axis of a syncline where free gas and fluids tend to migrate up-structure. The reflection at the base of the hydrate (BSR) is strong on one flank and fades away in the synclinal axis. The major source of methane gas is probably Quaternary organic-rich sediment and where the depth of this layer reaches the transition between hydrate and gas, the BSR is observed.
Geochemical objectives:

1. Quantify the parameters controlling gas hydrate formation by constraining physical conditions and chemical inputs.
2. Characterize chemically and isotopically the gas in the hydrate, the bound clathrate water, and establish where the residual brine from gas hydrate formation is localized.
3. Identify the sources of methane, characterize the pore fluids unaffected by gas hydrate formation, and quantify rates of fluid and gas transport in the accretionary regime.

Geophysical objectives:

1. Test the use of acoustic properties from seismic data to quantify the distribution of gas hydrate and free gas by making down-hole and physical properties measurements in the hydrate-free-gas-sediment system.
2. Determine the precision of heat flow values derived from the depth of the BSR. Measure the effects of hydrate on thermal conductivity.
3. Estimate impedance to the flow of fluid at the BSR caused by the restriction of permeability plugged by gas and measure the consequent variability in formation overpressures.

Other objectives.

1. Determine the tectonic erosion of the Nasca Ridge and the concurrent change from erosion to accretion at the margin.
2. To study the apparent landward shift of coastal upwelling since the Miocene and the concurrent shift in a major contour current indicated by the sedimentary structure in Lima basin.

JOIDES Number: **271/E Rev/2**
TITLE: **Proposal for limited APC coring on seamounts of the California coast during a possible transect of that coast in 1991 and initial response to OHP feedback on proposal 271/E, "Neogene Upwelling and Evolution of the California Current System".**
Proponent: **J. Barron**

The California current constitutes the major eastern boundary current of the northeastern Pacific Ocean and sits astride one of the most climatically and oceanographically sensative mid-latitude gradients in the world ocean. Of equal importance, the associated continental margin of California represents one of the four principal regions of coastal upwellling and high productivity in the modern ocean. A series of north-south (and east-west, if possible) transects across the path of the California Current are proposed in order to:

1-Develop models of how the California Current system has evolved in response to major polar cooling events and increased latitudinal thermal gradients in the later part of the Neogene.
2-Determine the width of the California Current through time and the character of gradients both across and along the track of the current.
3-Determine whether fluctuations in the California Current have responded in phase or out of phase with high latitude climate changes including mid Miocene buildup of ice on Antarctica, later Neogene initiation of glaciation in the northern hemisphere.
4-Determine seasonality affects (e.g. upwelling) first evolved and/or accelerated during Neogene time. Related questions include when is the earliest record of El Niño-like events and their durations?
5-Search for patterns possibly related to closing of major Pacific gateways including the Isthmus of Panama.

(2 to 3 APC cores, 1 to 2 weeks of drilling time).

JOIDES Number: **233/E Rev/2**
Title: **Update Proposal to the Ocean Drilling Program for Fluid Process and Structural Evolution of the Central Oregon Accretionary Complex.**
Proponents: **L.D. Kulm, J.C. Moore, B. Carson, G.R. Cochrane, B.T.R. Lewis, P.D. Snavely Jr., R von Huene**

This document is an update of the Proposal to the Ocean Drilling Program referenced as 233/E and it concentrates solely on the specific drill holes and objectives previously described in Proposal 233/E.
The overall objective is to study active and past fluid venting and dewatering processes occurring within the accretionary complex and to relate these processes to the structural and stratigraphic framework. Specific objectives include the following:

1. Determine the sources of pore fluids and hydrologic conditions above the decollement.
2. Determine the nature of fluid expulsion pathways.
3. Determine the subsurface distribution and magnitude of carbonate cementation, diagenesis, and Ca-transport through the accretionary prism in the different structural settings and during the various stages of deformation.
4. Evaluate the transition from a hydrologic regime with significant intergranular fluid towards one dominated by flow along faults.
5. Define the characteristics of fluids and the physical properties of the associated deposits at incipient deformation zones in the abyssal plain, seaward of the main deformation front.
6. Determine the velocity structure of the accretionary complex and its relationship to diffusive regional dewatering versus localized vent expulsion sites.

APPENDIX V

TAMU-ODP SUMMARY STATEMENT ON FREE FALL FUNNEL ENTRY AND RECOMMENDATIONS

Appendix V

OCEAN DRILLING PROGRAM

SUMMARY STATEMENT SS-0200

FREE FALL FUNNEL REENTRY CAPABILITIES AND RECOMMENDATIONS

Introduction

The purpose of this summary statement is to clarify the capabilities and address the limitations of the Ocean Drilling Program's (ODP) Free Fall Funnel and to recommend guidelines for future FFF deployment planning.

Description

The FFF, ODP part number OH-4600, is an 8-foot diameter by 40-1/2 inch high, "temporary" reentry cone, with a 12-1/2 inch diameter throat. A casing pup joint (13-3/4 inch diameter) is welded to the bottom of the FFF. The casing pup joint keeps the FFF aligned with the bore hole. The FFF has no ability whatsoever to suspend a casing string. The FFF has also been referred to as the "free fall reentry cone" or "mini cone".

The Free Fall Funnel is not a direct substitute for a full size reentry cone with the concomitant sediment stabilizing casing string. The FFF is a relatively inexpensive piece of hardware (less than five thousand dollars) which requires a few hours of rig time to deploy and can result in a dramatic increase in productive science. Conversely, a full size reentry installation is an expensive exercise (approximately 100,000 dollars in hardware and three or more days of rig time) which should only be attempted when unstable upper sediments make progress in the hole unlikely and/or when reentry in subsequent legs is considered likely.

A schematic illustrating an "ideal" FFF deployment is attached. The schematic also includes the overall dimensions of the FFF.

Problems Associated with FFF Deployments

The FFF relies entirely on its 8-foot diameter "footprint" in contact with the sea floor and/or cuttings mound for support. The FFF does not benefit from "pile" support as does the full-size reentry cone with casing. Therefore, if the top of the bore hole is washed out or the sediments are not consolidated enough for adequate support, the FFF can and occasionally does sink out of sight.

The problem of the FFF sinking out of sight can be addressed in two ways. First, three glass floatation balls are attached to the FFF on 3-meter tethers. If the floatation balls survive the trip to the sea floor and providing that the FFF does not sink below the surface more than the length of the tethers, the floatation balls can be used to visually guide the drillstring via underwater television for reentry. Secondly, a small mud skirt has been designed which will help support the FFF. Neither of those aids is a guarantee that the FFF can be located and reentered.

Since the FFF is not equipped with a casing string to prevent the upper soft sediments from sloughing, the borehole can collapse beneath the FFF before a reentry is accomplished.

Should the FFF be snagged by the Bottom Hole Assembly (BHA) during a pipe trip and be pulled from the hole, there is no means of reinserting it and thus reentry would be virtually impossible.

In those cases where the FFF settles into the crater at the seafloor created by enlargement of the hole plus deposition of cuttings, it can be difficult or impossible to locate. Sonar will probably not help in such cases and no FFF has been reentered to date by using sonar.

Development Philosophy

The FFF was not developed to replace the reentry cone/casing combination. The premise under which the FFF was developed was to provide an expedient, low-cost means of maximizing scientific results in a borehole where reentry was not expected but is later found to be necessary.

It must be noted that the FFF is not a guaranteed reentry mechanism and the extra science gathered must always be weighed against the very real possibility of an unsuccessful reentry versus the time and expense to set a full size reentry cone and casing.

Typical uses for the FFF would include:

1. Deepening holes that have not reached their objective due to premature bit failure can now be deepened by round tripping for a new bit.

2. In the event of a bit release failure, a round trip to change to a logging BHA can be made.

3. Packer work can now be performed in single bit holes while avoiding the undesirable practice of drilling with a packer in the string.

4. A round trip to change from an XCB bit to an RCB bit in the same hole, thus saving the time to drill down to the previous TD in a new hole. In this application, consideration must be given to the time required to deploy the FFF and the subsea TV. In most cases, it is more expedient to simply spud a new hole with the RCB.

FFF Deployment Synopsis Through Leg 125

Number of sites with FFF deployments	12
Number of sites with attempted FFF reentries	10
Number of successful reentry sites	9
Number of sites where the FFF was not visible	5
Number of multiple FFF reentry sites	3
Total number of successful FFF reentries	12

Although the ninety percent success rate of reentering a FFF appears high, one should not lose sight of the fact that fifty percent of all the reentries were achieved without the FFF being exposed. Also, two of the FFF reentries were accomplished without even the glass floatation balls being visible and one FFF (and associated hole) was never found at all. These statistics may reflect more upon the expertise of the ships crew than on the reliability of the FFF. Additionally, the BHA is at risk when a "blind" stab at the FFF is made. Loss of the BHA would not only cost rig time for a trip, but also the expense of a replacement.

ODP General Recommendations

A. The FFF should only be deployed when time constraints preclude setting a reentry cone with casing and the science to be gathered by reentry can be risked against the very real possibility of an unsuccessful reentry.

B. The FFF should not be deployed when reentry on subsequent legs is a strong possibility.

C. The FFF should be used only when its deployment would represent a significant savings in rig time over drilling a new hole.

FFF Deployment History

There is no hard and fast rule about the appropriate application in all cases of a Free Fall Funnel. To better understand the rationale employed in the Ocean Drilling Program to date, here is a brief synopsis of past deployments:

Leg 108, Site 658; The first FFF deployment. A FFF prototype was deployed in Hole 658A. The TV camera was used to observe "pull-out" of the BHA and the FFF was clearly visible. The ship was offset 30 meters to intentionally lose visual contact with the FFF. The ship was then repositioned over the FFF and the first successful FFF reentry was accomplished. No coring or drilling was attempted through the FFF.

Leg 110, Site 671; Coring was terminated in Hole 671B due to a core barrel stuck in the BHA. A FFF was deployed for reentry for logging operations. The TV was lowered to observe "pull-out" and it was noted that the FFF had sunk below the cuttings with only two glass floatation balls visible. A logging BHA was made up and tripped to the sea floor. After five hours of maneuvering the ship, reentry was accomplished by lowering the BHA between the floatation balls into the cuttings mound.

Leg 115, Site 713; Hole 713A was extended by deploying a FFF and round tripping the BHA for a bit change. Deployment of the TV for "pull-out" observation revealed the FFF to be clearly visible. Only two glass flotation balls survived the trip to the sea floor. After three hours of maneuvering the ship, reentry was achieved.

Leg 116, Site 718; Failure of an HBR to release in Hole 718E prevented deployment of the logging tools. A FFF was deployed and the drill string round tripped for a logging BHA. Deployment of the TV to observe "pull-out" revealed the FFF to have sunk below the surface of the cuttings mound and only the four glass floatation balls were visible. Reentry was achieved after 13.5 hours of maneuvering the ship and several mis-stabs.

Leg 117, Site 722; After logging Hole 722B, the logging tools would not reenter the BHA and the crimper and cutter had to be deployed. Before pulling the BHA clear of the sea floor, a FFF was deployed to aid in reentering the hole should it have become necessary to fish for the logging tools. The logging tools were retrieved with the drill string and no reentry was attempted.

Leg 119, Site 740; Hole 740A was extended by deploying a FFF and round tripping the BHA for a bit change. In preparation for reentry, it was observed that the FFF was visible but appeared to be 6 m below the surface of the cuttings mound with only the floatation balls above. Reentry time was minimal since the FFF was found directly below the drill string.

A second reentry was made after a round trip to clean a plugged bit. The second reentry was also made in short order. Again, the FFF was found directly below the drill string, probably a result of the shallow water depth (818m).

Leg 119, Site 742; A FFF was deployed in Hole 742A as "insurance" for a reentry if the ship had to temporarily abandoned the hole due to an approaching iceberg. The iceberg changed direction and no reentry was attempted.

Leg 121, Site 752; Due to a lost suite of logging tools in Hole 752B, a FFF was deployed. The BHA was round tripped to renter the hole with fishing tools. In preparation for reentry, the FFF could not be found either by sonar or TV. The drill string was stabbed into a disturbance on the sea floor near what appeared to be one of the glass floatation balls. Miraculously, the hole was reentered and the logging tools were successfully fished.

A second reentry was attempted to complete the logging operations. More that 12 unsuccessful stabs were required before the hole was successfully reentered the second time.

Leg 121, Site 758; In order to advance Hole 758A with the RCB, a FFF was deployed for reentry. A small mud skirt was fabricated and attached to the FFF. Upon reentry, The FFF was found to be setting high on the sea floor, clearly visible and reentry was achieved in 12 min.

A second reentry was made after round tripping for a routine a bit change. The second reentry was accomplished in three minutes once the BHA had reached the sea floor.

Leg 122, Site 762; A FFF with mud skirt was deployed in Hole 762C for reentry after round tripping for a logging BHA. The TV was lowered to observe "pull-out" and the FFF was found sitting high on the sea floor clearly visible. Only 8 min. were required to reenter the hole once the logging BHA had reached the sea floor.

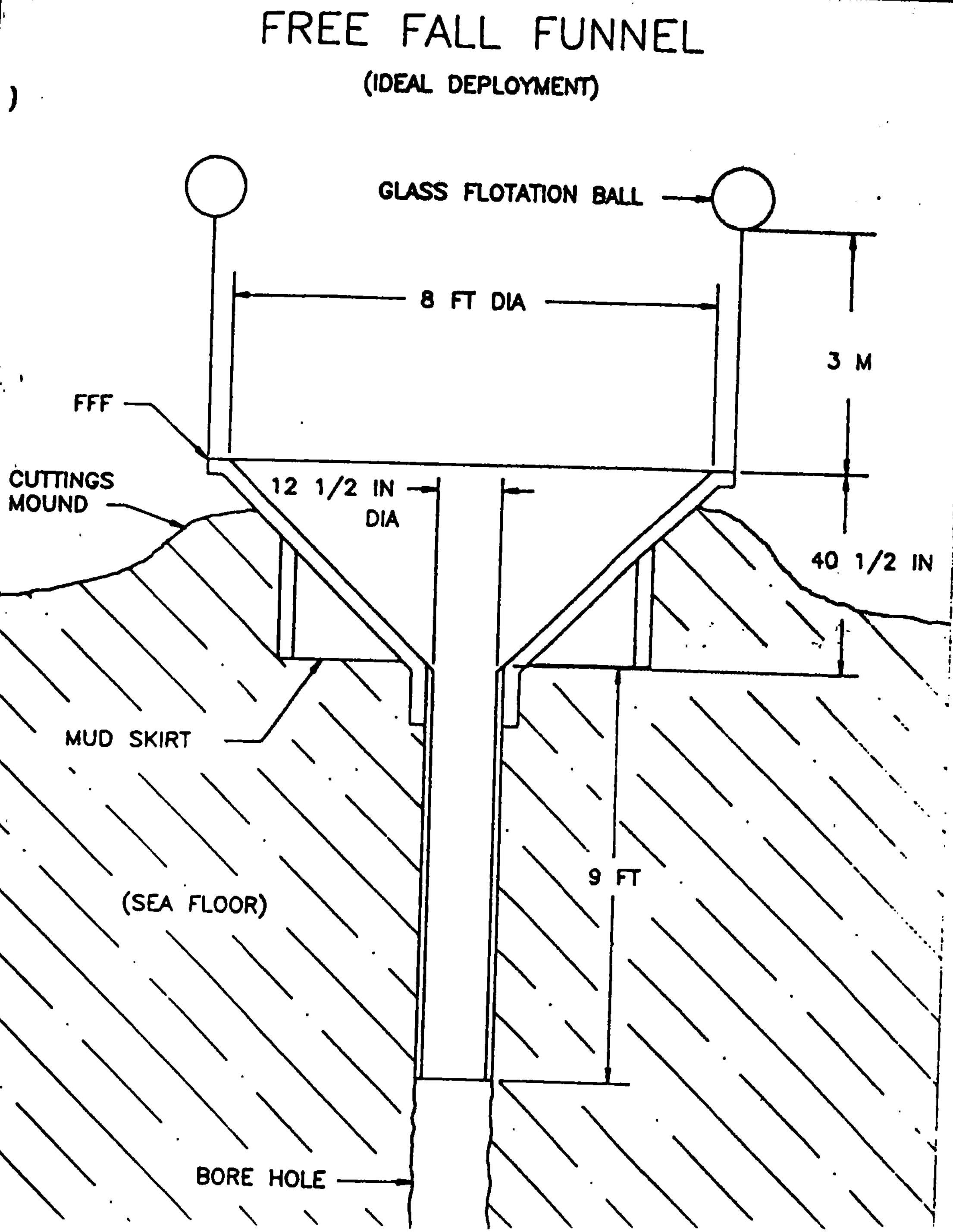
Leg 124, Site 767; A FFF was deployed in Hole 767B for reentry after a round trip for the RCB. During reentry procedures, neither the FFF nor the glass floatation balls could be found. After several hours of searching and several mis-stabs, the effort was discontinued and a new hole was spudded.

Leg 125, Site 779; A FFF without mud skirt was deployed in Hole 779A for reentry after a round trip for a bit change. The TV was lowered for observation of the "pull-out" and the FFF was found sitting high on the sea floor clearly visible. Reentry was accomplished in 1.5 hours once the BHA had reached the sea floor.

Revised: 7-6-89

Ron Grout________

Dave Huey________



Meyer

To: Those Concerned
From: Ron Grout/Glen Foss
Subject: Free-fall Reentry Funnel
Date: 27 November 1988

This memo supersedes the Glen Foss memo of 1 May 1986 on the same subject.

The free-fall funnel (FFF) has now been in use in the ODP for over two years. It has proven to be useful in some situations and has saved holes for further penetration and/or logging. The track record for "reenterability" is good, and the odds of making one, or possibly two, reentries into a given FFF are fairly high. On at least two occasions, the FFF has gone completely out of sight in soft sediments. In one case it was reentered on a blind stab, and in another case, reentry was not achieved.

Though some doubts concerning the utility of the FFF have been assuaged, there is no change in the basic policy and philosophy toward its use. It remains a remedial tool to salvage single-bit holes that fall short of their drilling or logging targets. The lack of casing makes deepening of the hole or downhole science vulnerable to problems arising from deterioration of soft shallow sediments. The small "footprint" and lack of elevation above the seafloor will continue to make the FFF prone to "burrowing" or being lost in soft-sediment craters if drilling operations are conducted with the FFF in place.

We will continue to stock and use the FFF for those situations where a "second chance" is needed. The following guidelines remain in force for the deployment of the FFF:

A. The FFF should be used only when its deployment would represent a significant savings in rig time over drilling a new hole. In many cases, a new hole can be drilled in less time than FFF deployment and reentry would take. As hole conditions deteriorate with time, a redrill hole should be more stable for deepening and logging than the original hole.

B. Because of the risk of losing the hole, the bit should never be pulled clear of the seafloor unless it has been determined that the site objectives cannot be achieved without reentry.

C. Observing the withdrawal of the bit from the FFF prior to the pipe trip is encouraged. The anticipated problem of pulling the FFF out of the hole has not occurred, but the TV would determine whether the FFF is in position and visible for reentry. The risk and amount of time involved should be considered by the O.S. in deciding whether to take this step.

D. The existence of the FFF should not be a consideration in scientific and operational planning. As a general rule, ODP sites should be planned either for single-bit holes or for full dual-casing-string reentry installations.

cc: L. Garrison
B. Harding
A. Meyer
J. Baldauf
M. Storms
P. Thompson
Development Engineers
Staff Scientists

APPENDIX VI

DATA BANK STATISTICS

Data Supplied (FY '89)

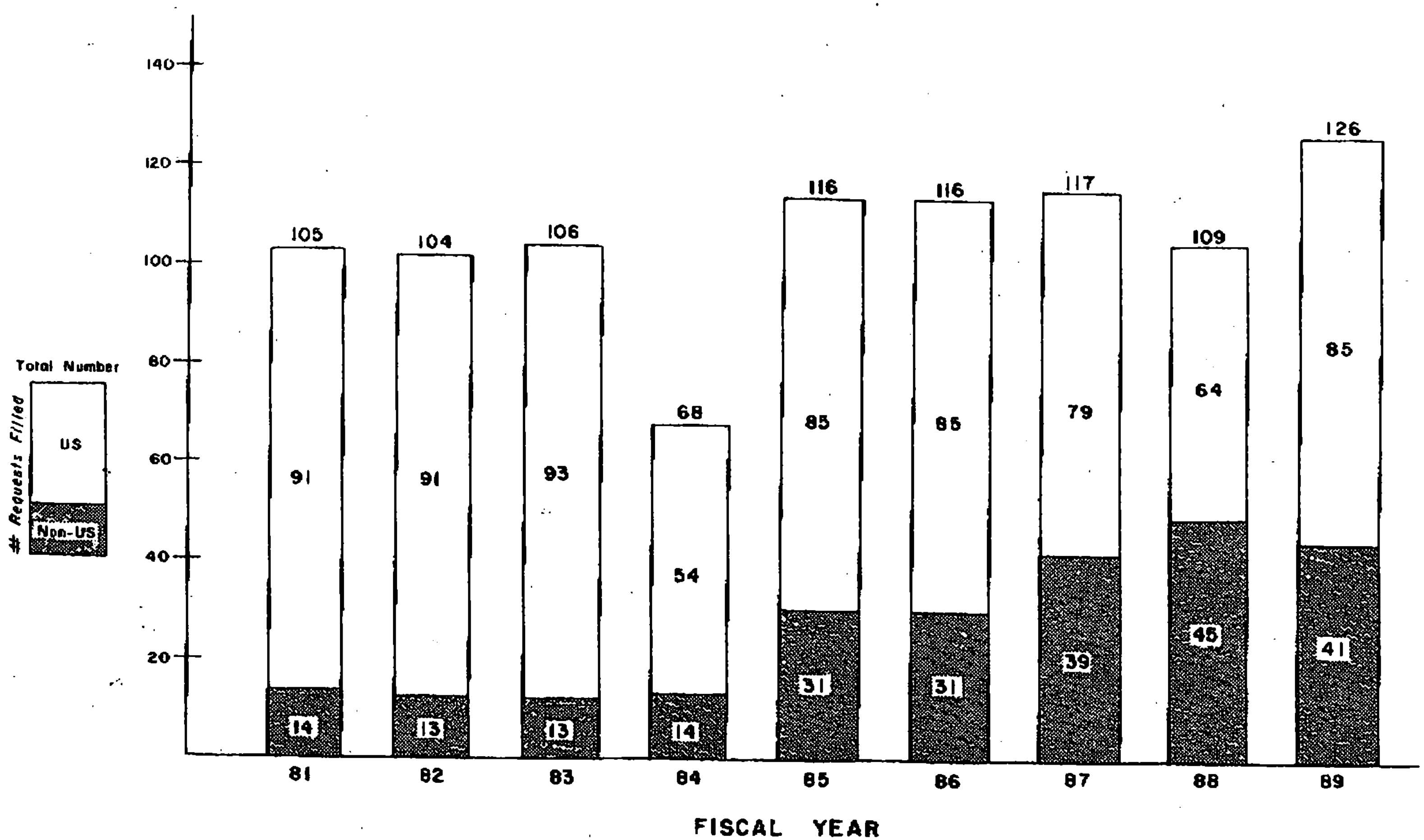
Recipients listed by Institution (US) or Country (non-US)

U.S.		#	% of Total Requests
ODP		21	16.5%
LDGO		8	6 %
HIG		6	5 %
UT		6	5 %
SIO		5	4 %
URI		5	4 %
OSU		2	1.5%
WHOI		2	1.5%
TAMU		1	1 %
RSMAS		0	0
UW		0	0
OTHER US*		22	23 %
	Total U.S.	85	67.5%
NON U.S.			
U.K.		9	7 %
FRANCE		8	6 %
ESF		6	5 %
JAPAN		6	5 %
FRG		3	2.5%
CANADA/AUSTRALIA		2	1.5%
OTHER**		7	5.5%
	Total non U.S.	41	32.5%
	Total Requests	126	100%

*Includes:

a) Requests filled for panel members or site proponents from non-JOI institutions
b) Requests filled for co-chiefs from non-JOI institutions
c) Requests filled for panels (such as PPSP)
d) Requests filled for post-cruise studies by non-JOI members of a site survey team

**Includes safety packages (one to each country)



Total Number
US
Non-US
Requests Filled
140
120
100
80
60
40
20
105
104
106
68
116
116
117
109
126
91
91
93
54
85
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64
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41
81
82
83
84
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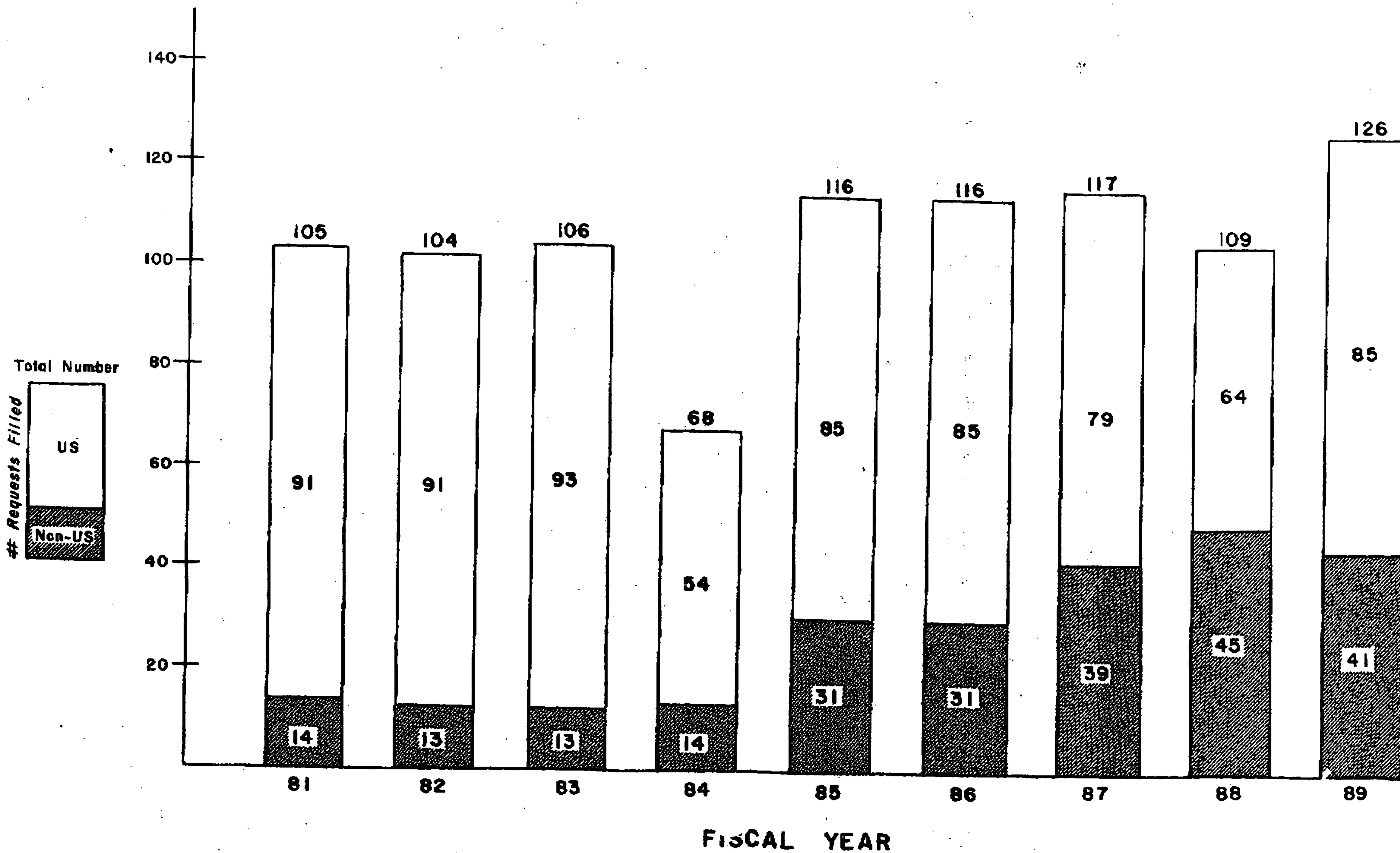
86
87
88
89
FISCAL YEAR



Total Number
US
Non-US
Requests Filled
140
120
100
80
60
40
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105
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68
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109
126
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FISCAL YEAR

APPENDIX VII

PRELIMINARY DATA BANK ASSESSMENT OF PROPOSALS NEWLY ASSIGNED TO SSP WATCHDOGS

290/E
Axial Seamount, Juan de Fuca Ridge

This is a proposal to drill a near-axis seamount to determine its origin and evolution. Two holes, one a bare-rock hole in the summit caldera and one on a sediment pond on the lower flank, are proposed for Axial Seamount on the Central Juan de Fuca Ridge. A third site is proposed on the adjacent Brown Bear Seamount for comparative studies with a mature, inactive near-axis volcano. The objectives are to characterize and sample the internal structure of an actively forming seamount, to sample the floor on which it is being built, to study the process of caldera formation and to investigate the subsurface processes associated with an active high-temperature hydrothermal system.

Plentiful seabeam, SeaMARC and diving data exist in the area. An MCS survey is needed to image the magma chambers and sub-surface alteration zones. (The proponents are attempting to organize such a survey). Additional survey needs (deep-tow magnetics and gravity, extended SeaMARC to include Brown Bear Seamount and the Helium Basin Scarp area) are discussed by the proponents in the proposal.

[This proposal, in general, is exceptional in its attention to and discussion of site survey matters.]

291/E
Drilling in the Marquesas Island Chain

This is a proposal to drill targets in the apron of the Marquesas volcanic chain at several locations, and at each place to volcanic basement. The drilling will address the development of the deep structure of the chain, the response of the lithosphere to volcanic loading and the compositions of lavas traced from the earliest stages of volcanic history to the latest extrusions on the islands. The sites are proposed along data collected by the *Washington* during cruise CROSSGRAIN 2 (SCS and seismic refraction). Seabeam data also exists in the area, though apparently the lines are not that closely spaced. Still needed (as of a year ago) are MCS, high-resolution bathymetry, heat flow, and geological sampling.

P.S. to Laurent: Is this proposal still active? Why wasn't it included in the CEPAC prospectus? Has Natland collected additional data during the last year?

308/E
Volcanically Reactivated Seamounts, Line Island Chain

The objective is to drill three holes (summit, flank and apron) at each of three areas in the Line Islands Seamount Chain. Recent SeaMARC II work in the area has shown that many of the seamounts are characterized by extrusive volcanism which post-dates formation of the sedimentary cap. The proponent argues that the seamounts have been reactivated by neo-volcanic activity. The proposed drilling will determine how and when volcanic reactivation took place.

The three proposed sites are at the Karin Ridge, an unnamed seamount referred to as MMS and Chapman Seamount. Good SeaMARC II data apparently exist at all sites. The quality of the seismic profiles is difficult to assess from the small copies in the proposal, but there at least appears to be fairly extensive coverage (for both 3.5 kHz and lower frequency records). Dredging data exist at all sites.

316/E
To Drill a Gas Hydrate Hole

This is a proposal to drill a gas hydrate hole somewhere to see how reliable pore-water geochemical analyses are as indicators of gas hydrate presence. The idea is to take closely spaced (every 5 meters instead of the customary 10 or 20) to make sure that hydrates are as uniformly distributed as we have concluded from past, more widely spaced samples. The closer spacing will ensure that any wiggles or peaks in chemical trends that might indicate non-uniform hydrate distribution will be picked up. The only site mentioned as a possibility for this proposal is Nankai Trough site 5, which perhaps would be included as part of the second leg of Nankai drilling. SSP approved NKT-5 at the March 1988 meeting.

Needless to say, the PPSP will be taking a hard look at any drillsite with these objectives.

271/E
Paleoceanographic Transect of the California Current

271/E proposes a series of latitudinal and longitudinal transects across the path of the California Current to: 1) develop models of how the California Current system has evolved in response to major polar cooling events and increased latitudinal thermal gradients in the late Neogene; 2) determine the width of the Current through time and the character of gradients both across and along the track of the Current; 3) determine whether fluctuations in the Current have responded in phase or out of phase with high latitude climate changes such as the mid-Miocene buildup of ice on Antarctica and the later Neogene initiation of glaciation in the Northern Hemisphere; 4) determine the onset and history of upwelling; and 5) search for patterns related to closing of major Pacific gateways such as the isthmus of Panama. The sites, which range from ~150 to 800+ meters in depth, are proposed mostly along reflection profiles collected by the *Lee* , the *Farnella* and assorted Scripps ships. For most of the sites, only line drawings of the reflection profiles are shown in the proposal. It is impossible to determine how good the data are from these figures, but there is reason to believe there may be some problems with data quality and quantity for at least some of these sites. There is no mention of planned site survey work in the future.

296/C
Drilling in the Ross Sea

Proposed drilling in the Ross Sea will address three topics: 1) Rifting history of the Antarctic plate and associated uplift history of the Transantarctic Mountains; 2) Mesozoic and Cenozoic Antarctic glacial history; and 3) Paleoceanography between the Indian, Pacific and Atlantic Oceans. Eight shallow (600 meters) holes and one deep (1100 meters) re-entry hole are proposed. Several thousand miles of MCS data have been collected in the Ross Sea area (by USGS, BGR, IFP and JNOC) and there is *Eltanin* SCS data in the area as well. All of the sites are proposed along the USGS and BGR lines. Gravity and magnetics also exist in the region. Piston cores and 3.5kHz would be useful, but it is unclear from the proposal whether or not these data exist.

315/F
Network of Permanent Ocean Floor Seismic Observatories

This proposal was submitted after a JOI/USSAC-sponsored workshop on broad-band downhole seismometers in the deep ocean. The objective is to establish a test site for repeated short term and long term downhole seismometer emplacements, in order to make high quality broad band noise measurements, record teleseismic events and test new broad band sensors and other long term deployment instrumentation. The workshop considered several locations for pilot experiments, including the Nazca-Pacific-Cocos triple junction, the outer rise seaward of any trench, the Hawaiian swell and the South America-Antarctica-Africa triple junction. This proposal suggests the Hawaiian swell is best. It requires a clean, stable hole with 50-100 meters of penetration into oceanic basement and a re-entry cone. The experiment would be conducted as an "add-on" to the Hawaii flexure proposal already being considered by JOIDES and is supported by the same data set. Given that the site-specific data in the area includes MCS, high resolution SCS, seabeam, 3.5 kHz and piston cores, it seems that the data is more than adequate, though the JOIDES proposal gives only an approximate site location.

297/C
The Pacific Margin of the Antarctica Peninsula

Seven holes of medium (~600 meters) penetration are proposed on the Pacific Margin of the Antarctic Peninsula to investigate: 1) the history of uplift and subsidence of the fore-arc resulting from the subduction of a spreading center (a la Chile Triple Junction); 2) fore-arc structure and thermal metamorphism from the same event: 3) the history of Antarctic Peninsula glaciation over the past 5 to 10 Ma; and 4) the mode of transport of terrigenous sediment to the deep sea during continental glaciation. The sites are proposed along existing British Antarctic Survey MCS data (only line drawings are shown in the proposal). Magnetics, gravity, bathymetry, 3.5 kHz and shallow sidescan also exist in the area. An additional MCS and ESP survey was carried out in March of 1988; as this proposal was submitted before then, they have not influenced the preliminary site selection. However, the sites have most likely been modified since the '88 survey.

APPENDIX VIII

UPDATED SSP SITE SURVEY MATRICES

E.P.R.

Site Survey Data Summary: 9° 40'N; Proposal 321-E			
SITE	**EPR - 1**	**EPR - 2**	
Latitude: **Longitude:**	9° 39.0' N 104° 16.4' W	9° 39.0' N 104° 15.5' W.	
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Fast-spreading ridge 2610 m Bare Rock 1000-1500 m	Fast-spreading ridge 2555 m Bare Rock 500 - 700 m	
TECHNIQUE			
1. High-res. SCS	Yes	Yes	
2. Deep pen SCS	Yes	Yes	
3. MCS+Vel.	Yes	Yes	
4. Seismic Grid	Site at MCS Line 559 and ESP 7	Site at MCS Line 559 and ESP 7	
5. Seis. Refrac.	ESP's	ESP's	
6. 3.5 KHz	Yes, also Scripps deep-tow sonar	Yes, also Scripps deep-tow sonar	
7. Multibeam Bathymetry	Yes, SeaBeam; JOI Synthesis data set	Yes, SeaBeam; JOI Synthesis data set	
8. High-res. Imagery	SeaMarc I, SeaMarc II, camera tows, and ARGO survey Nov. 1989.	SeaMarc I, SeaMarc II, camera tows, and ARGO survey Nov. 1989.	
9. Heat Flow			
10. Mag & Grav.	Yes	Yes	
11. Paleo cores Geotech cores			
12. Dredging	Yes, also DSDP Leg 54 and submersible sampling	Yes, also DSDP Leg 54 and submersible sampling	
13. Current Meter			

Site Survey Data Summary: Chile Margin Triple ...tion, 10/89			
SITE	**TJ - 1**	**TJ - 2**	**TJ - 3**
Latitude: **Longitude:**	46° 08.4' S 75° 48.2' W	46° 06.5' S 75° 41.4'W	46° 04.5'S 75° 33.5'W
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Inner trench slope 2320 m 800 m 825 m	Inner trench slope 1700 m 1000 m 800 m	Inner trench slope 1020 m 900 m 800 m
TECHNIQUE			
1. High-res. SCS	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes, Conrad 23-04	Yes, Conrad 23-04	Yes, Conrad 23-04
12. Dredging	Yes	Yes	Yes
13. Current Meter	---	---	---

Site Survey Data Summary: Chile Margin Triple Junction, 10/89			
	TJ - 4	TJ - 4B	TJ - 5
Latitu **Longitu...:**	46° 14.3'S 75° 47.4' W	46° 19.3' S 75° 44.6'W	45° 53.7'S 75° 51.3' W
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Inner trench slope 2905 300 m 400 m	Inner trench slope 2325 m 2000 + m 600 m	Inner trench slope 2760 800 m 825 m
TECHNIQUE			
1. High-res.SCS	Digital watergun, Conrad 29-01	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes	Yes, Conrad 23-04	Yes, Conrad 23-04
12. Dredging	Yes	Yes	Yes
13. Current Meter	---	---	---

Site Survey Data Summary: Chile Margin Tripl... ction, 10/89			
SITE	TJ - 6	TJ -	TJ - 8
Latitude: **Longitude:**	45° 43.3'S 75° 39.2' W	46° 31.0' S 75° 49.0' W	46° 43.0'S 75° 47.0'W
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Inner trench slope 1340 m 1000 m 1050 m	Inner trench slope 1280 m 500 m 550 m	Inner trench slope 2500 m 700 m 750 m
TECHNIQUE			
1. High-res.SCS	Digital watergun, Conrad 29-01	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes	Yes, Conrad 23-04	Yes, Conrad 23-04
12. Dredging	Yes	Yes	Yes
13. Current Meter	---	---	---

CHILE TJ - 2

Site S. Data Summary: Chile Margin Triple Junction, 10/89			
SITE	TJ - 9	TJ - 10	TJ - 11
Latitude: **Longitude:**	47° 11.5'S 75° 47.0' W	47° 45.5'S 76° 13.0'W	47° 45.0' S 76° 01.0'W
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Inner trench slope 1900 m 1200 m 700 m	Inner trench slope 2025 m 1000 m 600 m	Inner trench slope 800 m 900 m 910 m
TECHNIQUE			
1. High-res. SCS	Digital watergun, Conrad 29-01	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes	Yes, Conrad 23-04	Yes, Conrad 23-04
12. Dredging	Yes	Yes	Yes
13. Current Meter	---	---	---

Site Survey Data Summary: Chile Margin Triple Junction, 10/89			
SITE	TJ - 12	TJ - 13	TJ - 14
Latitude: **Longitude:**	47° 44.0'S 75° 50.0'W	44° 27.0'S 75° 41.0' W	44° 26.0' S 75° 31.0' W
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Inner trench slope 1800 m 500 m 525 m	Inner trench slope 2050 m 4000 m 800 m	Inner trench slope 1125 m 1000+ m 700 m
TECHNIQUE			
1. High-res. SCS	Digital watergun, Conrad 29-01	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03	Digital watergun, Conrad 29-01; 23-04; Conrad 18-03
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP	Conrad 29-01; 240-channel CDP Line , S.P.	Conrad 29-01; 240-channel CDP Line , S.P.
4. Seismic Grid	Yes	Yes	Yes
5. Seis. Refrac.	---	---	---
6. 3.5 KHz	Yes	Yes	Yes
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets	100% SEABEAM coverage, Conrad 29-01	100% SEABEAM coverage, Conrad 29-01
8. High-res. Imagery	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36	GLORIA survey of region, Darwin 36
9. Heat Flow	Yes	Yes	Yes
10. Mag & Grav.	Yes	Yes	Yes
11. Paleo cores Geotech cores	Yes,		
12. Dredging	Yes		
13. Current Meter	---	---	---

CHILE TJ #5

SITE	TJ - 15		
Latitude: **Longitude:**	44° 25.0'S 75° 23.0'W		
Environment: **Water Depth:** **Sed. Thickness:** **Penetration:**	Inner trench slope 900 m 1200 m 700 m		
TECHNIQUE			
1. High-res. SCS			
2. Deep pen SCS			
3. MCS+Vel.	Conrad 29-01 240-channel CDP		
4. Seismic Grid	Yes		
5. Seis. Refrac.	---		
6. 3.5 KHz	Yes		
7. Multibeam Bathymetry	100% SEABEAM coverage of drilling targets		
8. High-res. Imagery	GLORIA survey of region, Darwin 36		
9. Heat Flow			
10. Mag & Grav.	Yes		
11. Paleo cores Geotech cores			
12. Dredging			
13. Current Meter	---		

SITE SURVEY DATA SUMMARY : AREA: NW Pacific Neogene

TARGET SITE:	NW 1	NW	NW·4
latitude: longitude: region:	46°.6 N 161°.8 E N Pacific	41° 30 N 178° 18 W N. Pacific	44°.45 N 168°12' W N. Pacific.
Environment: water depth: sed. thickness: penetration:	D Ocean thin sed 5530m (0.25 twt) 400m	D. Ocean thin sed. 5800 m (0.1 sec). 300 m	D Ocean thin sed. 5685 m (0.1 sec) 300 m
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	Vema -21 8/27/65 04002 (low quality).	RV S.P. Lee 1982 183/0129 (low quality).	RV. Lee 1978 274/00002 (low quality
(b) deep penetration	"yes" (old small airgun)	"yes" (enough).	"yes" (enough).
3. MCS, including velocities	no	no	no
4. Crossing Seismic Lines or Survey Grid	?	?	?
5. Seismic Refraction	no	no	no
6. 3.5 kHz	needed.	needed.	needed.
7. Multi-beam Bathymetry	no	no	no
8. Side Scan Sonar a. Shallow Source	no	no	no
b. Deep Towed Source	no	no	no
9. Heat Flow	no	no.	no
10. Magnetics and Gravity	?	?	?
11. Coring	yes	no?	no
12. Dredging	no	no	no
13. Photography	no	no	no
14. Current Meter (for bottom shear)	no.	no	no.

UPDATE: 17/10 - 89. OBS positions moved
NO CHANGE OF PM1A

SITE SURVEY DATA SUMMARY : AREA: Detroit Seamount

TARGET SITE	DS 1	DS 2	DS 2
latitude:	51° 10' N	51° 07' N	?
longitude:	167° 40' N	167° 59' E	
region:	N. Pacific	N. Pacific	N. Pacific.
Environment:	Seamount	Seamount.	Seamount
water depth:	2400 m	3100 m	3800 m
sed. thickness:	500 m	500 m	600 m
penetration:	550 m.	550 m	650 m.
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	RNDB SIO Aug '88 USGS lines	RNDB SIO Aug '88 USGS lines.	RNDB SIO Aug '88 USGS lines.
(b) deep penetration	?	?	?
3. MCS, including velocities	no	no	no
4. Crossing Seismic Lines or Survey Grid	yes ?	yes ?	yes ?
5. Seismic Refraction	no	no	no
6. 3.5 kHz	?	?	?
7. Multi-beam Bathymetry	yes.	yes	yes
8. Side Scan Sonar a. Shallow Source	no	no	no
b. Deep Towed Source	no	no	no
9. Heat Flow	no	no	no.
10. Magnetics and Gravity	?	?	?
11. Coring	yes	yes	yes
12. Dredging	no	no	no
13. Photography	no	no	no
14. Current Meter (for bottom shear)	no.	no	no.

UPDATE: 17/10-89.

SITE SURVEY DATA SUMMARY : N.E PACIFIC.

TARGET SITE:	PM 1A		
latitude:	54° 21.9 N		
longitude:	148° 27.3 W		
region:	NE Pacific.		
Environment:	Seamount C.		
water depth	3660		
sed. thickness:	310		
penetration:	360		
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	yes		
(b) deep penetration	yes		
3. MCS, including velocities	no		
4. Crossing Seismic Lines or Survey Grid	yes		
5. Seismic Refraction	no		
6. 3.5 kHz	yes		
7. Multi-beam Bathymetry	no		
8. Side Scan Sonar a. Shallow Source	no		
b. Deep Towed Source	no		
9. Heat Flow	no		
10. Magnetics and Gravity	yes		
11. Coring	yes		
12. Dredging	no		
13. Photography	no		
14. Current Meter (for bottom shear)	no		

UPDATE: 17/10 - 89. (no changes)

To: Dr. Robert Kidd
c/o Dr. Heinrich Meyer, BGR, Hannover, F.R.G.

From:
Audrey Meyer,
ODP

DRILLING ENVIRONMENT (TARGET)

	DATA TYPE	A Paleoenvironment or Fan (APC/XCB)	B Passive Margin	C Active Margin	D Open Crust (>400 m sediment cover)	E Open Crust (<400 m sediment cover)	F Bare-rock Drilling	G Aseismic Ridge, Plateau or Seamount	MIT Guyot	Shatsky Rise	Bonin Backarc
1	Deep Penetration SCS	(X)	(X)	(X)	X or 3			(X)*		✓	✓
2	High Resolution SCS	X	(X)	(X)	(X)	X	X	X	✓		
3	MCS & Velocity Determination		X	X	X or 1		(X)*	(X)*			✓
4	Grid of Intersecting Seismic Lines	(X)*	X	X	(X)*	(X)	(X)	(X)*	✓	✓	✓
5	Refraction		(X)*	(X)*	(X)*	(X)	(X)*	(X)*			
6	3.5 kHz	X	X	X	X	X	X	X	✓	✓	✓
7	Multi-beam Bathymetry	(X)*	(X)*	X or 8	(X)	(X)*	X	(X)*	✓		✓
8	High Resolution Imagery	(X)*		X or 7			X	(X)*			✓
9	Heat Flow		(X)*	(X)*		(X), H	(X), H				
10	Magnetics & Gravity		(X)	(X)	(X)*	(X)*		(X)	✓	✓	✓
11	Cores: Paleoenvironmental/geotechnical	X	(X), R	(X), R	R	H, H	X	(X)*, R		✓	
12	Dredging					(X)*	X	(X)*	✓		✓
13	Current Meter (for bottom shear)	(X)*	(X)*	(X)*			(X)*	(X)*			

plus Alvin dives and bottom camera photos!

X = Vital
(X) = Desirable
(X)* = Desirable, but may be required in some cases
R = Vital for re-entry sites
H = Required for high temperature environments

Table 1. Site survey requirements for each type of drilling objective (TARGET).

Dear Rob — We're wrapping up a very successful Leg 132 pre-cruise meeting, with good engineering targets identified at all three locations. I'll be glad to tell you more about it when I see you in a couple weeks. REGARDS,
Audrey

DRAFT COPY

OCEAN DRILLING PROGRAM

SITE SURVEY PANEL MINUTES

Naniloa Hotel
Hilo, Hawaii

April 10-12, 1989

Present :
Greg Mountain* *(Chairman, USA)*
Fred Duennebier* *(USA)*
Rob Kidd* *(UK)*
Birger Larsen* *(ESF)*
Steve Lewis* *(USA)*
Keith Louden* *(Canada/Australia)*
Heinrich Meyer* *(Germany)*
Guy Pautot **(France)*
Kiyoshi Suyehiro* *(Japan)*
Mahlon Ball *(PPSP)*
Carl Brenner *(Data Bank)*
Suzanne O'Connell *(TAMU, alt. for A. Meyer)*
Laurent d'Ozouville *(JOIDES office)*
Tom Shipley *(PCOM, alt. for J. Watkins)*
Doug Bergensen *(HIG)*

* *panel members*

SITE SURVEY PANEL

Hilo, Hawaii
April 10-12, 1989

MINUTES

I PRELIMINARY MATTERS

The meeting began shortly after 9 AM. Chairman Greg Mountain welcomed returning panel members and liaisons, and introduced new members Keith Louden, Guy Pautot, and alternate liaisons Suzanne O'Connell and Tom Shipley. Host Fred Duennebier welcomed the attendees to Hawaii, introduced guest Doug Bergensen, and outlined logistical details and events that have been arranged. There were no changes to the minutes from the previous meeting. Ship schedules were collected (Appendix A1-A__). Ralph Moberly stepped into the meeting room to request that, in addition to the four programs already planned, SSP be prepared to discuss "Atolls and Guyots" and "Old Pacific Crust" during the afternoon's joint session with CEPAC-DPG. Tom Shipley requested time be allotted towards the end of the meeting to present the survey opportunities provided by 3-D seismic techniques. Greg Mountain read a letter from Ralph Moberly (March 23) addressed to all panel chairpersons, requesting comments on ODP benefits and accomplishments. Discussion of Mountain's response, not yet delivered, was inserted into the agenda.

II REPORTS

1. PCOM (Tom Shipley)

Due to delays in the development of the GeoProps tool, the Nankai drilling program scheduled by PCOM during its December meeting in Miami may be postponed. Earliest readiness for this critical technology is late May, 1990. Though the experiment to devote Leg 124E to engineering tests proved valuable, it may not be repeated by a similar Leg 129E, as was scheduled at the December PCOM meeting. Because of these changes, it is possible that the "Atolls and Guyots" plus "Old Pacific" programs may be inserted into the 1990 schedule; these and other options will be discussed at the May PCOM meeting.

PCOM continues to be concerned about the rate at which both the Initial Results and Scientific Results volumes are being published;

significant changes regarding this issue will be discussed at the next meeting. Laurent d'Ozouville mentioned that at the March meeting of IHP, changes were made in the schedule of post-cruise meetings: paleontologists will now be urged to meet 6 months after a cruise to firm up their biostratigraphies; the entire ship's science staff will assemble for its traditional post-cruise meeting 6 months after that. Laurent pointed out further that IHP has circulated a questionnaire regarding publication issues to 600 members of the marine science community; about 25% have responded.

PCOM notes that with this years 2% rise in the producers' price index there will be a commensurate rise in the operational costs of the JOIDES Resolution.

2. JOIDES (Laurent d'Ozouville)

Of the fifteen proposals deposited in the JOIDES office since our last meeting in October, six represent entirely NEW drilling programs. A lengthy discussion followed concerning the time and route by which drilling proposals are delivered to SSP for assessment of survey adequacy. Laurent presented a graphic outline of the sequence of events between the time of proposal deposit and actual drilling (**Appendix** __). Of concern to members of SSP is that in this scenario they will be furnished with programs to assess only after all thematic panels have completed their initial evaluations, returned them to PCOM, and PCOM has sorted out the various recommendations. This process may take considerably longer than the ~6 months implied by this diagram. Furthermore, it is likely that specific site survey recommendations may only be possible to make after DPGs have completed their tasks of picking exact site locations. Consequently, panel members expressed concern that site survey assessments may in some cases flag shortfalls long past the time at which remedies can be made.

It was pointed out that an uncertain (but probably significant) number of approved programs have gone undrilled and remain in the system as "shelved" proposals. Any of these may be resurrected and placed onto the drilling schedule as interest is rekindled by: 1) technological developments not available in the past, 2) redefinition of thematic interests, or 3) geographic proximity to a target region passed up previously for any of a number of other reasons. That such shelved programs satisfied site survey standards several years ago does not mean that each should automatically by-pass present-day SSP review. After much discussion it was agreed that SSP would aim to operate under the schedule as laid down in the graphic outline of the JOIDES Journal "Guidelines" issue (Dec '88), but would put in place a number of procedures aimed at tracing new and resurrected proposals:

ACTION: JOIDES liaison Laurent d'Ozouville is asked to bring to each SSP meeting information regarding old drilling programs resurrected since the previous panel meeting.

The JOIDES office presently distributes copies of new proposals to the Data Bank at the same time that it sends copies to each of the thematic panels. Until the influx of new and revised proposals becomes prohibitively large,

ACTION: Data Bank Manager Carl Brenner will log each proposal as it arrives from the JOIDES office, conduct a cursory assessment of data availability (NOT a complete archival search), and present this list of new arrivals at each meeting of the SSP.

The SSP Chairman will assign watchdogs to be responsible for overseeing the progress of both these resurrected AND new proposals through the review system.

3. Annual Chairpersons Meeting (Greg Mountain)

Issues discussed at the annual panel chairpersons meeting in Miami were reported by chairman Greg Mountain. Progress on the "Long Range Drilling Plan" was presented in Miami by lead author Nick Pisias. When complete, this document will represent a "sales" brochure to international community for drilling past FY93. The final draft is due for submission to PCOM in May '89; discussion among the non-US partners will continue through Oct '90, to be followed by presentation to the US Science Board in Oct '92. Nick pointed out the lack of justification for both a permanent alternate platform and for deep riser drilling. Larry Mayer noted the apparent inconsistency that despite the widely recognized need for developing new engineering technologies that will be required past '92, the budget is fixed from now until then in the support of science. A total of sixteen drilling issues are described in the long range plan; the panel chairpersons commented that grouping under a small number of themes would be helpful. Several renditions of these groupings were discussed, with a leading foursome as follows:

> "*Structure and Composition of Oceanic Crust and Mantle* "
> "*Causes and Effects of Oceanic Climate and Variablility* "
> "*Fluids in the Lithoshpere* "
> "*Dynamics, Kinematics, and Deformation of the Lithosphere* "

Aspects of the new panel structure were discussed in Miami. Those present endorsed the use of "double liaisons" among most thematic panels. Features of Detailed Planning Groups (DPGs) were identified as follows: they will be regional, ad-hoc, short-lived groups of experts drawn from a range of places both within and perhaps from outside the drilling community; they will likely include drilling proponents. Their recommendations will feed back to the specific thematic panel that formed them, *not* to PCOM. In essence, PCOM will establish drilling schedules, thematic panels will determine program rankings, and DPGs will select specific drill site locations.

Considerable discussion developed in Miami regarding problems concerning the publication of both the Part A (Initial Reports) and Part B (Scientific Results) volumes of ODP reports. Highlights of possible changes included: 1) shorten deadlines for Part A and/or for Part B; 2) release participants to publish outside of Part B before they submit their ODP manuscripts; and 3) eliminate Part B entirely, and periodically gather reprints into thematic issues.

CEPAC chairman Dave Rea reported in Miami that engineering development will be essential to the success of many CEPAC objectives. He noted further that engineering tests scheduled for 124E will not evaluate the following: improved recovery in chert/chalk sequences (chert/clay is to be penetrated on Leg 124E); reef limestone; and high temperature environments.

4. TAMU (Suzanne O'Connell)

A. Leg 124E

The results of Leg 124E were summarized (**Appendix** __). If additional engineering tests are conducted in the future, it is hoped that, as was done with 124E, SSP can provide assistance in the selection of all sites. The panel emphasizes the wisdom of returning to previously completed drill sites to minimize the chance of encountering unforseen hole conditions that can only complicate the already difficult task of evaluating the performance of new drilling technolgies.

B. Underway Geophysics

In the continuing discussion between TAMU and SSP concerning underway geophysics aboard the JOIDES Resolution, a response to our last assessment of capabilities and future needs was presented (**Appendix __**). Upon inquiry from the panel, Suzanne stated that the operator emphatically holds the point of view that conducting reconnaissance geophysical surveys aboard the Resolution should not pre-empt the primary task of recoverying cores. Effort should be expended to collecting opportunistic data between sites, but some question remains as to the need to prepare real-time navigation.

Steve Lewis expressed the view that site approach surveys, though short in time, are absolutely essential and require real time navigation and data assessment. He pointed out further that experience on Leg 124 showed that the re-location of the sonar dome forward of the moon pool has resulted in excellent 3.5 KHz records up to 8 knots, with rapid deterioration above that speed. Fred Duennebier considered that there exists little chance for additional improvement without great expense.

C. Mini-Cone Deployment

Contrary to general opinion, deployment of the free-fall "mini-cone" is a complex task that can take 18 hrs or more to complete. The TAMU engineers point out that in some cases pulling clear of the bottom and offsetting to a new hole may entail less time.

ACTION: Re-iterating its request from the last meeting, SSP asks that Jack Baldauf prepare a history of mini-cone deployment and its performance in various surficial sediment types and forward this information to Rob Kidd.

5. PPSP (Mahlon Ball)

Mahlon first responded to an SSP reguest from its Swansea meeting that JOIDES distribute to proponents a safety guidelines package as new proposals arrive. He pointed out that the ________ guidelines of PPSP were now included in both the new JOIDES Journal Guidelines Issue and in the information package sent out to potential proponents by the JOIDES office. He distributed a review paper on hydrocarbon shows in cores taken by DSDP and ODP (Katz, B. and K. Emeis, 20th Annual OTC, May 2-5, 1988, pp. 423-430), and noted that PPSP has arranged with TAMU that the review data is regularly updated

(I'm rather fuzzy about what transpired re: SSP request that JOIDES distribute to proponents a safety guidelines package as new proposals arrive. a) did Laurent pass this request on to PPSP at their Hawaii mtg? b) was there a PPSP reponse? c) was there any action taken?)

Similar to the summary of hydrocarbon shows in cores taken by DSDP and ODP (Katz, B. and K. Emeis, 20th Annual OTC, May 2-5, 1988, pp. 423-430), a summary of gas occurences is being prepared by Martha von Bremen at TAMU. This information was requested by PPSP and will be delivered to that panel at an upcoming meeting.

Mahlon reported that all sites have been approved for drilling in the Japan Sea (both Legs 127 and 128). He added that the safety review for both Japan Sea legs went smoothly, due in large measure to the excellent preparation by the co-chief scientists. SSP feels this was due in part to the cooperation that developed between the site proponents, PPSP and SSP during the review process, and the resulting effort made by all concerned that potential safety concerns be dealt with as soon as they were recognized. We look forward to future programs proceeding through the review process as well.

Because of safety concerns for the Cascadia program, a preliminary examination was conducted during the last meeting of PPSP. Numerous BSRs are observed in profiles offshore Vancouver, but PPSP feels that a properly designed survey grid can yield drillable targets. By contrast, no BSRs are known from the Oregon margin. H2S occurences are known (a potential hazard for drill floor fires if found as a free gas), but occur only in the dissolved phase.

6. DATA BANK (Carl Brenner)

The FY'90 budget contains a 4% increase over last year, amounting to $216K (total). The full-time secretary left the Data Bank last September; many clerical tasks are now handled by a recently purchased Macintosh. The pending budget request includes 4 mos. per year for a computer operator/secretary to assist in clerical matters as well as in maintaining the digital data base of Data Bank archives.

Carl reviewed an analysis (prepared with help from Jeff Fox, **Appendix __**) of reproduction costs of the EPR synthesis. It seems likely that these costs prohibit the wide distribution of additional hard copies. Undoubtedly the atlas will be a valuable guide for developing a final drilling program on the EPR, but SSP points to the need to investigate further other means of distributing this survey information. One suggestion is on CD-ROM.

In response to SSP's request at the last meeting, Carl has contacted Alan Cooper and requested submission of reprocessed JOIDES Resolution seimsic lines collected in Prydz Bay during Leg 120.

III SITE SURVEY STATUS OF UNSCHEDULED PROGRAMS

1. Cascadia (Keith Louden)

Two drilling programs comprise the composite Cascadia program. No prioritization by the thematic panels has yet been determined. PPSP has conducted an early pre-site survey review.

Ten drill sites are proposed on the Oregon margin. In contrast to the active margin targets off Japan and Barbados where vertical heat loss/fluid flow gradients and fine-grained lithologies are found, respectively, these off Cascadia are designed to yield information about lateral contrasts of these properties in coarse-grained sediments. A considerable amount of survey data exists in the region (much of it summarized in an OMD Atlas), including recently declassified SeaBeam bathymetry. With the exception of MCS profiles, ample information is available for site selection. MCS data will be collected on the Washington this summer. Chief Scientist Vern Kulm contacted Carl Brenner for recommendations regarding features of this survey that would satisfy SSP requirements. After panel discussion, Keith Louden drafted a letter as an SSP response (**Appendix ___**, which should include strong emphasis on the need for 3.5 KHz data, the value of strike lines, the efficiency of hi-res SCS, and recommend sound sources.)

Five sites have been proposed for drilling on the Vancouver margin. The very complex structural fabric of the Oregon margin calls for detailed seismic control in that region; equally detailed control is needed on the Vancouver margin because of the presence of BSRs. One site is intended to penetrate the base of the clathrate zone, and will require an especially detailed near-site survey. An appreciable amount of data exists at present, but for adequate site selection and safety consideration, additional MCS profiles are needed. These will be acquired this summer by an industry vessel. Roy Hyndman has requested SSP input into the design of this survey program. After panel discussion, Keith Louden agreed to draft a letter in response (**Appendix** ___, which again should include strong emphasis on the need for 3.5 KHz data, the value of strike lines, the efficiency of hi-res SCS, and recommend sound sources.)

2. EPR Bare Rock (Steve Lewis)

The only new development since the last meeting is that Dan Fornari has been funded to conduct an Argo cruise at the 9° N site in the Fall of '89.

3. Sedimented Ridges (Keith Louden)

Two drilling legs are proposed to investigate fluid flow, crustal alteration and metallogenesis in spreading centers buried by sediment. Two candidate regions are under consideration: Middle Valley and Escanaba Trough. Both areas have an excellent data base of heat flow information. As outlined in the CEPAC prospectus, additional side scan and SeaBeam data would be useful, and SSP looks forward to reviewing final sites with this data in hand.

To gain better understanding of the safety as well as engineering hazards of drilling in high temperature environments (such as in Middle Valley) Lou Garrison has called a meeting of engineers, industry experts and proponents, that is assembled in Dallas this week.

ACTION: Keith Louden will contact Sedimented Ridges proponent Earle Davis requesting information pertinent to SSP needs regarding: 1) Davis' upcoming cruise to Middle Valley, and 2) results of the working group meeting to be held in Ottowa this summer.

4. Eastern Equatorial Pacific (Heinrich Meyer)

The only new development since the last meeting is that Nick Pisias has been funded to conduct a hi-res SCS survey cruise in the summer of '89.

5. Chile Triple Junction (Steve Lewis)

The one-leg, 5-hole drilling proposal given preliminary review at the last meeting has since been augmented by a second leg of 12 additional targets. The original set are largely confined to the region north of the active ridge/trench collision; the latter is within the collision zone and south of it. Together these sites could provide age and lithologic control on features of plate subduction where plate kinimatics and land geology are already relatively well known. Since our last meeting the entire region has been covered in a GLORIA survey by Graham Westbrook. Preliminary, migrated sections have been processed at L-DGO, and processing of the MCS data set is progressing. SSP looks forward to the presentation of a complete data package.

6. Hawaii Flexure (Guy Pautot)

There are three objectives to drilling immediately north of Hawaii: 1) to constrain the subsidence history of the lithosphere under the effect of the load imposed by the island chain; 2) to evaluate the role of large-scale mass wasting in the region; and 3) to determine the age of volcanism on the peripheral bulge. Five holes are proposed. Three difficulties are recognized at present: 1) lithologies are expected to be red clays and volcaniclastics without appreciable biogenic content needed for biostratigraphic control; 2) mass wasting dominates much of the section and may be very complex; and 3) tracing and seismic resolution of key horizons into the strucutral moat north of Hawaii is severely limited by the chaos of mass flow deposits. SSP is most concerned with the last of these three. John King recently completed a pilot study of magnetostratigraphy from piston cores in the area, which Guy Pautot summarized and showed that it holds good potential. Nonetheless, the obviously large extent of mass flows shown in a Washington seismic profile submitted to the panel by Bob Dietrich suggests that without occassional biostratigraphic control, magnetostratigraphy will provide only limited benefit to the stated drilling objectives. While this is clearly a problem, SSP's main concern is that seismic data that it has seen does not indicate adequate seismic resolution. The USGS has collected SCS data along the GLORIA tracks in this region, and consequently:

ACTION: Carl Brenner will contact Dave Clague and Bill Normark to request USGS SCS data from north of Hawaii be

deposited in the Data Bank. Furthermore, Carl will notify the drilling proponents of SSP's perceived importance of this new data source, and urge that they examine these and all other profiles to identify the lines of highest acoustic resolution.

7. Lower Crust at 504B (Carl Brenner)

Nothing new has developed since our last meeting.

8. Loihi Seamount (Fred Duennebier)

Nothing new has developed since our last meeting.

III STATUS OF PROGRAMS DISCUSSED IN JOINT SESSION

1. Ontong-Java Plateau (Heinrich Meyer, Tom Shipley)

Results of the recent Washington cruise across the Ontong-Java Plateau were reviewed, and all survey data types deemed "vital" by SSP to meet the Neogene objectives are available (**Appendix** __). Preliminary site locations have been designated. The survey participants Larry Mayer, Tom Shipley and Jerry Winterer did an excellent job making these data available for site survey assessment in such short time.

Several SSP members questioned the confidence with which seismic correlations can be made between the Plateau and Nauru Basin. Despite the efforts of the survey investigators to collect numerous profiles that transect the 3500-4000 m water depth range, correlations are very difficult to make because of abrupt thinning of depositional units within a region of complex onlapping relationships.

Paleogene to Mesozoic sequences and basement itself are not imaged well beneath a high amplitude chert reflector that occurs across the top of the Plateau. Results at Site 289/586 showed a 30 m.y. hiatus across the K/T boundary; existing data suggests the pre-Neogene section thickens towards the NW, but the Washington water gun profiles are neither well distributed geographically, nor of sufficient penetration to identify a significantly better site. The panel is hopeful that when the 300 cu. in. airgun profiles collected on this same Washington cruise are processed that a clearer definition of pre-Neogene targets will be available for specific site designation.

SSP noted that there is a possibility that HIG holds additional data on the Plateau (dating from ~1975, Kroenke leg).

ACTION: Fred Duennebier will ask Loren Kronke to check on the existence and suitability of HIG seismic profiles across the Ontong-Java Plateau. (Done. Data now in ~~Dick~~ Bill Sliter's hands. FKD)

Also noted was a Kronke proposal for a 1990 cruise that could collect relevant data. Given the short lead times, SSP will track these developments should basement objectives continue to be of interest.

2. North Pacific Neogene (Birger Larsen)

As a general comment for all of the North Pacific Neogene sites, SSP encourages the proponents to prepare alternate as well as prime sites. This effort of preparing what appears to be redundant site selection at present may pay off at sea by providing backup sites that could yield more complete stratigraphic sections should hiatuses be found unexpectedly at the primary sites.

A. Detroit Seamount

The shallow site near 2400 m has sufficient survey data for specific site location; as a cautionary note, however, the proponents ought to recognize the local complexity in topography at this location. SSP feels that considerable work remains on the proper selection of the accompanying deep site. Care must be taken to identify and then avoid slumps that originated on the flank of the the seamount. SSP suggests the proponents consider moving the deep site to Meiji Drift, thereby avoiding mass-wasting deposits and possibly recovering a thicker, more expanded section (but possibly diluting the aeolian input, which is another objective). Whether below Detroit Seamount or within Meiji Drift, however, location of this deep site will benefit from examination of the extensive USGS data set that includes GLORIA, SCS and 3.5 KHz data. Consequently,

ACTION - Carl Brenner will contact Andy Stevenson and request that the USGS data in the vicinity of Detroit Seamount and Meiji Drift be submitted to the Data Bank.

B. Patton Seamount

Numerous E-W crossings of this feature provide adequate single-beam topographic control, piston core analyses, magnetics and SCS.

C. NW Sites 1,3,4

(DISCUSSIONS OF NW 1, 3 + 4 MAY BE MIXED UP)

NW1 and 4 are located on 20-yr old, single channel data of barely acceptable quality. Drilling objectives would be jeopardized if NW1 was drilled into the sedimentary apron of a nearby seamount seen on the Vema-20 profile across the target site; consequently, SSP emphasizes that a short pre-site survey will provide especially valuable navigational control that was not available when these data were collected. Similarly, basement relief near NW4 is locally variable, and a pre-site survey is strongly advised. NW3 is located with more recent seismic data that was not available for examination at this meeting.

3. Bering Sea (Birger Larsen)

A. Umnak Plateau

An exceptionally complete set of data has been collected by the USGS, and includes MCS, 100% GLORIA coverage with coincident SCS, magnetics, gravity, piston cores and heat flow measurements. SSP looks forward to the proponents assembling and synthesizing these data during their preparation of a complete drilling proposal. Thus,

ACTION - Carl Brenner will contact Andy Stevenson and request access to the USGS data in the vicinity of Unmak Plateau and Sounder Ridge.

B. Sounder Ridge

The same complete catalogue of data as at Umnak Plateau exists across Sounder Ridge, with the exception of a grid of MCS profiles defining the 3-D structure of the latter, comparatively small feature. Andy Stevenson reported that existing SCS data can image the entire section and supply this control. Because of safety concerns, the proponents ought to use these data to include total sediment thickness maps in the preparation of their final drilling package.

C. Shirshov Ridge

The sole SCS line collected by the USGS across this feature is of good quality, but its singularity is unacceptable from an SSP perspective. (Furthermore, the line illustration examined by SSP showed 2.5 seconds to estimated TD at the proposed site, while only 400m penetration was listed in the prospectus.) The Russians appear to have the data (both MCS and dredges) required for survey definition of this drilling target, and thus

SSP CONSENSUS - The Panel urges PCOM to, once again, request that EXCOM do whatever is proper to ensure a speedy return of the the Soviet Union to ODP.

4. Atolls and Guyots (Fred Duennebier, Doug Bergensen)

A. Marshall Islands

17 guyots were dredged and surveyed with SCS, 3.5 KHz, SeaMarcII, gravity and magnetics on a Moana Wave cruise in August, 1988. Three preliminary sites at Sylvania Guyot and another three at Harrie Guyot were presented to the panel. In both locations the sites are designed to sample the reef, lagoon and basin-floor apron. The drilling goals are to better determine reef anatomy, date the latest reef drownings, determine the chronolgy of volcanic events and sea level changes, and measure paleolatitude at the time the volcanic edifice was built. Seismic quality at the apron sites appears to be of limited use in: 1) imaging debris shed from the adjacent guyot, and 2) providing a seismic tie back to this supposed source during periods of lowstand in global sealevel.

Adequate data is available for the site proponents to develop a comprehensive drilling plan. SSP draws attention to the value of shipboard magnetics in distinguishing betweeen volcanic features and reef buildups, both of which can have similar seismic, topographic and SeaMarcII character.

B. Central Pacific Guyots

22 guyots were surveyed with SCS and SeaBeam on the Washington in January, 1989. Dredges and SASS bathymetry had been collected previously. In contrast to those of the Marshall Islands, several of these guyots all appear to have survived through

the Cretaceous and built up thick reef sequences. SSP awaits the processing of all data from this recent cruise and the preparation of a complete drilling package.

C. Ogasawara Plateau

SCS profiles, multibeam bathymetry and MCS lines across Ogasawara Plateau reported in the CEPAC prospectus were brought to this meeting by Suyehiro, but detailed site and proposal information is lacking. Consequently,

ACTION: Carl Brenner will assemble in the Data Bank all available data across Ogasawara Plateau, forward it to watchdog Fred Duennebier who will evaluate the data and present an assessment at the next meeting.

5. Old Pacific (Greg Mountain, Tom Shipley)

Sonobuoy velocity gradients plus possible acoustic layering raise concern about the depth and nature of basement in the East Marianas Basin. Basement at Pig3 and 4 is adequately revealed in the re-processed FM35-12 MCS data. Results of the Suroit cruise (late summer '89) will be needed to evaluate Pig 1, 2, and the occurrence and distribution of any shallow (~30msec) chert not visible on the Fred Moore data at Pig 3 and 4. The panel points to the possible need to deploy a downhole coring motor in an effort to penetrate these cherts. Unless significant engineering advances are made before these sites are drilled , it is likely that recovery will be especially low in the chert-rich zone 30-60 meters sub-bottom.

ACTION - Guy Pautot will draft a letter to Yves Lancelot outlining SSP's interest in equipment and track layout for this summer's cruise. Furthermore, because of the possibility that the Old Pacific program could be inserted into the FY'90 schedule, an especially rapid data analysis will be required for these data to be useful.

SSP looks forward to the prepartion of a complete drilling survey package that will explain how the single A2-2 site could by itself represent a test of along-strike variability in magnetic anomaly amplitudes.

6. Shatsky Rise (Kiyoshi Suyehiro)

Despite the unique and valuable potential of recovering anoxic sediments on Shatsky Rise, SSP judges the available data inadequate. Of primary concern is the sparse amount of seismic data of reasonable quality that has been shown to the panel. The proponents need to justify that the present sites promise to provide sections more continuous than was recovered on previous legs. Numerous tracks exist across this feature which the proponents are urged to assemble, synthesize, and prepare in a final drilling package integrating earlier data. Towards this end,

ACTION: Carl Brenner will asemble data from across Shatsky Rise and make it available to the site proponents.

IV ASSESSMENT OF SCHEDULED DRILLING LEGS

1. Leg 126 - Bonin II

All sites were approved at the last meeting.

2. Leg 127 - Japan I

At out last meeting, J3b was located on the east flank of Okushiri Ridge, and the panel expressed concern about 1) the poor definition of basement and sedimentary reflectors due to complex normal faulting throughout much of the section, and 2) the uncertainty of identifying crystalline basement because of acoustic layering. Since then, J3b has been moved to a position on the western flank of the ridge where item 1) is not an issue; this site has been approved by the Safety Panel. Layering within the vicinity of basement is still apparent, and SSP emphasizes that total depth to the objective (determining the age and composition of true basement) remains uncertain.

3. Leg 128 - Japan II

All sites were approved at the last meeting.

4. Leg 129 - Nanka I

All sites were approved at the last meeting.

5. Leg 130 - Geochemical Reference

6. **Leg 131 - Ontong-Java Plateau**

Discussed in joint meeting with CEPAC and summarized above.

7. **Leg 132 - NE Autstralia**

All sites were approved at the last meeting.

8. **Leg 133 - Vanuatu**

9. **Leg 134 - Lau**

V OTHER BUSINESS

1. **SUBMERSIBLES**

2. **3-D SEISMIC SURVEYING**

VI NEXT MEETING

appended to SSP min.

MEMO

To: USSAC **Date:** 19 Jan 1989

From: EPR Synthesis Editors (Tighe, Tyce, Detrick, Fox)

Subject: Distribution of EPR Synthesis Generated Products

<u>BACKGROUND:</u> The JOI-sponsored EPR Synthesis of Sea Beam, Sea MARC I, MCS and petrologic data is now complete and includes the following three components:

1. EPR PORTFOLIO: (~120 pages, ~175 figures; 36" x 46")
   - A) <u>Series I-IV</u>: Index Maps, and Regional Tectonic, Magnetic Anomaly, and Gravity Maps (23 pages).
   - B) <u>Series V:</u> MCS Profiles (8 pages).
   - C) <u>Series VI</u>: Regional- and Intermediate-Scale Sea Beam Bathymetry maps. (5 Regional color-filled maps with 50 m contour intervals, each covering 8^o of latitude at a scale of 4"/degree or 1:1,100,000; and 20 Intermediate-Scale color-filled maps with 20 m contour intervals, each covering 2^o of latitude at a scale of 15"/degree or 1:330,000.) (25 pages).
   - D) <u>Series VII:</u> Local-Scale Sea Beam Bathymetry (83 color-filled plots with 10 m contours, each covering up to 43' of latitude at a scale of ~44"/degree or 1:100,000). (~50 pages).
   - E) <u>Series VIII</u>: Sea MARC I Data. (36 Figures, 13 pages).

2. WRITTEN REPORT: (Three Volumes, 8-1/2 "x 11")
   - A) <u>Volume 1</u>: A description of the atlas, what assumptions were made in generating it, appendices of data sources, etc., and guidelines for use of the folio.
   - B) <u>Volumes 2 & 3</u>: The printed petrologic database.

3. DIGITAL DATABASES: A set of 9-track magnetic tapes and floppy disks, including the following:
   - A. Sea Beam, Sea MARC I and Petrologic Databases on 5 9-track magnetic tapes.
   - B. Petrologic Database on 3 Macintosh-formatted floppy disks.

The EPR Synthesis was previewed at the Fall AGU. There was considerable interest in the document, and concern that individual investigators would not have adequate access to its information.

<u>COST OF REPRODUCTION:</u> There are a number of options that could be followed:

1. **Reproduce the entire portfolio in color (Sea Beam maps) and black and white (Sea MARC I and MCS data). This would be slightly smaller in size (30"x36"; printer's requirement). All figures except the Sea MARC I images already fit this size requirement; Sea MARC I images would be very simple to recreate at the reduced scale of 1:100,000 (They are at 1:50,000 in the present atlas).**

   To produce 300 copies = $ 140,000 = $467.00/copy.
   For each additional 100 copies =$ 7,000

2. Reproduce a subset of the portfolio. Below are two options.

   a) All the Sea Beam maps (Sections VI & VII; 75 pages)

      300 copies = $126,000. =$420.00/copy
      Addt'l 100 copies = $ 6,000.

   b) Just the Regional (50m contour) and Intermediate- (20m contour) Scale Sea Beam maps (Section VI; 25 pages). (NOTE: This was the most popular minimum product based upon conversations with various investigators at AGU).

      300 copies = $ 48,000. =$160.00/copy
      Addt'l 100 copies = $ 3,500.

3. Create a poster-quality copy of one or more color-filled Sea Beam bathymetric maps (bulk of the cost is in creating the 4-color separations). This is <u>very</u> inexpensive ($225/500 copies) if a map used in the atlas is also used for the poster.

   Color Separation and 500 copies = $ 1,800. = $3.60/each
   Addt'l 100 copies = $ 50.

Our proposal would include the direct costs listed above, as well as a small amount of money for technical support and salaries. It is important to note that most or all of the funds used to publish such a product could be recovered if a fee were charged for the product. No one we spoke to at AGU had any problem with spending a couple of hundred dollars for a useable atlas.

OCEAN DRILLING PROGRAM

SITE SURVEY PANEL MINUTES

Naniloa Hotel
Hilo, Hawaii

April 10 - 12, 1989

Present:

Greg Mountain* (Chairman, USA)
Fred Duennebier* (USA)
Rob Kidd* (UK)
Birger Larsen* (ESF)
Steve Lewis* (USA)
Keith Louden* (Canada/Australia)
Heinrich Meyer* (Germany)
Guy Pautot* (France)
Kiyoshi Suyehiro* (Japan)
Mahlon Ball (PPSP)
Carl Brenner (Data Bank)
Suzanne O'Connell (TAMU, alt. for A Meyer)
Laurent d'Ozouville (JOIDES Office)
Tom Shipley (PCOM, alt. for J Watkins)
Doug Bergensen (HIG)

* panel members

SSP EXECUTIVE SUMMARY HILO HAWAII APRIL 10-12 1989

1. Site Survey Panel concentrated primarily on reviewing the status of CEPAC programs at its Hawaii meeting - one afternoon was spent in joint session with the CEPAC/DPG who were also meeting in Hilo.

2. Updates on scheduled and remaining WPAC legs were discussed, as well as the effects on site survey progress of likely changes in order of drilling being contemplated by PCOM. Delays in development of critical drilling tools may mean the early insertion of "Atolls and Guyots" and "Old Pacific" programs.

3. SSP noted good progress with most programs but highlighted problems with survey data for Shatsky Rise and the drilling location suggested for Osawara Plateau. There were no new developments reported at this meeting on Japan Sea II, EPR Bare Rock, Eastern Equatorial Pacific and Lower Crust 504B drilling.

4. Proponents have been asked to deposit data in the Site Survey Data Bank for the Hawaii Flexure, North Pacific Neogene, Bering Sea and N.W. Australia drilling proposals.

5. At the request of proponents, SSP provided advice on survey data to be collected on cruises in support of Oregon Margin, Vancouver Margin and 'Sedimented Ridges' proposals.

6. SSP requested that proponents of the North Pacific Neogene proposals prepare alternate as well as prime site data packages to allow for flexibility at sea should unexpectedly incomplete stratigraphic sections be encountered. Data necessary for some targets is held by Russian institutions. The Panel urges PCOM to once again, request that EXCOM do whatever is proper to ensure a speedy return of the Soviet Union to JOIDES.

7. SSP voiced concern that the progress of drilling proposals through the 'new' thematic structure could mean that shortfalls in survey data could be picked up too late for remedy; also that 'shelved' drilling proposals might be resurrected by thematic panels and they may not satisfy current survey standards. SSP will aim to operate under the new proposal guidelines but will put in place a procedure for tracking new and resurrected proposals through reports by JOIDES Office and Data Bank representatives at each SSP meeting.

8. Rob Kidd took over as Chairman of SSP at the end of the meeting from Greg Mountain, who is moving to NSF after an all-to-short term as SSP Chairman. The Panel thanked him for all his considerable efforts on SSP and wished him every success in Washington.

ACTION ITEMS - SSP HAWAII APRIL 1989

1. ACTION: JOIDES liaison Laurent d'Ozouvile is asked to bring to each SSP meeting information regarding old drilling programs resurrected since the previous panel meeting.

2. ACTION: Data Bank Manager Carl Brenner will log each proposal as it arrives from the JOIDES office, conduct a cursory assessment of data availability (NOT a complete archival search), and present this list of new arrivals at each meeting of the SSP.

3. ACTION Re-iterating its request from the last meeting, SSP asks that Jack Baldauf prepare a history of mini-cone deployment and its performance in various surficial sediment types and forward this information to Rob Kidd.

4. ACTION: After panel discussion, it was agreed that Louden will draft a letter as an SSP response (this WILL INCLUDE STRONG EMPHASIS ON NEED FOR 3.5 KHZ,THE VALUE OF STRIKE LINES, EFFICIENCY OF HI-RES SCS AND WILL RECOMMEND SOUND SOURCES

5. ACTION After panel discussion Keith Louden will draft a letter as SSP recommendation on the Vancouver Margin WHICH AGAIN WILL INCLUDE STRONG EMPHASIS ON NEED FOR 3.5 KHZ, THE VALUE OF STRIKE LINES, THE EFFICIENCY OF HI-RES SCS AND WILL RECOMMEND SOUND SOURCES.

6. ACTION Keith Louden will contact Sedimented Ridges proponent Earl Davis requesting information pertinent to SSP needs regarding 1) Davis' upcoming cruise to Middle Valley, and 2) results of the working group meeting to be held in Ottawa this summer.

7. ACTION Carl Brenner will contact Dave Clark and Bill Normark to request USGS SCS data from north of Hawaii be deposited in the Data Bank. Furthermore, Carl will notify drilling proponents of SSP's perceived importance of this new data source, and urge that they examine these and all other profiles to identify the lines of highest acoustic resolution.

8. ACTION Fred Dunnebier will ask Loren Kronke to check on possible 1970? HIG SCS profiles over Ontong-Java Plateau. Also noted was a Kronke proposal for a 1980 cruise that could collect relevant data. Given the short lead times SSP will track these developments, should basement objectives continue to be pursued.

9. ACTION Carl Brenner will contact Andy Stevenson and request that the USGS data in the vicinity of Detroit Seamount and Meiji Drift be submitted to the Data Bank.

10. ACTION Carl Brenner to contact Andy Stevenson and request the USGS data in the vicinity of Unmak Plateau and Sounder Ridge.

11. ACTION Guy Pautot will draft a letter to Yves Lancelot, to be reviewed by the Panel at the end of the meeting, outlining SSP's interest in equipment and navigation for this summers's cruise. Furthermore, because of the possibility that the Old Pacific program could be inserted into the FY'90 schedule, an especially rapid data analysis will be required for these data to be useful.

12. ACTION Kidd will contact Audrey Meyer at TAMU for information on their needs for setting cone and casing at Bon-8 and Mar-5.

Carl Brenner also prepared a data package for Mar-5 - this he will make available to proponent Natland.

13. ACTION Rob Kidd will provide JOIDES office with some text to add to its guidelines for proponents pointing out the possible desirability of submersible data under the heading "high resolution imagery".

14. ACTION: Carl Brenner to supply statistics on Data Bank to Greg Mountain who will complete the letter to PCOM as input to the ODP Accomplishments Document.

15. ACTION: Rob Kidd will transmit to Moberley SSP's preferred choices for a USSAC member from the list provided by PCOM.

16. ACTION: Rob Kidd will transmit to Ralph Moberley SSP'S suggestions for a US institutional replacement for Greg Mountain who is moving to NSF.

17. ACTION: Rob Kidd is to supply JOIDES office with provisional information on the Hannover meeting as soon as key arrangements can be made by Henrich Meyer.

SITE SURVEY PANEL

Hilo, Hawaii
April 10-12, 1989

MINUTES

I PRELIMINARY MATTERS

The meeting began shortly after 9 am. Chairman Greg Mountain welcomed returning panel members and liaisons, and introduced new members Keith Louden, Guy Pautot, and alternate liaisons Suzanne O'Connell and Tom Shipley. Host Fred Duennebier welcomed the attendees to Hawaii, introduced guest Doug Bergensen and outlined logistical details and events that have been arranged. There were no changes to the minutes from the previous meeting. Ship schedules were collected (Appendix A1-A6). Ralph Moberly stepped into the meeting room to request that, in addition to the four programs already planned, SSP be prepared to discuss "Atolls and Guyots" and "Old Pacific Crust" during the afternoon's joint session with CEPAC-DPG. Tom Shipley requested time be allotted towards the end of the meeting to present the survey opportunities provided by 3-D seismic techniques. Greg Mountain read a letter from Ralph Moberly (March 23) addressed to all panel chairpersons, requesting comments on ODP benefits and accomplishments. Discussion of Mountain's response, not yet delivered, was inserted into the agenda.

II REPORTS

I PCOM (Tom Shipley)

Due to delays in the development of the GeoProps tool, the Nankai drilling program scheduled by PCOM during its December meeting in Miami may be postponed. Earliest readiness for this critical technology is late May, 1990. Though the experiment to devote Leg 124E to engineering tests proved valuable, it may not be repeated by a similar Leg 129E, as was scheduled at the December PCOM meeting. Because of these changes, it is possible that the "Atolls and Guyots" plus "Old Pacific" programs may be inserted into the 1990 schedule; these and other options will be discussed at the May PCOM meeting.

PCOM continues to be concerned about the rate at which both the Initial Results and Scientific Results volumes are being published; significant changes regarding this issue will be discussed at the next meeting. Laurent d'Ozouville mentioned that at the March meeting of IHP, changes were made in the schedule of post-cruise meetings: paleontologists will now be urged to meet 6 months after a cruise to firm up their biostratigraphies; the entire ship's science staff will assemble for its traditional post-cruise meeting 6 months after that. Laurent pointed out further that IHP has circulated a questionnaire regarding publication issues to 600 members of the marine science community, about 25% have responded.

PCOM notes that with this years 2% rise in the producers' price index there will be a commensurate rise in the operational costs of the JOIDES Resolution.

2 JOIDES (Laurent d'Ozouville)

Of the fifteen proposals deposited in the JOIDES office since our meeting in October, six represent entirely NEW drilling programs. A lengthy discussion followed concerning the time and route by which drilling proposals are delivered to SSP for assessment of survey adequacy. Laurent presented a graphic outline of the sequence of events between the time of proposal deposit and actual drilling (Appendix A7). Of concern to members of SSP is that in this scenario they will be furnished with programs to assess only after all thematic panels have completed their initial evaluations, returned them to PCOM and PCOM has sorted out the various recommendations. This process may take considerably longer than the 6 months implied by this diagram. Furthermore, it is likely that specific site survey recommendations may only be possible to make after DPGs have completed their tasks of picking exact site locations. Consequently panel members expressed concern that site survey assessments may in some cases flag shortfalls long past the time at which remedies can be made.

It was pointed out that an uncertain (but probably significant) number of approved programs have gone undrilled and remain in the system as "shelved" proposals. Any of these may be resurrected and placed onto the drilling schedule as interest is rekindled by 1) technological developments not available in the past, 2) redefinition of thematic interests, or 3) geographic proximity to a target region passed up previously for any of a number of other reasons. That such shelved programs satisfied site survey standards several years ago does not mean that each should automatically by-pass present-day SSP review. After much discussion it was agreed that SSP would aim to operate under the schedule as laid down in the graphic outline of the JOIDES Journal "Guidelines" issue (Dec '88) but would put in place a number of procedures aimed at tracking new and resurrected proposals.

ACTION: JOIDES liaison Laurent d'Ozouvilee is asked to bring to each SSP meeting information regarding old drilling programs resurrected since the previous panel meeting.

The JOIDES office presently distributes copies of new proposals to the Data Bank at the same time that it sends copies to each of the thematic panels. Until the influx of new and revised proposals becomes prohibitively large.

ACTION: Data Bank Manager Carl Brenner will log each proposal as it arrives from the JOIDES office, conduct a cursory assessment of data availability (NOT a complete archival search), and present this list of new arrivals at each meeting of the SSP.

The SSP Chairman will assign watchdogs to be responsible for overseeing the progress of both these resurrected AND new proposals through the review system.

3 Annual Chairperson Meeting (Greg Mountain)

Issues discussed at the annual panel chairpersons meeting in Miami were reported by chairman Greg Mountain. Progress on the "Long Range Drilling Plan" was presented in Miami by lead author Nick Pisias. When complete, this document will represent a "sales" brochure to the international community for drilling past FY93. The final draft is due for submission to PCOM in May '89; discussion among the non-US partners will continue through Oct '90 to be followed by presentation to the US Science Board in Oct '92. Nick Pointed out the lack of justification for both a permanent alternate platform and for deep riser drilling. Larry Mayer noted the apparent inconsistency that despite the widely recognised need for developing new engineering technologies that will be required past '92, the budget is fixed from now until then in the support of science. A total of sixteen drilling issues are described in the long range plan; the panel chairpersons commented that grouping under a small number of themes would be helpful. Several renditions of these groupings were discussed, with a leading foursome as follows:

"Structure and Composition of Oceanic Crust and Mantle"
"Causes and Effects of Oceanic Climate and Variability"
"Fluids in the Lithosphere"
"Dynamics, Kinematics, and Deformation of the Lithosphere"

Aspects of the new panel structure were discussed in Miami. Those present endorsed the use of "double liaisons" among most thematic panels. Features of Detailing Planning Groups (DPGs) were identified as follows they will be regional, ad-hoc, short-lived groups of experts drawn from a range of places both within and perhaps from outside the drilling community; they will likely include drilling proponents. Their recommendations will feed back to the specific thematic panel that formed them, not to PCOM. In essence, PCOM will establish drilling schedules, thematic panels will determine program rankings, and DPGs will select specific drill site locations.

Considerable discusion developed in Miami regarding problems concerning the publication of both the Part A (Initial Reports) and Part B (Scientific Resulsts) volumes of ODP reports. Highlights of possible changes included 1) shorten deadlines for Part A and/or for Part B; 2) release participants to publish outside of Part B before they submit their ODP manuscripts; and 3) eliminate Part B entirely, and periodically gather reprints into thematic issues.

CEPAC chairman Dave Rea reported in Miami that engineering development will be essential to the success of many CEPAC objectives. He noted further that engineering tests scheduled for 124E will not evaluate the following: improved recovery in chert/chalk sequences (chert/clay is to be penetrated on Leg 124E); reef limestone; and high temperature environments.

4 TAMU (Suzanne O'Connell)

A. Leg 124 E

The results of Leg 124E were summarised (Appendix A8). If additional engineering tests are conducted in the future, it is hoped that, as was done with 124E, SSP can provide assistance in the selection of all sites. The panel emphasizes the wisdom of returning to previously completed drill sites to minimise the chance of encountering unforseen hole conditions that can only complicate the already difficult task of evaluating the performance of new drilling technologies

B. Underway Geophysics

In the continuing discussion between TAMU and SSP concerning underway geophysics aboard the JOIDES Resolution, a response to our last assessment of capabilities and future needs was presented (Appendix A9).

Upon enquiry from the Panel, Suzanne stated that the operator emphatically holds the point of view that conducting reconnaissance geophysical surveys aboard the Resolution should not pre-empt the primary task of recovering cores. Effort should be expended in collecting opportunistic data between sites, but some question remains as to the need to prepare real-time navigation.

Steve Lewis expressed the view that site approach surveys, though short in time, are absolutely essential and require real time navigation and data assessment. He pointed out further that experience on Leg 124 showed that the re-location of the sonar dome forward of the moon pool has resulted in excellent 3.5 KHz records upt to 8 knots, with rapid deterioration above that speed. Fred Duennebier considered that there exists little chance for additional improvement.

C. Mini-cone

Contrary to general opinion, development of the free-fall "mini-cone" is a complex task that can take 18 hrs or more to complete. The TAMU engineers point out that in some cases pulling clear of the bottom and offsetting to a new hole may entail less time.

ACTION Re-iterating its request from the last meeting, SSP asks that Jack Baldauf prepare a history of mini-cone deployment and its performance in various surficial sediment types and forward this information to Rob Kidd.

5 PPSP (Mahlon Ball)

Mahlon first responded to an SSP request from its Swansea meeting that JOIDES distribute to proponents a safety guidelines package as new proposals arrive. He pointed out that the summary guidelines of PPSP were now included in both the New Joides Journal guidelines issue and in the information package sent out to potential proponents by Joides Office.

He distributed a review paper on hydrocarbon shows in cores taken by DSDP and ODP (Katz, B and K. Emeis, 20th Annual OTC, May 2-5 1988, pp 423-430) and noted that PPSP had liased with TAMU to ensure that the review data is regularly updated.

Mahion reported that all sites have been approved for drilling in the Japan Sea (both Legs 127 and 128). He added that the safety review for both Japan Sea legs went smoothly, due in large measure to the excellent preparation by the co-chief scientists. SSP feels this was due in part to the cooperation that developed between the site proponents, PPSP and SSP during the review process, and the resulting effort made by all concerned that potential safety concerns be dealt with as soon as they were recognized. We look forward to future programs proceeding through the review process as well.

Because of safety concerns for the Cascadia program, a preliminary examination was conducted during the last meeting of PPSP. Numerous BSRs are observed in profiles offshore Vancouver,but PPSP feels that a properly designed survey grid can yield drillable targets. By contrast, no BSRs are known from the Oregon margin. H2S occurences are known (a potential hazard for drill floor fires if found as a free gas), but occur only in the dissolved phase.

6 DATA BANK (Carl Brenner)

The FY'90 budget has been submitted and approved by JOI, Inc. It contains a 4% increase over last year, amounting to 216K. The full-time secretary
left the Data Bank last September; many clerical tasks are now handled by a recently purchased Macintosh. The pending budget request includes 4 mos. per year for a computer operator/secretary to assist in clerical matters as well as in maintaining the digital data base of Data Bank archives.

Carl reviewed an analysis (prepared with help from Jeff Fox) of reproduction costs of the EPR data synthesis charts. It seems likely that these costs prohibit the wide distribution of additional sets of hard copies. Undoubtedly the 'atlas' will be a valuable guide for developing a final drilling program on the EPR, but SSP points to the need to investigate further other means of distributing this survey information. One suggestion is on CD-ROM.

In response to SSP's request at the last meeting, Carl has contacted Alan Cooper and requested submission of reprocessed JOIDES Resolution seismic lines collected in Prydz Bay during Leg 120.

III SITE SURVEY STATUS OF UNSCHEDULED PROGRAMS

1. Cascadia (Keith Louden)

Two drilling programs comprise the composite Cascadia program. No prioritization by the thematic panels has yet been determined. PPSP has conducted an early pre-site survey review.

Ten drill sites are proposed on the Oregon margin. In contrast to the active margin targets off Japan and Barbados where vertical heat loss/fluid flow gradients and fine-grained lithologies are found, respectively, these off Cascadia are designed to yield information about lateral contrasts of these properties in coarse-grained sediments. A considerable amount of survey data exists in the region (much of it summarised in an OMD Atlas), including recently declassified SeaBeam bathymetry. With the exception of MCS profiles, ample information is available for site selection. MCS data will be collected on the 'Washington' this summer. Chief Scientist Vern Kulm contacted Carl Brenner for recommendations regarding features of this survey that would satisfy SSP requirements.

ACTION: After panel discussion, it was agreed that Louden will draft a letter as an SSP response (this WILL INCLUDE STRONG EMPHASIS ON NEED FOR 3.5 KHZ,THE VALUE OF STRIKE LINES, EFFICIENCY OF HI-RES SCS AND WILL RECOMMEND SOUND SOURCES

Five sites have been proposed for drilling on the Vancouver margin. The very complex structural fabric of the Oregon margin calls for detailed seismic control in that region; equally detailed control is needed on the Vancouver margin because of the presence of BSR's. One site is intended to pentrate the base of the clathrate zone, and will require an especially detailed near site survey. An appreciable amount of data exists at present, but for adequate site selection and safety consideration, additional MCS profiles are needed. These will be acquired this summer by an industry vessel. Roy Hyndman has requested SSP input into the design of this survey program.

ACTION After panel discussion Keith Louden will draft a letter as SSP recommendation on the Vancouver Margin **WHICH AGAIN WILL INCLUDE STRONG EMPHASIS ON NEED FOR 3.5 KHZ, THE VALUE OF STRIKE LINES, THE EFFICIENCY OF HI-RES SCS AND WILL RECOMMEND SOUND SOURCES.**

2 EPR Bare Rock (Steve Lewis)

The only new development since the last meeting is that Dan Fornari has been funded to conduct an Argo cruise at the 9°N site in the Fall of '89.

3 Sedimented Ridges (Keith Louden)

Two drilling legs are proposed to investigate fluid flow, crustal alteration and metallogenesis in spreading centers buried by sediment. Two candidate regions are under consideration Middle Valley and Escanaba Trough. Both areas have an excellent data base of heat flow information. As outlined in the CEPAC prospectus, additional side scan and SeaBeam data would be useful, and SSP looks forward to reviewing final sites with this data in hand.

To gain better understanding of the safety as well as engineering hazards of drilling in high temperature environments (such as in Middle Valley) Lou Garrison (TAMU) has called a meeting of engineers, industry experts and proponents, that is assembled in Dallas this week.

ACTION Keith Louden will contact Sedimented Ridges proponent Earl Davis requesting information pertinent to SSP needs regarding 1) Davis' upcoming cruise to Middle Valley, and 2) results of the working group meeting to be held in Ottawa this summer.

4 Eastern Equatorial Pacific (Heinrich Meyer)

The only new development since the last meeting is that Nick Pisias has been funded to conduct a hi-res SCS survey cruise in the summer of '89.

5 Chile Triple Junction (Steve Lewis)

The one-leg, 5-hole drilling proposal given preliminary review at the last meeting has since been augmented by a second leg of 12 additional targets. The original set are largely confined to the region north of the active ridge/trench collision; the latter is within the collision zone and south of it. Together these sites could provide age and lithologic control on features of plate subduction where plate kinimatics and land geology are already relatively well known. Since our last meeting the entire region has been covered in a GLORIA survey by Graham Westbrook. Preliminary, migrated sections have been processed at L-DGO, and processing of ther MCS data set is progressing. SSP looks forward to the presentation of a complete data package.

6 Hawaii Flexure (Guy Pautot)

There are three objectives to drilling immediately north of Hawaii 1) to constrain the subsidence history of the lithosphere under the effect of the load imposed by the island chain; 2)to evaluate the role of large-scale mass wasting in the region; and 3) to determine the age of volcanism on the peripheral bulge. Five holes are proposed. Three difficulties are recognised at present: 1) lithologies are expected to be red clays and volcaniclastics without the appreciable biogenic content needed for biostratigraphic control; 2) mass wasting dominates much of the section and may be very complex; and 3) seismic resolution of key horizons that need to be tracked into the moat is severely limited by the chaos of mass flow deposits. SSP is concerned most with the last of these. John King recently completed a pilot study of magnetostratigraphy from piston cores in the area, which Guy Pautot summarised and showed that it holds reasonable potential. Nonetheless, the obviously large extent of mass flows shown in a "Washington" seismic profile submitted to the panel by Bob Dietrich suggest that without occasional biostratigraphic control, magnetostratigraphy will provide only limited benefit to the stated drilling objectives. While this is clearly a problem, SSP's main concern is that seismic data that it has seen does not indicate adequate seismic resolution. The USGS has collected SCS data along the GLORIA tracks in this region, and consequently,:

ACTION Carl Brenner will contact Dave Clark and Bill Normark to request USGS SCS data from north of Hawaii be deposited in the Data Bank. Furthermore, Carl will notify drilling proponents of SSP's perceived importance of this new data source, and urge that they examine these and all other profiles to identify the lines of highest acoustic resolution.

7 Lower Crust at 504B (Carl Brenner)

Nothing new has developed since our last meeting.

8 Loihi Seamount (Fred Duennebier)

Nothing new has developed since our last meeting. Data look adequate at this stage in the absence of site specific proposals.

III STATUS OF PROGRAMS DISCUSSED IN JOINT SESSION

The following programs were assessed after presentations in joint session with CEPAC.

1 LEG 131 - Ontong-Java Plateau (Heinrich Meyer, Tom Shipley)

Results of the recent Washington cruise across the Ontong-Java Plateau were reviewed, and all survey data types deemed "vital" by SSP to meet the Neogene objectives are available. Preliminary site locations have been designated. The survey participants Larry Mayer, Tom Shipley and Jerry Winterer did an excellent job making these data available for site survey assessment in such a short time.

Several SSP members questioned the confidence with which seismic correlations can be made between the Plateau and Nauru Basin. Despite the efforts of the survey investigators to collect numerous profiles that transect the 3500-4000 m water depth range, correlations are very difficult to make because of complex and abrupt thinning of depositional units within a region of complex onlapping relationships.

Paleogene to Mesozoic sequences and basement itself are not imaged well beneath a high amplitude chert reflector that occurs across the top of the Plateau. Results at Site 289/586 showed a 30 m.y. hiatus across the K/T boundary; existing data suggests the pre-Neogene section thickens towards the NW, but the Washington water gun profiles are neither well distributed geographically, nor of sufficient penetration to identify a significantly better site. The panel is hopeful that when the 300 cu. in. airgun profiles collected on this same "Washington" cruise are processed that a clearer definition of pre-Neogene targets will be available for specific site designation. SSP noted that there is a possibility that HIG holds further data on the plateau (circa 1970).

ACTION Fred Dunnebier will ask Loren Kronke to check on possible 1970? HIG SCS Profiles over Ontong-Java Plateau. Also noted was a Kronke proposal for a 1980 cruise that could collect relevant data. Given the short lead times SSP will track these developments, should basement objectives continue to be pursued.

2 North Pacific Neogene (Birger Larsen)

As a general comment for all of the North Pacific Neogene sites, SSP encourages the proponents to prepare alternate as well as prime sites. This effort of preparing what appears to be redundant site selection at present may pay off at sea by providing the opportunity to collect more complete stratigraphic sections should hiatuses be found unexpectedly.

(1) Detroit Seamount

The shallow site near 2400 m has sufficient survey data for specific site location; as a cautionary note, however, the proponents ought to recognise the local complexity in topography at this location. SSP feels that considerable work remains on the proper selection of the accompanying deep site. Care must be taken to identify and then avoid slumps that might originate on the flank of the seamount. SSP suggests the proponents consider moving the deep site to Meiji Drift, thereby avoiding mass-wasting deposits and possibly recovering a thicker, more expanded section. Whether below Detroit Seamount or within Meiji Drift, location of this deep site will benefit from examination of the extensive USGS data set that includes GLORIA, SCS and 3.5KHz data.

ACTION Carl Brenner will contact Andy Stevenson and request that the USGS data in the vicinity of Detroit Seamount and Meiji Drift be submitted to the Data Bank.

(2) Patton Seamount
a) Numerous E-W crossings of this feature provide adequate single-track topographic control, magnetics and SCS.

(3) Northwest sites, NW 1,3, and 4
a) NW is located on 20 year old, single channel data of barely acceptable quality.
b) NW3 and 4 are both located with more recent seismic data that was not available for examination
c) In general, SSP urges the proponents to assemble a data package more complete than now exists. Furthermore, the Panel points out that, though desirable, sites do not have to be located at line crossings if it can be shown that targets are clearly revealed a reasonably short distance away.

3 Bering Sea (Birger Larsen)

(1) Unmak Plateau. An exceptionally complete package of data has been collected by the USGS, and includes MCS, 100% GLORIA coverage with coincident SCS, magnetics and gravity, piston cores and heat flow measurements.

ACTION Carl Brenner to contact Andy Stevenson and request the USGS data in the vicinity of Unmak Plateau and Sounder Ridge.

(2) Sounder Ridge. The same complete catalogue of data as at Unmak Plateau exists across Sounder Ridge with the exception of a grid of MCS profiles defining the 3-D structure of this comparatively small feature. Existing SCS data can reportedly image the entire section and supply this control. As with the Unmak Plateau, SSP awaits review of a complete data package.

(3) Shirshov Ridge. The sole MCS line collected by the USGS across this feature is of good quality, but inadequate from an SSP perspective. Also members noted that the USGS line mistakenly shows a 2.5 sec penetration where the proposed hole is located while the prospectus calls for a 400 m T.D.(!).

The Russians appear to have the data (both MCS and dredges) required for survey definition of this drilling target.

SSP CONSENSUS - The Panel urges PCOM to, once again, request that EXCOM do whatever is proper to ensure a speedy return of the Soviet Union to JOIDES.

4 Atolls and Guyots (Fred Duennebier)

(1) SSP was presented with an assessment of the range of survey data either already collected or likely to come available for the Schlanger et al and Winterer et al proposals respectively. The Panel is agreed that adequate data exists and looked forward to reviewing the site specific proposals. Concern was expressed over the shortened lead time for assessment should this drilling now be inserted earlier in the Program.

(2) Without a review of nearby seismic data, plus a justification for locating the site OFF existing seismic lines as shown in the CEPAC prospectus, SSP cannot form an assessment of the Ogasawara Plateau site.

5 Old Pacific (Gred Mountain, Tom Shipley)

(1) Sonobuoy velocity gradients along with potential acoustic layering raise serious doubts about the location and nature of basement in the East Marianas Basin.

(2) Basement at Pig3 and 4 is adequately revealed in the re-processed FM35-12 MCS data.

(3) Results of the "Suroit" cruise (late Summer '89),will be needed to evaluate Pig 1 and 2, plus the occurrence and distribution of any shallow (<100 msec) chert not visible on the Fred Moore data.

ACTION Guy Pautot will draft a letter to Yves Lancelot, to be reviewed by the Panel at the end of the meeting, outlining SSP's interest in equipment and navigation for this summers's cruise. Furthermore, because of the possibility that the Old Pacific program could be inserted into the FY'90 schedule, an especially rapid data analysis will be required for these data to be useful. Lancelot may be invited to the next SSP meeting.

(4) SSP does not understand how the single A2-2 site could by itself represent a test of along-strike variability in magnetic anolmaly amplitudes.

6 Shatsky Rise (Kiyoshi Suyehiro)

Despite the unique and valuable potential of recovering anoxic sediments on Shatsky Rise, SSP judges the available data inadequate. Of primary concern is the sparse amount of seismic data of reasonable quality that has been shown to the panel. The proponents are urged to consider with a) developing a justification for a future engineering test leg on Shatsky Rise that would provide a reasonably improved data set or b) advocate a short pre-drilling survey by the Resolution.

IV ASSESSMENT OF SCHEDULED DRILLING LEGS

1 Leg 126 Bonin II

All sites were approved at the last SSP meeting.

2. Leg 127 Japan Sea I

At our last meeting J3B was located on the east flank of Okushiri Ridge and SSP expressed concern about:-

2.1. the poor definition of basement and sedimentary reflectors due to complex normal faulting in much of the section, and;

2.2. the uncertainty of identifying crystalline basement because of acoustic layering.

Since then, J3B has been moved to position on the western flank of the Ridge where item 2.1 is not an issue.

This site has now been approved by PPSP.

Layering in the vicinity of the basement is still apparent and SSP emphasises that the total depth to the objective (determination of the age and composition of the basement) remains uncertain.

3 Leg 128 Japan Sea II (Kyoshi Suyehiro)

No new developments since the Swansea meeting.

4 Leg 129 Nankai (Kyoshi Suyehiro)

Nankai drilling may be rescheduled to a later date. PPSP approved the entire survey package for the Nankai sites.

5 Leg 130 Geochemical Reference Sites (Rob Kidd)

Following the recommendations of the Swansea meeting, Carl Brenner prepared a site survey package for proponent Natland that includes Bon-8 and Mar-4. In addition attempts have been made at LDGO to process these seismic lines in order to image basement and the chert reflectors.

Mar-4 is at the same location as DSDP Site 452 and also became Eng-3 of Engineering Leg 124E (now ODP Site 777). Chert was encountered at between 30 - 40 meters subbottom and prevented penetration in a number of attempts. This was the depth predicted by the LDGO processing. It seems clear that sufficient sediment exists at both Bon-8 and Mar-4 for both re-entry cone and casing.

On the other hand, while the processing experiment by LDGO has shown that it is possible to image the chert and basement reflectors with some accuracy, the present data show no evidence of a 'window' through the cherts at either. If one could be found it might mean that casing would not have to be set.

ACTION Kidd will contact Audrey Meyer at TAMU for information on their needs for setting cone and casing at Bon-8 and Mar-5.

Carl Brenner also prepared a data package for Mar-5 - this he will make available to proponent Natland.

7 Leg 132 N.W. Australia (Rob Kidd)

SSP judged as adequate the site survey data for the N E Australian drilling presented by Peter Davis at the Swansea meeting and the proponents were asked to deposit the necessary data in the data bank. Some correspondence has ensued on this because of processing delays in Australia. SSP looks forward to the data being deposited in the near future.

8 Leg 133 Vanuatu (Guy Pautot)

No new data has come available to SSP since its Swansea meeting. SSP reiterates its request to TAMU for information on whether it has specific survey requirements for bare rock drilling here. Pautot observed that submersible dives being conducted by a French cruise could result in relevant data.

ACTION: Suzanne O'Connell is to alert TAMU of SSP's request that it should indicate any specific site survey requirements for Vannatu bare rock drilling.

9 Leg 134 Lau Basin (Fred Duennebier)

The main development since the Swansea meeting has been the search by proponents for locations in the back arc where basement objectives can be pursued without the need for bare-rock drilling.

New 'Thomas Washington' seismic data and 'Darwin' GLORIA and seismics suggest that: for Lau-2 - at least 3 alternate basement sites (Lau 2 - A, B and D) are available; for Lau-7 - TWO sites with sufficient sediment are available; Lau-9 replaces the original Lau Basin bare-rock site. Pautot noted that submersible surveys by 'Nautile' are presently underway in the Lau Basin with proponent Von Stackleberg aboard. SSP felt that, although it was too late for a beacon to be placed by the submersible as on Leg 106/109, we should encourage proponents to deposit any relevant photographic surveys or geotechnical testing in the data bank.

ACTION Fred Duennebier will write to proponent Lindsay Parson alerting him of SSP's interest in any submersible data.

V OTHER BUSINESS

1 Submersibles SSP discussed the usefulness of submersible surveys as part of the matrix of site survey data required for Panel approval of some sites. Guy Pautot updated the Panel on developments in French submersible technology, particularly in the field of geotechnical testing.

SSP consensus: Submersible surveys may be desirable for some sites, for example, cases where bare-rock or re-entry cones are to be placed.

ACTION Rob Kidd will provide JOIDES office with some text to add to its guidelines for proponents pointing out the possible desirability of submersible data under the heading "high resolution imagery".

2 3D Seismic Surveys Tom Shipley made a presentation to SSP on a detailed 3D-survey of the Costa Rica accretionary wedge. This new technique allows diffuse reflectiors to be imaged in areas of complex surface relief. More importantly, horizontal slices may be imaged through sequences to delineate the dimensions of mud volcanoes, 'bright spots', slumps, debris flows etc. The use of super computers now make this collection and processing technique no more expensive than normal MCS surveying over larger areas and it may even become necessary for drilling in highly complex active margin settings.

3 PCOM request for input to ODP accomplishments document

Greg Mountain presented a draft reply to this request that emphasises the role of the Site Survey Bank. After discussion, SSP agreed that Greg should complete the letter by incorporating statistics on data holdings and activity and send it on to PCOM as soon as possible.

ACTION: Carl Brenner to supply statistics on Data Bank to Greg Mountain who will complete the letter to PCOM as input to the ODP Accomplishments Document.

4 New Panel Members

a) SSP has been informed by Ralph Moberley that it is to be assigned a USSAC member in addition to its three U.S. institutional members; Duennebier (HIG), Lewis (USGS) AND Mountain (LDGO). The new member will be an industry researcher and four names were put forward by PCOM for Panel consideration.

ACTION: Rob Kidd will transmit to Moberley SSP's preferred choices for a USSAC member from the list provided by PCOM.

b) Greg Mountain is to rotate off the SSP because of his imminent move to NSF. The Panel is asked by PCOM to suggest names of possible US replacements. SSP reviewed its present spread of expertise and agreed on two names for consideration by PCOM.

ACTION: Rob Kidd will transmit to Ralph Moberley SSP'S suggestions for a US institutional replacement for Greg Mountain who is moving to NSF.

VI NEXT MEETING

Heinrich Meyer agreed to host the next SSP meeting at BGR Hannover, West Germany. The provisional meeting dates are 16th-18th October inclusive, assuming that suitable arrangements can be made in Hannover and meetings of other panels requiring SSP input remain as scheduled.

ACTION: Rob Kidd is to supply JOIDES office with provisional information on the Hannover meeting as soon as key arrangements can be made by Henrich Meyer.

VII TRANSFER OF CHAIRMANSHIP

Greg Mountain officially passed on the Chairmanship of Site Survey Panel to Rob Kidd. Rob thanked Greg on behalf of the Panel for all his efforts during his all-too-short period as Chairman and wished him every success in his new position with NSF.

SSP APPENDICES - HAWAII MEETING APRIL 1989.

A-1 TO A-6 SHIP SCHEDULES

A-7 - PROPOSAL TRACKING OUTLINE

A-8 - LEG 124E RESULTS SUMMARY

A-9 - TAMU RESPONSES TO SSP REQUESTS FOR INFORMATION

A1 2 US

Posted: Tue Jan 31, 1989 8:58 AM EST Msg: JGIJ-3865-8176
From: WOODS.HOLE
To: L.Clark, K.Kaulum, A.Bucklin
CC: Woods.Hole, Ship.Sched89
Subj: 1989 ATLANTIS II 1/31/89

R/V ATLANTIS II
1989 SCHEDULE

REVISED: January 31, 1989

DATES	AREA & OBJECTIVE	CHIEF SCIEN. PRINC. INVEST.	END PORT	AGENCY, DAYS FUND. STATUS
01/01 - 03/12	Maintenance		Woods Hole	
	The following programs are Non-ALVIN work.			
03/13 - 03/24	Transit		Funchal	13 NSF
03/28 - 04/06	47N - 60N, 20W	Honjo	Reykjavik	13 NSF
04/10 - 04/14	59N = 21W(ML-ML)	Trask(Marra)	Reykjavik	7 ONR
04/17 - 05/11	60N & 47N, 20W	Marra	Azores	28 NSF
05/15 - 06/08	47N & 60N, 20W	Ducklow	Reykjavik	29 NSF
06/13 - 07/06	Nfld Basin	Owens	Woods Hole	17 ONR
		Transits		9 NSF
08/01 - 08/05	Refit for ALVIN Sea Trials & Certification	Walden	St. George	4 NSF 2 ONR 2 NOAA
08/11 - 08/30	Cont. Margin	Ryan	Woods Hole	22 NSF
09/05 - 09/16	NE Atlantic DWDS 106	Grassle	Woods Hole	12 NOAA
09/22 - 10/14	28N, 30W (Non-Alvin)	Boyle	Azores	25 NSF
10/19 - 11/17	Mid-Atlantic Rdg. (Non-Alvin)	Langseth	Bridgetown	34 NSF
11/22 - 12/24	Mid-Atlantic Rdg. (ALVIN)	Thompson, et al	Woods Hole	26 NSF 9 NOAA
12/27 -	Shipyard and Biannual Overhaul			

Total Recommended Charge Days:

NSF: 203
ONR: 26
NOAA: 23

Posted: Thu, Feb 23, 1989   1:51 PM EST   Msg: KGIJ-3886-1653
From: UNOLS.OFFICE
To: SHIP.SCHED89
Subj: UNIV RHODE ISLAND 89 ENDEAVOR

POC: Mr. John Bash
University of Rhode Island
Graduate School of Oceanography
Narragansett, RI 02881
TEL: (401) 792-6203
TELEMAIL: RHODE.ISLAND

LAST UPDATE: 23 Feb 89

RV ENDEAVOR 1989 PROPOSED SCHEDULE

CRUISE PERIOD	AREA/OBJECTIVE	SCIENTIST	END PORT	AGENCY, DAYS & FUNDING
1-12 JAN	MAINTENANCE		NARRA	
16-18 JAN	NO MANS LAND	WELLER	NARRA	NSF 3 (F)
19-21 JAN	DUMP SITE 106	McDOWELL	WHOI	EPA 3 (F)
22-25 JAN	MAINTENANCE		NARRA	
26-27 FEB	NO MANS LAND	WELLER	WHOI	NSF 3 (F)
28-28 FEB	WHOI	TRANSIT	WHOI	NSF 1 (F)
1-12 MAR	BERMUDA	BERTEAUX/CLAY	NARR	ONR 12 (F)
1-12 MAR	BERMUDA	BERTEAUX	NARRA	ONR 12 (F)
16-25 MAR	SEEP	SMITH	NARRA	DOE 10 (F)
1-28 APR	GULF STREAM	ROSSBY	NARRA	NSF 28 (F)
1-13 MAY	SEEP	BISCAY/BACON	NARRA	DOE/NSF 11/2 (F)
18 MAY-12 JUN	GR.SO.CHANNEL	WINN	NARRA	NSF 26 (F)
16 JUN-26JUN	NO.ATLANTIC	TRANSIT	REYKJAVIK	NSF 11 (F)
28 JUN-07JUL	ICELAND	JGOFS	REYKJAVIK	NSF 12 (F)
10 JUL-31JUL	GREENLAND SEA	DEMING	TROMSO	NSF 24 (F)
3 AUG-09 SEP	GREENLAND SEA	WORCESTER	TROMSO	NSF25 ONR16 (F)
10-14 SEP	NO.ATLANTIC	TRANSIT	GLASGOW	NSF3 ONR4 (F)
18 SEP-23 SEP	60N 21W	MARRA	REYKJAVIK	ONR 12 (F)
26 SEP-11 OCT	AZORES	HONJO(GOFS)	FUNCHAL	NSF 18 (F)

14-19 OCT	CENT ATLANTIC	TRANSIT	CAPE VERDE	NSF 6	(F)
21 OCT-07NOV	EQUATOR	KATZ	CAYENNE	NSF 20	(F)
10NOV-21NOV	NO.ATLANTIC	TRANSIT	NARRA	NSF 12	(F)

FUNDED CRUISES 257 DAYS

SCHEDULED 193 NSF; 40 ONR; 21 DOE, 3 EPA

PROGRAMS NOT ACCOMMODATED:

CHRISTENSEN GREENLAND SEA AUG 17 DAYS JOI (P)

BERTEAUX GREENLAND SEA 10 DAYS ONR (F)

Posted: Fri, Jan 20, 1989 6:50 PM EST Msg: NGIJ-3857-3674
From: UNOLS.OFFICE
To: SHIP.SCHED89
Subj: TEXAS A&M 89 GYRE

POC: Dean Letzring, Manager
Marine Operations
Texas A&M University
P.O. Box 1675
Galveston, TX 77533
TEL: (409) 740-4469

LAST UPDATE: 18 Jan 89

1989 R\V GYRE SCHEDULE

CRUISE PERIOD	AREA/OBJECTIVE	CHIEF SCIENTIST	END PORT	AGENCY
01/08-01/13	GULF OF MEXICO STUDENT TRAINING	E. BEHRENS	GALVESTON	STATE-5
03/06-03/15	GULF OF MEXICO INTERDISCIPLINARY	W. MERRELL	GALVESTON	STATE-10
03/20-03/29	ORCA BASIN ORGANIC GEOCHEM.	E. VAN VLEET	ST. PETE.	NSF-10
04/17-05/06	N. CENTRAL GULF GEOLOGY	~~E. POWELL~~	~~GALVESTON~~	~~NSF-20~~
07/06-07/15	WESTERN GULF INTERDISCIPLINARY	G. ROWE	GALVESTON	STATE-10
08/01-08/21	EASTERN ATLANTIC MARINE ZOOPLANKTON	M. ROMAN	MIAMI	NSF-21
08/24-09/07	BAHAMAS, LEMON SHARK STDY	S. GRUBER	MIAMI	NSF-15
09/16-09/20	N. CENTRAL GULF STUDENT TRAINING	J.SCLATER/ L.LAWVER	GALVESTON	STATE-5
11/15-11/25	WESTERN GULF INTERDISCIPLINARY	D. BIGGS	GALVESTON	STATE-10

FUNDING: NSF - 81
STATE - 40

TOTAL 121

Posted: Mon. Mar 13, 1989 5:18 PM EST Msg: MGIJ-3898-8785
From: UNOLS.OFFICE
To: SHIP.SCHED89
Subj: SCRIPPS 89 MELVILLE

POC: Dr. George Shor, Jr.
Scripps Institution of Oceanography
La Jolla, CA 92093-0210
TEL: (619) 534-2853; FAX: (619) 534-0981
TELEMAIL: SCRIPPS.INST

LAST UPDATE: 6 Mar 89

SHIP OPERATING SCHEDULE 1989
R/V MELVILLE

Cruise Period	Area and Objectives	Chief Scientist	End Port	Agency Days
12/07-01/15	HYDROS LEG 2 South Atlantic Ventilation Experiment	Key	Cape Town	NSF-16
01/23-03/08	HYDROS LEG 3 SAVE/Long Lines	Smethie/ McCartney	Montevideo	NSF-49
03/13-04/19	HYDROS LEG 4 Long Line Phys.Oc.	McCartney/ Talley	Barbados	NSF-40
04/20-04/26	transit		Miami	NSF- 7 NAVY- 2
04/30-05/22	HYDROS LEG 5 Re-entry experiment South of Bermuda & Equipment tests	Spiess/Webb	Woods Hole	NAVY-20 JOI- 1 NSF- 4
05/25-06/25	HYDROS LEG 6 Benthic biology South of Bermuda (6/10 stop at St. George, Bermuda)	Williams/Druffel	Woods Hole	NSF-36
06/30-07/21	Re-entry experiment	Spiess/Orcutt	Miami	Navy-24
08/21-08/27	Re-entry experiment	Spiess/Orcutt	Miami?	Navy- 7

08/28 To shipyard for mid-life overhaul/refit

Posted: Fri, Mar 17, 1989 12:45 PM EST Msg: DGIJ-3902-6696
From: UNOLS.OFFICE
To: SHIP.SCHED89
Subj: UNIV HAWAII 89 MOANA WAVE

POC: James W. Coste
University of Hawaii Marine Center
#1 Sand Island Road
Honolulu, HI 96819
TEL: (808) 847-2661
TELEMAIL: HAIAII.INST

LAST UPDATE: 13 Mar 89

SHIP OPERATING SCHEDULE 1989
R/V MOANA WAVE

PORTS	DATES	PROJECT TITLE AREA OF OPERATION	NO. DAYS REQUESTED	STATUS
HONOLULU HONOLULU	01 JAN 05 JAN	MAINTENANCE	05	N/A
HONOLULU HONOLULU	06 JAN 10 JAN	HAWAIIAN OCEAN TIME SERIES STATION (LUKAS)	05	NSF(F)
HONOLULU MALAKAL	16 JAN 01 FEB	TRANSIT	18	NSF(F)
MALAKAL MAJURO	05 FEB 04 MAR	10oN TRANSECT (BRYDEN)	31	NSF(F)
MAJURO HONOLULU	08 MAR 24 MAR	10oN TRANSECT (BRYDEN)	19	NSF(F)
HONOLULU HONOLULU	25 MAR 29 MAR	HOTS (LUKAS)	05	NSF(F)
HONOLULU RODMAN	02 APR 08 MAY	10oN TRANSECT (BRYDEN)	38	NSF(F)
RODMAN GULF PORT*	12 MAY 18 MAY	TRANSIT	05 04	NSF(F) HIG(F)
SHIPYARD SHIPYARD	19 MAY 07 JUN	MAINTENANCE	19	N/A
SHIPYARD MAYAGUEZ	08 JUN 09 JUL	SeaMARC II BAHAMAS HISPANIOLA (BREEN)	34	NSF(F)
MAYAGUEZ RODMAN	13 JUL 15 AUG	SeaMARC II CARIB PLATE (MANN)	37	NSF(F)
RODMAN PUNTARENAS	19 AUG 03 SEP	CANO ISLAND REEF DIVING (GLYNN)	19	NSF(F)
PUNTARENAS	07 SEP	TRANSIT	18	NSF(F)

HONOLULU	27 SEP		05	NOAA(F)
HONOLULU HONOLULU	02 OCT 06 OCT	HOTS (LUKAS)	05	NSF(F)
HONOLULU HONOLULU	06 NOV 10 NOV	HOTS (LUKAS)	05	NSF(F)
HONOLULU HONOLULU	04 DEC 08 DEC	HOTS (LUKAS)	05	NSF(F)
		OPERATING DAYS	253	

*SHIPYARD LOCATION TO BE DETERMINED BY COMPETITIVE BIDS.

Posted: Fri Jan 27, 1989 3:31 PM EST Msg: GGIJ-3863-8555
From: WOODS.HOLE
To: SHIP.Sched89
CC: Schedulers.East.Gulf, Schedulers.West
Subj: 1989 OCEANUS

POC: Barbara J. Martineau,
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543
Tel: 508-548-1400, Ext.2450 ** TELEMAIL: WOODS.HOLE

R/V OCEANUS
1989 - Schedule

REVISED: January 19,1989

DATES	AREA & OBJECTIVE	CHIEF SCIEN. PRINC.INVEST.	END PORT	AGENCY FUND.	DAYS	STATUS
01/05 - 01/28	Tropical Atlantic SOFAR float study	Richardson	Bridgetown Fortaleza	NSF	29	F
02/01 - 02/21	Tropical Atlantic SOFAR float study	Richardson	Las Palmas	NSF	23	F
02/25 - 03/25	Tropical Atlantic CTD Study	Roemmich Hall	Bridge-town	NSF	33	F
03/30 - 04/03	Transit		St.George	NSF	8	F
04/06 - 04/24	CTD Study NE Atlantic	Joyce	Woods Hole	NSF	20	F
05/05 - 05/21	NE Sargasso Sea Nitric Oxide Study	Zafiriou	Woods Hole	NSF	17	F
05/25 - 06/21	38N,68W SYNOP Experiment	Watts (URI)	Woods Hole	ONR NSF	12 16	F F
06/26 - 06/28	Instrument Test	Luyten	Woods Hole	ONR	3	F
06/30 - 07/02	HEBBLE Tripod Recovery	Hollister	Woods Hole	ONR	3	P
07/03 - 08/02	Biannual Overhaul Shipyard & Maintenance					
08/05 - 08/22 08/24 - 09/01	38N,68W SYNOP SYNOP	Watts Watts	Woods Hole	ONR NSF	10 16	F F
09/08 - 09/10	Transit to Bermuda	Sayles	St.	NSF	19	F

09/13 - 10/05	Diagenesis study	Martin	George Woods Hole	NSF	6	P
10/11 - 11/24	NE Sargasso Sea Flow cytometry	Olson Zafiriou	Woods Hole	NSF	14	F
10/30 - 11/19	Swordfish Telemetry Mid-Atlantic	Carey	Woods Hole	NSF	21	F
11/28 - 12/04	Local-Sea Water Sampler test	Berteaux Jenkins	Woods Hole	NSF	7	F

Total for Year		257
	NSF	229
	Navy	28
Funded:		248
Pending:		9

Posted: Mon, Mar 13, 1989 5:27 PM EST Msg: DGIJ-3898-8846
From: UNOLS.OFFICE
To: SHIP.SCHED89
Subj: SCRIPPS 89 T. WASHINGTON

POC: Dr. George Shor, Jr.
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TELEMAIL: SCRIPPS.INST

LAST UPDATE: 6 Mar 89

SHIP OPERATING SCHEDULES 1989
R/V THOMAS WASHINGTON

Cruise Period	Area and Objectives	Chief Scientist	End Port	Agency Days
ROUNDABOUT EXPEDITION:				
12/31-01/10	Leg 12 Seismic survey Ontong-Java Plateau	T. Shipley	Majuro	NSF- 9
01/10-01/19	Leg 13 Transit/SeaBeam via Howland Island	N/A	Suva	NSF- 9 other-2
01/25-02/01	Leg 14 SeaBeam/SCS Lau Basin	J. Hawkins	Tonga	NSF-11
02/02-03/03	Leg 15 SeaBeam/Dredging Lau Basin	J. Hawkins	Pago Pago	NSF-26 JOI- 4
03/04-03/21	Leg 16-Transit: Sea Beam CO2 sampling via Society and Line Islands	Keeling(Guenther)	Honolulu	NSF-12 NSF- 7
03/25-04/28	Leg 17 Benthic Biology north of Hawaii	K. Smith	Honolulu	NSF-39
05/02-06/02	Leg 18 Transit, SeaBeam, Sea Marc II SeaMarc tests via Fieberling Seamount	P. Lonsdale	San Diego	NSF- 5 ONR-26 UC- 2
06/02-08/17	BIENNIAL OVERHAUL		SAN DIEGO	
08/28-10/02	Coring/SCS/SeaBeam Equatorial carbonate area	N. Pisias (OSU)	Acapulco	NSF-37
10/06-11/07	Dredging/SeaBeam East Pacific Rise 8-12N	J. Bender/ C. Langmuir/ K. Kastens	Manzanillo	NSF-37
11/12-12/16	ARGO photos/dredging Hydrothermal areas East Pacific Rise 9 N	R. Haymon/ D. Fornari	San Diego	NSF-37

Command?
Command?
Command? bye

This mail session is now complete.

MAIL DISCONNECTED 00 40 00:00:02:00 124 13

R/V Bernier

Preliminary Schedule as of April 7, 1989

- in yard for re-fit and cross-decking from *R/V Conrad* for remainder of 1989 -

Beginning Jan 1, 1990:

8 programs in the north, central and south Atlantic, 2 of which are funded

2 programs in the southern and central Indian Ocean

7 programs in the western and eastern Pacific

NERC RESEARCH SHIPS PROGRAMMES 1989/90

Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
03 10 17 24	1 8 15 22 29	05 12 19 26	3 10 17 24 31	07 14 21 28	04 11 18 25	2 9 16 23 30	06 13 20 27	04 11 18 25	1 8 15 22 29	05 12 19 26	05 12 19 26

RRS Charles Darwin

Dates	Port	Cruise	Principal scientist	Institution	Work / Area
10–14	VALPARAISO	38	Price	*Edinburgh*	Geochemistry Off Peru
11–15	BALBOA	39	Sinha	*Cambridge*	Geophysics E Pacific Rise
16–20	BALBOA	40	Westbrook	*Bir'm'm*	Geoph Off Colombia
20–22	B'BOA	40A	Breen	*LDGO*	Geoph
07–10	WHOI	41	Hogg	*WHOI*	Physics NW Atlantic
31–08	WHOI				Passage
15–22	BARRY	42	Saunders	*IOSDL*	Physics NW Atlantic
16–20	TROON	43	Taylor + Smith	*IOSDL* *UMIST*	Physics NE Atlantic
22–24	TROON	44	Ellett	*DML*	Physics NE Atlantic
04–06 – 10	UK PORT				Refit
					Charter or US Barter

RRS Discovery

Dates	Port	Cruise	Principal scientist	Institution	Work / Area
01–08	BARRY VIGO	181	Pollard	*IOSDL*	Physics Azores
03–07	BARRY	182	Fasham	*IOSDL*	BOFS NE Atlantic
08–11	TROON	183	Harris	*PML*	BOFS NE Atlantic
12–14	FALMOUTH	184	McCave	*Cambridge*	BOFS NE Atlantic
14–18	BARRY	185	Rice + Priede	*IOSDL* *A'deen*	Biol. Physiol. Porc. Bight
17–20	MADEIRA	186	Tyler	*So'ton*	Biology Iberian Pen.
16–20	LISBON	187	Weaver	*IOSDL*	Geochem Iberian Pen.
14 Nov 16 – 22	LISBON / BARRY	188	Masson	*IOSDL*	Geophysics Canary Basin
					Vessel Conversion (or Lay-Up or Charter)

Moved to March

RRS Challenger

Dates	Cruise	Principal scientist	Institution	Work
29–10	GY 49			Survey
12–25	GY 50	Burton	*So'ton*	Chemistry
27–	GY 51			Survey
09–11	GY 52	Reid	*PML*	Sedim.
24–26	GY 53			Survey
07–09	GY 54	Joint	*PML*	Biology
22–24	GY 55			Survey
07–08	GY 56	James	*POL*	Physics
22–24	GY 57			Survey
06–07	GY 58	Hill	*UCNW*	Physics
21–23	GY 59			Survey
04–06	GY 60	Reid	*PML*	Sedim.
19–21	GY 61			Survey
03–05	GY 62	Watson	*PML*	Physics
23–26 – 30	BARRY			Refit
				Charter
03–24				Lay-Up; DAFS Charter
27	BARRY			
01–31	TROON 63	Gordon+Ellett	*DML*	Biol. + Phys. NE Atlantic

Charter Ships

Month	Duration	Principal scientist	Institution	Work / Area
May	8 days	Ellett	*DML*	Physics NE Atlantic
Aug	8 days	Ellett	*DML*	Physics NE Atlantic

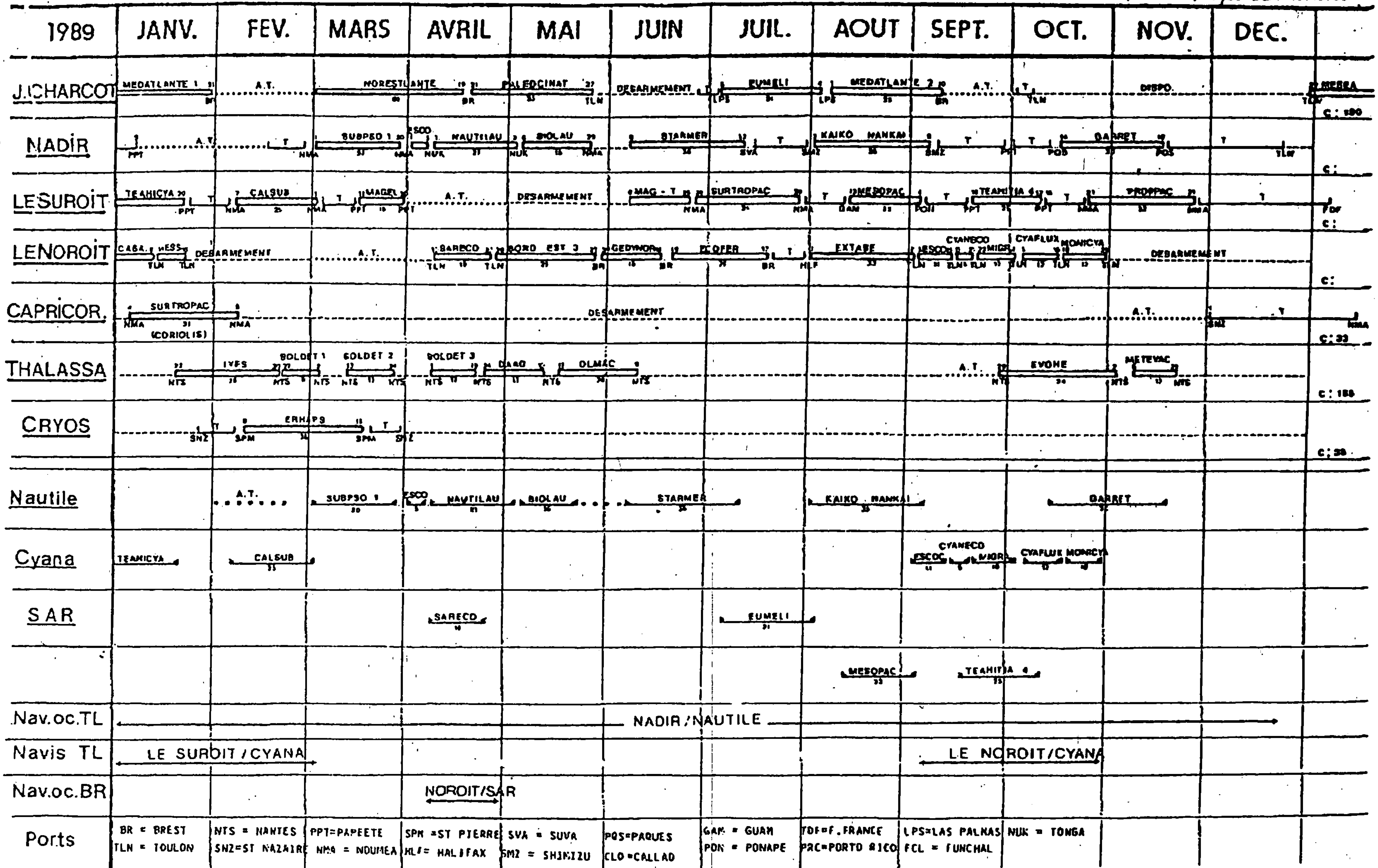
Version 2 (February 1989)

- 72 - UK.

IFREMER

PROGRAMME DES MOYENS NAVALS

projet du : 19/10/88



1989 FRANCE PROGRAMS

KEY: Charcot

NORESTLANTE : ocean-continent boundary
: deep refraction seismics
NE Atlantique : N et S part of bay of Biscay (Pendragon esc., Galicia Bank)
Sibuet

PALEOCINAT.
: paleoclimate and global changes
N.W Atlantiq. (Labeyrie)

EUMELI : flux of ~~matter~~ materials in the oceans off Marocco, Mauritanie
(Auffret)

NADIR + Nautile

SUBSO 1 : d'Entrecasteaux collision
Vanuatu (Daniel)

NAUTILAU : Lau basin
Valufu ridge
(Fouquet, Von Stackelberg)

STARMER : N. Fiji basin
ridge N Fiji (16°30 et 20°30)
(Auzende - Houza or Urabe
STA

KAIKO-NANKAI : active faults and cold seeps in Nankai accretionary prism
(Le Pichon - Kobayashi)
ORI)

GARRETT : deppest part of the Garett F.Z.
F.Z. (Hekinian)

Suroit — TEAHITIA. (+ Cyana)
hot spot near Tahiti
(Cheminée)

MAGELLAN. same area Tahiti
magneto-tellurique (Tarits)

MESOPAC. paleoenvironments - volcanic events of Cretaceous
(projet OLD CRUST)
(Lancelot) Sismique multitrace

TEAHITIA 4 : hot spot Tahiti
deep structure : refraction,
sismique 3.D,

F.S. SONNE Operations-schedule 1989-1990

cruise	dep. - arr.	from - to: (area)	Program (Charter)
SO-62	4-89 -- 7-89	Callao-Valparaiso	GEOMETEP 5 (BGR) [Geology,Geochemistry on East Pacific Rise]
SO-63	7-89 -- 9-89	-Callao	Uni Marburg [det.hydrthermal studies on special areas of the EPR]
SO-64	9-89 -- 10-89	-Callao	Uni Hamburg [DISCOL Biology and Geology environmental st. ,Central Pacific
SO-65	10-89-- 12-89	-Tahiti	Uni Kiel [MIDPLATE 2,Hydrthermal studies in south.centr.Pacific and Geophysic near Tahiti
SO-66	12-89-- 2-90	-Fidji Isl.	TU Clausthal [MIDPAC 4, Hydrthermal stud.within the area of KIRIBATI/equatorial Pacific
SO-67	2-90-- 4-90	-Fidji Isl.	BGR [Geology of the Manihiki Plateau,geolgical and hydroth. studies in the Lau Basin

F.S. POLARSTERN Operations-schedule 1989 - 1990

cruise	when	program (charter)	area
ANT VIII/1	7/89-8/89	Water geochemistry	South Atlantic
ANT VIII/2	8/89-10/89	Meteorology and Oceanography	northern Weddel Sea
ANT VIII/3	10/89-2/90	Glaciology,oceanography,marine geophysics	Weddel Sea
ANT VIII/4	2/90-4/90	Geophysics and marine geology	Astrid Ridge

F.S. METEOR Operations-schedule 1989 - 1990

Zeit	Fahrtabschnitt/ Endhafen	Aufgabe: Arbeitsgebiet	Aufgabe: Themen/Programm/wiss. Disziplinen	Koordinator	Fahrtleiter
1989					
	Tenerife	Östl. Nordatlantik	SFB 133	Zenk	Wefer
19.03. - 27.04.	M10/1 Pt.Delgada	Zentr.Nordatlantik	"Plankton 89"	Zeitzschel	Zeitzschel
27.04. - 12.06.	M10/2 Reykjavik	Zentr.Nordatlantik	"Plankton 89"	Zeitzschel	Lenz
15.06. - 12.07.	M10/3 Reykjavik	Zentr.Nordatlantik	"Plankton 89"	Zeitzschel	Zeitzschel
15.07. - 31.08.	M10/4 Hamburg	Östl.Nordatlantik	BIOTRANS	Zeitzschel	Thiel
	W e r f t z e i t				
03.10. - 31.10.	M11/1 Rio Grande	Atlantischer Transect	SFB 133	Roether	Müller
02.11. - 21.11.	M11/2 Ushuaia	Drake Passage	Tracerozeanographie	Roether	Roether
23.11. - 21.12.	M11/3 Mar del Plata	Patagonischer Schelf	Fischereibiologie	Roether	Nellen
1990					
27.12. - 22.01.	M11/4 Ushuaia	Antarktische Halbinsel	Krill/BIOMASS	Roether	Sahrhage
24.01. - 26.02.	M11/5 Kapstadt	Zirkumpolarstrom	Tracerozeanographie	Roether	Roether
01.03. - 28.03.	M12/1 Pt. Delgada	südl. Ostatlantik	Partikelsedimentation	Wefer	Wefer
31.03. - 12.05.	M12/2 Pt. Delgada	Zentralatlantische Kuppen	Geophysik/Petrologie	Wefer	Weigel
15.05. - 19.06.	M12/3 Hamburg	Östl. Nordatlantik	BIOTRANS/JGOFS	Wefer	Thiel

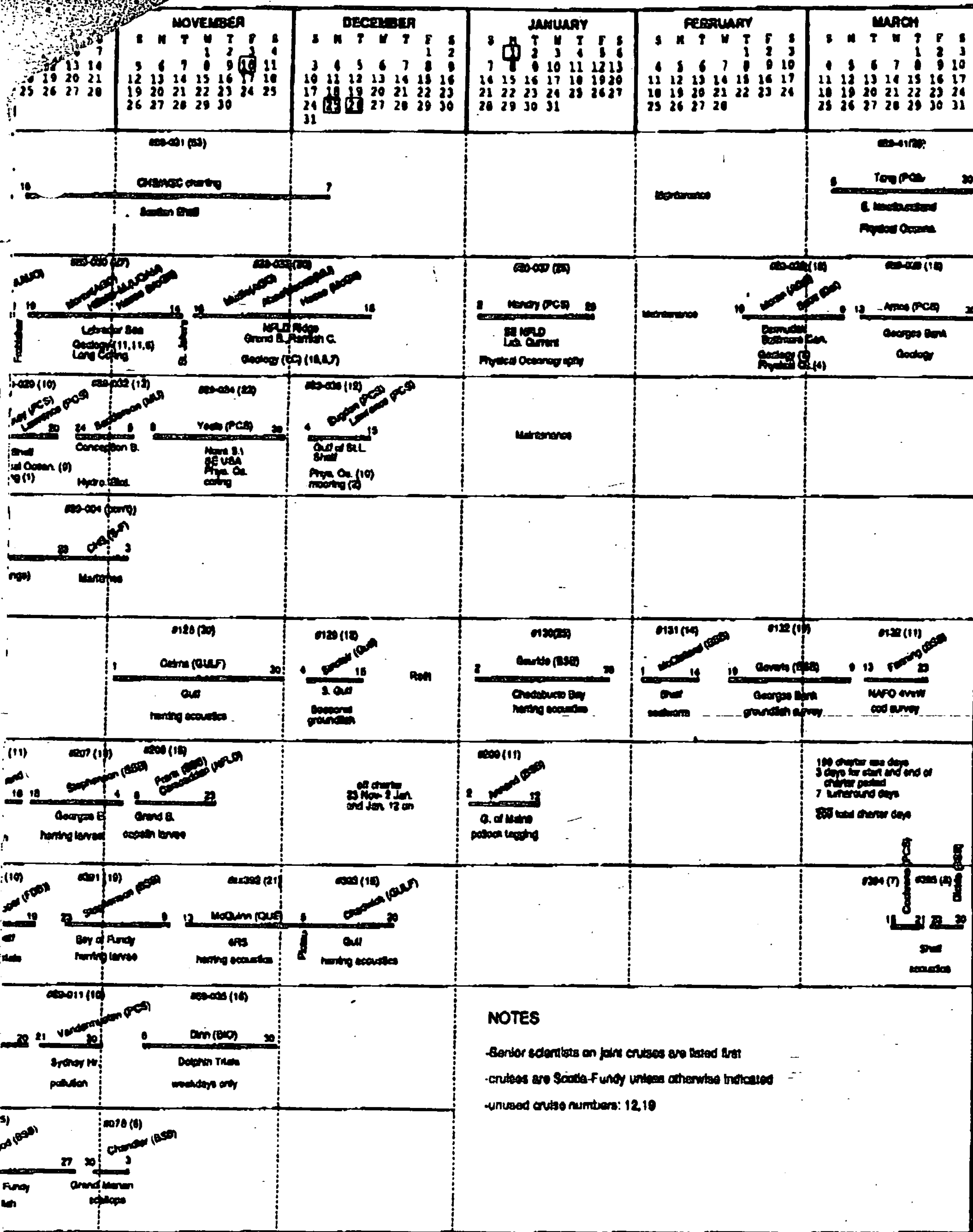
SHIP SCHEDULE (MG&G cruises) 89.04.07

1989 JAPANESE RESEARCH VESSELS

R/V HAKUHO-MARU (new) (ORI, U. of Tokyo)	Jun 01- Jun 15	test (K. Kobayashi)
	Jun 20- Jul 13	Nankai (J. Segawa)
	Jul 14- Jul 19	test (A. Taira)
R/V TANSEI-MARU (ORI, U. of Tokyo)	Apr 10- Apr 17	E. off Jpn (J. Segawa)
	Apr 20- Apr 26	E. off Jpn (J. Segawa)
	Sep 24 - Oct 05	Japan Sea (K. Tamaki)
	Nov 24- Dec 02	Nankai (K. Kobayashi)
	Dec 05- Dec 15	Nankai (K. Suyehiro)
R/V HAKUREI-MARU (GSJ/JNOC)	Apr 17- May 19	Bonin (GH89-1)
	May 26- Jul 03	Japan Sea (GH-89-2)
	Jul 21- Sep 05	Okinawa Tr.(GH-89-3)
	Sep 12- Oct 11	Japan Sea (GH-89-4)

R/V TAKUYO (Hydrographic Dept. MSA) routine seafloor mapping / Philippine Sea

CHARTERED SHIP to be determined
DELP project (national lithosphere program)



...E TO DUE TO PROGRAM OR VESSEL REQUIREMENTS. FOR MORE INFORMATION ON SCOTIA-FUNDY BASED VESSELS CONTACT A. ADAMS (902) 426-7292

A 98050473 IFREMER 1989-05-15 21:29 BON P5

Energy, Mines and Resources Canada
Energie, Mines et Ressources Canada

Geological Survey of Canada
Commission geologique du Canada

12 May 1989

GS7170-5

Dr. Keith Louden
IFREMER 940627F
IFREMER Centre de Brest
France

Dear Keith:

Attached, in three pieces, is a copy of the latest BIO ship schedule. Not certain in detail, but certain that the Hudson will be delayed at least a month from present schedule.

Sincerely,

Keith

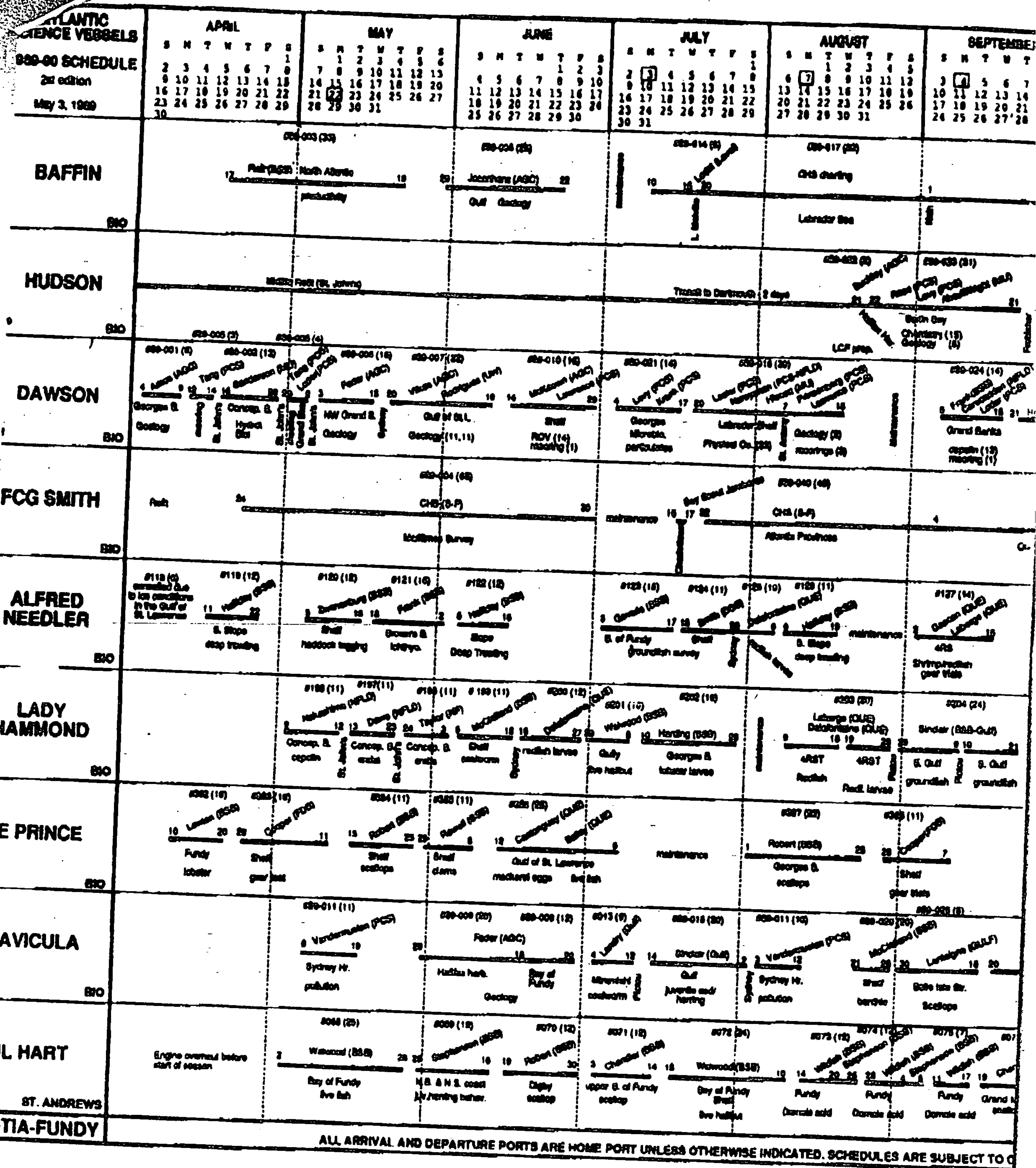
Keith S. Manchester

attachment

Atlantic Geoscience Centre
Bedford Institute of Oceanography
Box 1006, Dartmouth, Nova Scotia
B2Y 4A2
Telex 019-31552
Fax 426-7827
Telephone 426-8513

Centre géoscientifique de l'Atlantique
Institute océanographique de Bedford
C.P. 1006, Dartmouth, Nouvelle-Ecosse
B2Y 4A2
Telex 019-31552
Fax 426-7827
Teléphone 426-8513

Canada


ATLANTIC SCIENCE VESSELS
1989-90 SCHEDULE
2nd edition
May 3, 1989
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
BAFFIN
BIO
Labrador Sea
HUDSON
Transit to Dartmouth - 2 days
Baffin Bay
DAWSON
Georges B.
Geology
Gulf of St.L.
Grand Banks
FCG SMITH
CHS (S-P)
maintenance
Atlantic Provinces
ALFRED NEEDLER
S. Slope
deep trawling
Shelf
haddock tagging
Deep Trawling
groundfish survey
maintenance
Shrimp/redfish gear trials
LADY HAMMOND
Concep. B.
Shelf
Georges B.
lobster larvae
4RST
Redfish
S. Gulf
groundfish
E PRINCE
Fundy
lobster
Shelf
scallops
Gulf of St. Lawrence
mackerel eggs
maintenance
Robert (BSB)
Georges B.
scallops
gear trials
AVICULA
Sydney Hr.
pollution
Halifax harb.
Geology
Bay of Fundy
Sydney Hr.
pollution
L HART
Engine overhaul before start of season
Bay of Fundy
live fish
Digby
scallop
upper B. of Fundy
scallop
Bay of Fundy
live halibut
Fundy
Domoic acid
ST. ANDREWS
TIA-FUNDY
ALL ARRIVAL AND DEPARTURE PORTS ARE HOME PORT UNLESS OTHERWISE INDICATED. SCHEDULES ARE SUBJECT TO C

SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S	S M T W T
1 2	1 2 3 4 5 6 7	1 2 3 4	1 2	1 2 3 4 5 6	1
3 4 5 6 7 8 9	8 9 10 11 12 13 14	5 6 7 8 9 10 11	3 4 5 6 7 8 9	7 8 9 10 11 12 13	4 5 6 7 8
10 11 12 13 14 15 16	15 16 17 18 19 20 21	12 13 14 15 16 17 18	10 11 12 13 14 15 16	14 15 16 17 18 19 20	11 12 13 14 15
17 18 19 20 21 22 23	22 23 24 25 26 27 28	19 20 21 22 23 24 25	17 18 19 20 21 22 23	21 22 23 24 25 26 27	18 19 20 21 22
24 25 26 27 28 29 30	29 30 31	26 27 28 29 30	24 25 26 27 28 29 30 31	28 29 30 31	25 26 27 28

#89-017 (82) — Labrador Sea; 1 – 6; 16 — #89-031 (83) CHS/AGC charting — 7; Scotian Shelf; Maintenance

#89-022 (8) LCF prep.; #89-023 (31) Baffin Bay, Chemistry (15), Geology (8) — 21; #89-027 (27) MacLean (AGC) Hudson Strait, Geology (20,5) — 18; #89-030 (27) Labrador Sea, Geology (11,11,5), Long Coring — 14; #89-033 (26) NFLD Ridge, Grand B. Flemish C., Geology (UC) (15,5,7) — 15; #89-037 (28) Hendry (PCS) 2 – 29, SE NFLD Lab. Current, Physical Oceanography; Maintenance 19

Geology (3), moorings (3) — 15; Maintenance; #89-024 (14) 5 Grand Banks, capelin (13), mooring (1); #89-025 (16) 21 Harman (PCS) 6 Sastre Zoepl.; #89-023 (16) 11 – 30 Shelf, Physical Ocean. (6), mooring (1); #89-032 (13) 24 – 5 Conception B., Hydro Std.; #89-034 (22) 8 Yeats (PCS) 30, Nova S. \ SE USA, Phys. Oc. sailing; #89-036 (12) 4 – 15 Gulf of St.L. Shelf, Phys. Oc. (10), mooring (2)

89-040 (49) 15 (S-F) Atlantic Provinces; #89-0?? (30) 4 CHS (Quebec) 29, Quebec survey (Lauder exchange); #89-004 (Cont'd) 3 Maritimes

#126 (11) 8 – 19 S. Slope deep trawling, maintenance; #127 (14) 1 – 15 4RS Shrimp/redfish gear trials; #128 (30) 1 Cairns (GULF) 30 Gulf herring acoustics; #129 (12) 4 – 15 S. Gulf Seasonal groundfish; Refit; #130 (25) 2 Bourke (BSB) 29 Chedabucto Bay herring acoustics; #131 (14) 1 – 14 Shelf sandworm; 19

#203 (20) Serge (OUE) 8 – 18 4RST Redfish; 19 – 26 4RST Redf. larvae; #204 (24) Sinclair (BSB-Gulf) 9 S. Gulf groundfish; 10 – 21 S. Gulf groundfish; #205 (12) 23 – 4 Shelf Juv. fish trawl Ocean; #206 (11) 5 – 15 Shelf sandworm; #207 (18) 16 – 4 Georges B. herring larvae; #208 (18) 5 – 22 Grand B. capelin larvae; off charter 23 Nov.–2 Jan. and Jan. 12 on; #209 (11) 2 – 12 G. of Maine pollock tagging

#387 (23) Robert (BSB) 25 Georges B. scallops; #388 (11) 26 – 7 Shelf gear trials; #389 (12) 25 – 6 Shelf shrimp; #390 (10) 10 – 19 Shelf gear trials; #391 (19) 22 – 9 Bay of Fundy herring larvae; #392 (21) 12 McQuinn (OUE) 4RS herring acoustics; #393 (16) 5 – 20 Gulf herring acoustics

-011 (10) 12 Sydney Hr. pollution; #89-020 (29) 21 – 29 Shelf benthic; 30 Lafleigne (GULF) 18 Belle Isle Str. Scallops; #89-026 (8); #89-028 (34) 20 Forbes (AGC) 30 Newfoundland geology; #89-011 (16) 21 Vandermeulen (PCS) 30 Sydney Hr. pollution; #89-025 (18) 6 Dinn (BIO) 30 Dolphin Trials weekdays only

#073 (12) 10 – 16 – 20 Fundy Domoic acid; #074 (12) 23 – 26 – 4 Fundy Domoic acid; #075 (7) 11 – 17 Fundy Domoic acid; #076 (11) 19 – 29 Grand Manan scallops; #077 (25) 3 – 27 Bay of Fundy Live fish; #078 (5) 30 – 3 Chandler (BSB) Grand Manan scallops

NOTES

- Senior scientists on joint cruises are listed first
- cruises are Scotia-Fundy unless otherwise ind.
- unused cruise numbers: 12,19

INDICATED. SCHEDULES ARE SUBJECT TO CHANGE AT ANY TIME TO DUE TO PROGRAM OR VESSEL REQUIREMENTS. FOR MORE INFORMATION ON SCOTIA-FUNDY BASED VESSELS C

A-6 - CANADA.

Energy, Mines and Resources Canada
Énergie, Mines et Ressources Canada

Earth Sciences
Sciences de la Terre

Pacific Geoscience Centre
9860 West Saanich Road
P.O. Box 6000
Sidney, B.C.
V8L 4B2

Centre géoscientifique du Pacifique
9860, chemin Saanich ouest
C.P. 6000
Sidney, C.-B.
V8L 4B2

Your file Votre référence

Our file Notre référence

89-04-25

Dr. Keith Louden
IFREMER Centre de Brest
BP 70
29673 Plouzane, France

Bon jour Keith,

Of relevance to ODP are the following cruises:

Scientists	Ship	Place:Work	Dates
Davis, Franklin, Becker, Zierenberg	Tully	Escanaba Trough, Middle Valley: Seismic, HF, pore pressure, pore fluid chemistry	May 8-June 2
Pedersen/Bornhold	Parizeau	Patton-Murray Smts: Seismic, coring	June 26-July 14
Hyndman/Yorath	Contract	Vancouver margin, Middle Valley: Multi-channel seismic	July
Rohr/Purdy	Tully	Juan de Fuca flank: Deep-source seismic refraction	June 5-June 23

I hope you and Adele are enjoying your stay in Brest,

All the best,

Earl

Earl Davis
PGC

Canada

TIME TO DRILLING		PANEL REVIEW	DATABANK (DB)
D -4 yrs	General ship track determination	PCOM	
	Proposal submitted to JOIDES Office, which distributes copies.		Proposal deposited at DB Proponent identifies reference data
D -3 yrs	Initial evaluation	Thematic Panels	
	First Review Data Bank searches authorized.	PCOM commences tracking proposals with favorable thematic evaluation.	
			DB summarizes available data and initiates search of other databases
	Preliminary data assessment	Site Survey Panel	
	Prioritization and merging	Thematic Panels and Detailed Planning Groups	
			DB compiles site survey data package
	Specific site survey recommendations	Site Survey Panel	
	Supplemental site survey conducted		
		PPSP preview if required by the proponent	Site survey data deposited into DB
D - 2 to 1.5 yrs	Inclusion in drilling program	PCOM planning decision at Annual Meeting	
	Science Operator prepares for drilling		DB incorporates new site survey data and synthesizes final site survey data package
D -1 yr	Data assessment	Site Survey Panel	
			DB compiles safety package
D - 6 mo.			
	Safety review	Pollution Prevention and Safety Panel (PCOM final approval if necessary after PPSP changes)	DB compiles co-chief data package

* DRILLING *

A-8

LEG 124E
DIAMOND CORING SYSTEM
DCS - 2000 M

TEST RESULTS

* ESTABLISHED FEASIBILITY OF HANDLING/DEPLOYING DCS AT SEA
* DEMONSTRATED CONCEPT OF CUTTING DCS CORE FROM FLOATING VESSEL
    * IN 1600 METER WATER DEPTH
    * UNDER SEVERE ENVIRONMENTAL CONDITIONS
* SECONDARY COMPENSATION FUNCTIONED SUCCESSFULLY UNDER ENVIRONMENTAL CONDITIONS EXCEEDING THE DESIGN PARAMETERS
    * DESIGN: WOB ± <u>500 LB</u>, 4-6 FT HEAVE, <u>8 SEC</u> PERIOD
    * ACTUAL: WOB ± <u>500 LB</u>, 4-6 FT HEAVE, <u>4 SEC</u> PERIOD
* DRILL ROD STRING WITH WEDGE THREAD CONNECTIONS PERFORMED WELL
* TOP DRIVE, HYDRAULIC POWER PACK, MUD PUMPS, PLATFORM, MAST AND FEED CYLINDER ALL PERFORMED SATISFACTORILY

DESIRED IMPROVEMENTS

* STRENGTHEN WIRELINE TOOLS FOR RUGGED DEEP WATER ENVIRONMENT
* UPGRADE CORE WINCH - ADD BRAKE AND LEVEL WIND FEATURES
* IMPROVE UMBILICAL DESIGN
* REDUCE HANDLING/DEPLOYMENT TIME AND UPGRADE DEPTH CAPABILITY
* DEVELOP MEANS TO CONTROL UPPER HOLE STABILITY

Response to SSP Questions/Comments From October 1988 Meeting.

Items 1&2. HIGHRES

-Seismic acquisition is viewed as being adequate (at this point in time) with any potential modifications having a priority below that of improving shipboard navigation and plotting capabilities (see below). Previous inconsistencies with the bridge and underway logs have been resolved as a watchstander's manual was written to formalize the watch routine of the technical staff. ODP is aware of the inadequacies (software and documentation) of HIGHRES and the processing program, Define Process. This problem has been partly improved by the recent acquisition of SIOSEIS (written by Paul Henkart, SIO). This program [illegible] *JOIDES Resolution* during Leg 125.

Items 3-5. Streamers

-Negotiations are currently underway with LDGO for the loan of their french built high-speed streamer for evaluation during an upcoming ODP cruise (either Leg 127 or 128). If this streamer works as advertised, we will request approval and funds to purchase such a system for routine use on *JOIDES Resolution*.

-Deployment tests for depth control will be considered during evaluation of the high speed streamer. Previous tests using high-speed towing fish were completed during Leg 121 to improve the depth postion of the array. Current ODP streamers are not made for towing at high speeds.

Item 6. Sonar Dome

- Use of the Sonar Dome begining with Leg 123 has resulted in enhanced 3.5- and 12-kHz records collected at full speed. On Leg 124E records were improved as long as the water depth was <5000 m and the sea state was calm to moderate. In deeper waters the records were still poor. During the upcoming dry dock, we propose to replace the existing 3.5-kHz transducers (arranged in an array in the sonar dome) with a single (10kw) transducer in an attempt to get records in the combination of deeper water and rougher sea state.

Item 7. Time Standards
-Clocks accurate enough to track GPS on 2 satellites are currently onboard JOIDES Resolution, however, the LORAN-C on JOIDES Resolution operates in dual channel mode rather than in Rho-Rho mode (see statement by Randy).

Item 8. Underway Scientists
-ODP will continue alerting Co-Chief Scientists to the advantages of sailing "Underway Geophysicists" and will staff such a position when appropriate. ODP will also assist the "Underway Specialist" in becoming familiar with the shipboard operating systems. For examp..., ... happened for Leg 126 when the Underway Geophysicist came to ODP/TAMU prior to the cruise to become familiar with SIOSEIS and HIGHRES.

Item 9 Navigation
-ODP is investigating means to acquire the capabilities for plotting unsmoothed navigation x-y plots in real-time and smoothednavigation plots in near-real time (24-48 hours after data collection). The latter should be capable of plotting at least one additional parameter along trackline as well as strip charts for quality control. Three options are currently available (see comments from 10 November meeting). ODP considers this top priority and has implemented several preliminary steps to improve shipboard navigation:

1) ODP is in the process of scheduling an investigation group to evaluate the various systems available from various sources (LDGO, URI, Magnavox, for example) and to provide ODP with recommendations as to the best direction to proceed.

2) ODP is evaluating ways to improve the training of the technical support group.

OCEAN DRILLING PROGRAM

SITE SURVEY PANEL MINUTES

University College of Swansea
Swansea, Wales

October 4-6, 1988

Present :

Greg Mountain* *(Chairman, USA)*
Fred Duennebier* *(USA)*
Rob Kidd* *(UK)*
Birger Larsen* *(ESF)*
Steve Lewis* *(USA)*
Heinrich Meyer* *(Germany)*
John Peirce* *(Canada)*
Kiyoshi Suyehiro* *(Japan)*
Jack Baldauf *(TAMU, alt. for A. Meyer)*
Carl Brenner *(Data Bank)*
Peter Davies *(BMR, Australia)*
Tim Francis *(PCOM)*
John Jones *(ULondon, UK)*
Dave McKenzie *(PPSP)*
Laurent d'Ouzouville *(JOIDES office)*
Lindsay Parson *(IOS, UK)*

Absent :

replacement for Alain Mauffret* *(France)*

* *panel members*

SITE SURVEY PANEL

Swansea, Wales
October 4-6, 1988

EXECUTIVE SUMMARY

1. IMPACT OF THE NEW ADVISORY STRUCTURE ON SSP FUNCTIONS

Past success of SSP in identifying and correcting shortfalls of site survey adequacy have been made possible by lead times between initial panel review and actual drilling that are on the order of three years or more. These early reviews have been possible due to drilling prospectuses being prepared by regional panels. SSP emphasizes that this responsibility will now fall on the thematic panels, and stresses that they continue to supply SSP with prospectuses that are sufficiently mature AND sufficiently early for meaningful evaluation.

2. UNDERWAY GEOPHYSICS

The SSP continues to be concerned about the shortcomings of underway geophysics onboard the *Resolution*. Of greatest concern is the need to evaluate navigation quality in real-time, and to be able to produce smoothed navigation in a timely fashion. Secondary items relate to plotting various parameters along track, improving the 3.5 and 12 KHz systems, and improving the shipboard seismic acquisition and recording systems.

3. ASSESSMENT OF SCHEDULED WPAC PROGRAMS

A. Leg 125

In contrast to the report at the last SSP meeting, no piston cores are available at BON6; if this is to be a re-entry site, the ODP/TAMU engineers must be alerted to this inadequacy. Available information suggests there is little sediment cover at MAR3, and while SSP points out the likelihood of this being an effectively "bare-rock" site, unsupported spud-in may be possible.

B. Leg 126

Survey data is adequate for drilling at BON1. However, large variations in heat flow values indicate intensive hydrothermal circulation. There exists the possibility of encountering high temperatures within upwelling zones, possibly in the immediate vicinity of normal fault scarps. SSP urges the proponents finalize recent measurements, incorporate them with previous data and with the known fault distribution, and discuss anticipated target depth temperatures with both ODP/TAMU engineers and with PPSP.

C. Leg 127

New MCS profiles were reviewed. Sites J1d and J1e are approved for drilling. Acoustic stratification beneath the proposed basement reflector at J3b warrant further investigation before this site is approved.

D. Leg 128

Sites J2a and JS2 were approved by SSP at its last meeting.

E. Leg 129

Sites NKT1 and NKT2 were approved by SSP at its last meeting.

4. ASSESSMENT OF NON-SCHEDULED WPAC PROGRAMS

A. Northeast Australia

An exceptionally thorough data package across 13 NE Australia sites was presented to the Panel. All sites (NEA1-6 and NEA8-14) are approved.

B. Lau Basin

New information from *Darwin-33* was reviewed, and it revealed complexities unrecognized in earlier survey data of Lau Basin. Before SSP can evaluate the adequacy of the total survey package, a revised and unified set of drilling objectives must be developed. A request that Jim Hawkins collect additional data may be desirable.

C. Vanuatu

All Vanuatu sites except the prime site DEZ2 are approved for drilling. Velocities at DEZ2 are reasonably interpreted by Fisher + Collot. However, there is a reasonable chance that the drilled section will be highly fractured, and SSP suggests that penetration to even the most optimistic target depth of 850 m may call for re-entry. No piston cores are available to assess physical properties of surficial sediments, and SSP recommends that PCOM evaluate the need for this information and consider requesting ORSTOM collect piston cores at proposed Site DEZ2.

D. Geochemical Reference Sites

SSP discussed the three-hole geochemical reference site program and reached the following consensus: 1) sufficient data exist for specifying the location of BON8, though this has yet to be done; 2) MAR4 is sufficiently well surveyed, but the chance for adequate drilling recovery in hard-soft layers has yet to be determined; and 3) survey data and specific site location for MAR5 have not been identified.

5. PRELIMINARY ASSESSMENT OF CEPAC PROGRAMS

A. Flexure of the Lithosphere
- not reviewed at Swansea meeting
- chronostratigraphic control is essential; pilot study based on paleomagnetics is forthcoming

B. Chile Triple Junction
- all survey requirements have been met, and with the preliminary MCS profiles, tentative sites have been selected
- SSP awaits final processing and site selection

C. Cascadia Accretionary Prism
1) Vancouver décollement
   - crossing MCS lines are needed at proposed sites
   - better three-dimensional definition of accretionary wedge is strongly recommended to optimize exact site locations

2) Oregon transect
   - SSP urges that before the next MCS survey grid is collected that PPSP be consulted for its advice re: track spacing, acquisition parameters, extent of processing, etc.

D. Old Pacific Crust
- basement at recently surveyed Sites PIG3+4, EMB1+2 is inadequately imaged
- additional Sites PIG1+2 to be surveyed by Suroit in early '89; SSP stresses need for large volume airguns, sonobuoys and magnetics
- due to probability of encountering chert and/or volcanic sills, SSP suggests that chances of meaningful recovery AND successful drilling to basement should be re-evaluated after Navidrill test on 124E

E. Paleogene and Mesozoic Paleoceanography and Sea Level Seamount-Guyot and Subsidence Histories: Central Pacific
- preliminary review of recently acquired SCS and 3.5 KHz underscores the complex subsidence histories of guyots and the need for integration with regional tectonic models

F. Ontong-Java Plateau
- survey cruise scheduled for Nov, '88

G. Neogene Paleoceanography in the Eastern Equatorial Pacific
- SSP urges proponents to continue search for better seismics than are shown in prospectus; if none are found, then additional N-S hi-res SCS and 3.5 KHz profiles are needed

H. North Pacific Neogene
- Patton Seamount data package is adequate
- SSP awaits the presentation of a mature data package for Sites Meiji 1+2 and NW 1, 3 + 4. The proponents ought to investigate all available repositories of high-res SCS data; many of the small-volume air gun records shown in the prospectus are inadequate.

I. The Bering Sea: High-latitude Record of Late Mesozoic to Cenozoic Climate and Tectonics
- not reviewed at Swansea meeting
- survey package appears to be adequate from SSP perspective

J. Shatsky Rise, Anoxic Events
- SSP awaits the presentation of a mature data package for drilling on Shatsky Rise. Bottom current erosion and slumping have been important processes on the flanks of this feature, and optimal site location requires a dense net of high-res SCS to define the targets.

K. Lower Crust: Penetration of Layer 3
- Adequate data exist for deepening Hole 504B.

L. EPR Bare Rock Drilling
- Specific locations have not been selected. The report of the EPR working group demonstrates that the likely proponents are aware of the need to integrate a complex array of survey technologies.

M. Hydrothermal Processes at Sedimented Ridge Crests
- not reviewed at Swansea meeting

N. Early Stages of Hot Spot Volcanism: Loihi
- adequte survey package lacking only in side-scan imagery from a deep-towed source

6. OTHER MATTERS

A. SSP encourages the Deep Submergence Lab to submit to the JOIDES office an "idea proposal" that 1) describes the capabilities of its towed vehicles, and 2) suggests applications to upcoming site surveys.

B. The next meeting of SSP is tentatively scheduled for three days in Hawaii during the first two weeks of March, 1989.

SITE SURVEY PANEL

Swansea, Wales
October 4-6, 1988

ACTION ITEMS

*ACTION - **Laurent d'Ouzouville** will mail a copy of the July, '88 CEPAC prospectus to each member of SSP who does not already have one.*

*ACTION - **Laurent d'Ouzouville** will distribute to each site proponent (or team of proponents) the most current site survey matrix (see Appendix B1+2) as each new proposal is received at the JOIDES office. The proponent(s) will be required to complete the matrix before the proposal is logged in.*

*ACTION - **Fred Duennebier and John Peirce** will prepare a statement in reponse to TAMU's request for an SSP consensus re: the needs for implementation of an underway geophysical data processing capablility aboard Resolution.* (This statement was reviewed and finalized by the full panel on day 3 of this meeting, and is included as Appendix D.)

*ACTION - **Jack Baldauf** to coordinate actions at TAMU in response to SSP comments on underway geophysics (Appendix D), and report back to SSP at its next meeting.*

*ACTION - **Carl Brenner** will gather estimates for the costs of reproducing EPR syntheses, and present these at the next SSP meeting.*

*ACTION - At the upcoming PPSP meeting in Hawaii, **Laurent d'Ouzouville** will present SSP's request that JOIDES distribute the most current safety guidelines to the site proponents of all new proposals at the time they are received at the JOIDES office.*

*ACTION - **Carl Brenner** to write to Alan Cooper requesting a copy (on reproducible substrate if possible) of the version of the seismic line he feels is most useful to the interpretation of drilling results in Prydz Bay.*

*ACTION - **Jack Baldauf** will assemble the history of mini-cone deployment, noting especially performance in various surficial sediment types, and will relay findings to both the TAMU engineers and to Greg Mountain.*

*ACTION - **Fred Duennebier** will send to Jack Baldauf data recently acquired on Moana Wave across Seamount 853 to provide TAMU the opportunity to re-locate ENG1.*

*ACTION - **Jack Baldauf** to inform ODP/TAMU engineers of the lack of piston cores in the vicinity of potential re-entry site BON6.*

*ACTION - **Heinrich Meyer** will search for the record of a piston core taken near MAR3 during the recent Sonne 57 cruise, and will forward a report to Jack Baldauf.*

*ACTION - **Kiyoshi Suyehiro** to coordinate the discussions of probable target depth temperatures at BON1 between site proponents, ODP/TAMU engineers, and PPSP. Correspondence is to be copied to Greg Mountain.*

*ACTION - **Greg Mountain** will write to Ken Tamaki (on bitnet via Kiyoshi Suyehiro) requesting that as site proponent Ken Tamaki 1) analyze pertinent stacking and sonobuoy calculations for velocities that may resolve the ambiguous designation of basement at J3b; 2) deliver location maps of this and all Japan Sea sites showing MCS lines with shotpoints or common-depth-point annotations; and 3) attempt to unify the display scales of the various profiles critical to the proposed Japan Sea sites. Tamaki will be urged to bring these items with him to the October meeting of WPAC for discussion and deposit in the Data Bank.*

*ACTION - **Carl Brenner and Greg Mountain** will locate any relevant sonobuoy data in the vicinty of J3b contained in the L-DGO archives. Greg Mountain will review these findings, plus information delivered to the Data Bank by Ken Tamaki, and will forward an SSP comment on this site to PCOM .*

*ACTION - After the Lau Basin Working Group re-defines proposed objectives and drill sites, **Lindsay Parson** will finalize the Darwin-33 track, send it to **Fred Duennebier** who will then compose a letter to Jim Hawkins requesting seismics, 3.5 KHz and SeaBeam data be collected in the Lau Basin during his upcoming cruise on the Washington.*

*ACTION - After targets are re-focused by the Lau Basin Working Group, **Lindsay Parson** will expedite the A-D conversion and reprocessing of Darwin -33 seismic profiles across Lau Basin sites.*

*ACTION - **Greg Mountain** will contact Fisher + Collot and request they prepare several semblance velocity profiles for CDP's 10 km to either side of DEZ2 on Lines 104 and 1022. Artifacts caused by diffracted arrivals ought to show variable rms velocities; values derived from true reflections should remain consistent across the several analysis points. These velocity graphs are to be made available to WPAC and to Greg Mountain.*

*ACTION - For Vanuatu Site DEZ-2, ODP/TAMU (via **Jack Baldauf**) will provide to WPAC at their October meeting (with copies to G. Mountain and M. Fisher/J.-Y. Collot) a response on the drillng strategy, time estimates, and potential need for piston cores to achieve the site objectives, taking into account: 1) water depth of 2600m ; 2) range of likely penetrations from 800-1300m sub-bottom; and 3) possible occurrence of indurated and fractured volcanoclastic sediments.*

*ACTION - Depending on the outcome of the ODP/TAMU engineers' report and further discussions at the October meeting of WPAC, **Laurent d'Ouzouville** will notify PCOM of the lack of piston cores at DEZ2, a shortfall that could be met by requesting ORSTOM collect these samples.*

*ACTION - **Carl Brenner** will contact Geochemical Reference Site proponent Jim Natland to offer his assistance in compiling data packages for the geochemical reference sites BON8, MAR4, AND MAR5.*

*ACTION - **Greg Mountain** will contact Dave Scholl (USSAC chairman) for names of recommended USSAC members appropriate for replacement of Fred Duennebier to SSP.*

*ACTION - **Fred Duennebier** to arrange for reservation of remote University of Hawaii convention center for three days during the first two weeks of March, 1989.*

SITE SURVEY PANEL

Swansea, Wales
October 4-6, 1988

MINUTES

1. PRELIMINARY MATTERS

The chairman welcomed the attending panel members and liaisons, and introduced guests Peter Davies, John Jones, Lindsay Parson and substitute TAMU liaison Jack Baldauf.

Host Rob Kidd welcomed all attendees to Swansea and outlined scheduling details. The minutes from the previous meeting were approved. Ship schedules were presented and are attached as Appendices A1-A9.

2. REPORTS

A. PCOM (Tim Francis)

Participant contributions will increase by 10% to $2.75M beginning in FY '90. Australia will be joining Canada in a consortium membership as of FY'89. Signature by the Australian Minister is expected this month. John Peirce summarized the probable shared assignments of Canadian and Australian members to the various ODP panels, details of which appear in the to-be-signed MOU.

Highlights of an NSF/National Science Board review of ODP were presented: 1) ODP needs to maintain constructive relationships with other global programs; 2) concentrating on a smaller number of projects with adequate time is preferable to dealing with many projects with too little time; 3) improvements in drilling technology continue to be of high priority; and 4) the lack of thematic style of ODP publications must be remedied.

The upcoming PCOM meeting will establish the FY '90 program pertaining to Nankai Trough, a possible 2nd engineering leg, geochemical reference sites, NE Australia, Vanuatu and Lau Basin.

This same year-end PCOM meeting of 1989 will be setting the FY '91 program objectives, and will be drawing from programs summarized in the CEPAC prospectus of July '88. Few SSP members have as yet received a copy of this latter document.

ACTION - Laurent d'Ouzouville will mail a copy of the July, '88 CEPAC prospectus to each member of SSP who does not already have one.

John Peirce pointed out that in the absence of any drilling plans beyond CEPAC, lead time sufficient for meaningful evaluation by SSP will begin to decrease. He noted that with the change from drilling programs developed under regional guidelines to those of thematic design, the job of SSP review will become more complex. Fred Duennebier added that a similar concern had been raised at the most recent USSAC meeting.

SSP CONSENSUS - Past success of SSP in identifying and correcting shortfalls of site survey adequacy have been made possible by lead times between initial panel review and actual drilling that are on the order of three years or more. These early reviews have been possible due to drilling prospectuses being prepared by regional panels. SSP emphasizes that this responsibility will now fall on the thematic panels, and stresses that they continue to supply SSP with prospectuses that are sufficiently mature AND sufficiently early for meaningful evaluation.

SSP CONSENSUS - To ensure that proponents are aware of the types of data expected of an adequate survey package, SSP requests that site proponents be required to complete a site survey matrix at the time they submit their proposal to the JOIDES office.

ACTION - Laurent d'Ouzouville will distribute to each site proponent (or team of proponents) the most current site survey matrix (see Appendix B1+2) as each new proposal is received at the JOIDES office. The proponent(s) will be required to complete the matrix before the proposal is logged in.

Tim Francis outlined the changes in panel structure to begin in calendar '89, and which will include: 1) abolition of all regional panels, except for WPAC and CEPAC which will remain intact until termination of their respective drilling programs; 2) splitting of SOHP into a) Sediment and Geochemical Processes and b) Ocean History; and 3) creation of the new service panel entitled Shipboard Measurements.

Panel mandates have been updated. The wording of that pertaining to SSP (Appendix C) was reviewed by Fred Duennebier and found to differ very little from the existing mandate.

B. JOIDES (Laurent d'Ouzouville)

The JOIDES office has officially moved to HIG. Laurent expressed his willingness to assist all panel members in whatever way he can, and encouraged each to maintain an open communication link with himself and the rest of the JOIDES office staff.

C. TAMU (Jack Baldauf)

The most recent *Resolution* schedule was distributed (Appendix A10). The only changes from the previous version included 1) 2 days added to Leg 124E, and 2) 1 day each subtracted from Legs 126 and 127.

Co-chiefs for scheduled legs will be: Brian Taylor and Tadahide Ui (Leg 126), Kensaku Tamaki and Ken Pisciotto (Leg 127), Keyoshi Suyehiro and Jim Ingle (Leg 128) and Asahiko Taira and Ian Hill (Leg 129). That staff scientist assignments are not finalized is due, in part, to upcoming staff turnovers.

Preliminary summaries of Leg 123 results (now in progress) were reported.

TAMU recognizes a need to consolidate and improve upon underway geophysical data display and processing aboard the *Resolution* . To help in developing a plan, TAMU requests recommendations from SSP with regard to: 1) navigation--is real-time display of ship's position required? if yes, how advanced beyond "raw" navigation should it be? is smoothed, processed navigation of use if available after 24 hours? 2) what kind of on-board processing of other geophysical data are required? 3) to implement any improvements, should TAMU adopt a processing package already in place at another institution? or should it attempt to develop its own?

ACTION - Fred Duennebier and John Peirce will prepare a statement in reponse to TAMU's request for an SSP consensus re: the needs for implementation of an underway geophysical data processing capablility aboard Resolution. (This statement was reviewed and finalized by the full panel on day 3 of this meeting, and is included as Appendix D.)

ACTION - Jack Baldauf to coordinate actions at TAMU in response to SSP comments on underway geophysics (Appendix D), and report back to SSP at its next meeting.

D. Data Bank (Carl Brenner)

The data bank is operating in the black, thanks in part to JOI's understanding of the real costs of maintaining an archive facility. A new microfilm reader has been ordered, soon to be delivered. One of the three, full-size, color versions of the EPR Synthesis will soon be deposited in the Data Bank; a second copy will be made available to co-chiefs on the pertinent drilling legs. The distribution of additional copies requested of the Data Bank will raise a difficult issue of cost: should the Data Bank be expected to meet all reasonable requests, regardless of expense? is there an alternative format (e.g. smaller and/or b+w display) that would be acceptable? The SeaBeam displays may be the most important to preserve in color: could URI supply copies to the Data Bank at cost?

ACTION - Carl Brenner will gather estimates for the costs of reproducing EPR syntheses, and present these at the next SSP meeting.

At its next meeting, SSP will recommend how and in what format EPR syntheses should be made available upon request from the the Data Bank.

E. PPSP (Dave McKenzie)

In response to a request from SSP, Dave McKenzie (liaison from PPSP) presented a short description of the structure and mandate of PPSP, plus the evaluation criteria that PPSP applies to each program before granting approval for drilling. He emphasized that the goal of the safety review was to allow the Ocean Drilling Program to achieve its scientific objectives safely . The aim of the PPSP, he continued, is to conduct the safety review in a non-confrontational manner.

From the standpoint of safety alone, the major hazard of open hole drilling is encountering formations that contain large concentrations of biogenic or thermogenic gas. Both types pose a fire hazard; possible loss of buoyancy due to gas bubbling through the water column was discussed, and though catastrophic, is thought to be very unlikely. All gas hazards increase with decreasing water depth and/or increasing sediment overburden. PPSP is alert to direct signs of gas such as: 1) bottom-simulating reflectors (BSRs) with a phase reversal, suggesting a downward progression from clathrates to a sealed zone of free gas; and 2) isolated amplitude anomalies ("bright spots") that may indicate localized gas pockets. PPSP is very unlikely to approve drilling through a BSR unless it can be shown that the formation immediately beneath this feature is a poor reservoir or has no local closure. Bright spots are usually limited in extent, and moving a drill site a short distance off the seismic feature rarely decreases the chance of meeting the original drilling objectives. In a region of known or likely faulting, the possibility of vertical gas migration must be guarded against, and hence even gas buildups below the intended total drilling depth are given careful consideration.

The risk of hot pore water flashing to steam during or after ascent to the sea surface was discussed. Although this hazard is recognized, PPSP has not yet formed an assessment.

SSP CONSENSUS - SSP points out that BON1 (Leg 126) and several programs outlined in the CEPAC prospectus anticipate drilling in high-temperature environments. The chance of steam flashing ought to be evaluated by PPSP. In addition, how high temperatures could affect the BHA and logging equipment should be considered by ODP/TAMU engineers and the ODP/L-DGO logging group.

Dave stressed that PPSP members should be presented with a regional tectonic summary during the review session. This report should include relevant industry experience in the area, e.g., proximity and results of wells, heat flow studies, etc. Structure and isopach maps are always helpful, and are especially important in high-risk, continental margin areas. Because no site can be drilled if not first approved by PPSP, Dave stressed that all site proponents should arrive at the review session prepared to present all of their back-up as well as primary sites. Furthermore, he urged that proponents seek permission to drill to depths slightly beyond conservative calculations of target depths, should the unexpected occur and targets picked in travel time turn out to be at greater true depth than anticipated.

Rob Kidd asked if PPSP would consider developing a matrix, i.e. checklist, of items required for safety review. It was pointed out that despite the fact that a description of the safety review appears in the Sept. '85 issue of the JOIDES Journal, site proponents often become aware of these guidelines too late in the process to assemble the requested information properly. Dave thought that an early distribution of a safety checklist was worth considering, and will bring it up for discussion at the next meeting of the PPSP. Rob continued by noting that much of the chore of preparing a safety review package used to be taken up by the ODP staff scientist assigned to that particular Leg, and that this "watchdog" relationship provided an effective means of following through on the iterative nature of most safety reviews.

SSP CONSENSUS - Regrettably, few site proponents become aware that safety review guidelines exist (JOIDES Journal, Sept., 1985; expanded March, 1986; revised summer, 1988 but as yet unpublished) in time for these advisories to help them prepare survey and drilling packages. SSP requests that PPSP consider various means of "getting the message out". One possibility is to include these guidelines of safety items (with a checklist to be completed by the proponent?) along with the package delivered to potential proponents by the JOIDES office.

ACTION - At the upcoming PPSP meeting in Hawaii, Laurent d'Ouzouville will present SSP's request that JOIDES distribute the most current safety guidelines to the site proponents of all new proposals at the time they are received at the JOIDES office.

F. CEPAC (Steve Lewis)

Steve Lewis reiterated the statement made by PCOM at its last meeting that at this stage, many of the drilling programs in the July '88 CEPAC prospectus cannot be evaluated yet by SSP because: 1) survey data are in the process of being collected, or 2) absolutely no surveys are anticipated. Birger Larsen added that his reading of the prospectus revealed that the adequacy of existing survey packages was sometimes exaggerated.

Site-by-site discussion of each of the 14 proposed legs was tabled until the evaluation by each SSP watchdog.

G. WPAC (Heinrich Meyer)

1) Leg 124

Heinrich Meyer reported that at the April '88 WPAC meeting, he and Greg Moore examined recently acquired *Darwin* profiles and judged them inadequate for imaging basement at BANDA 1. Heinrich described the series of S. China Sea sites (SCS 10, 10a, 10b, 11) that have since been dropped from the schedule by PCOM due to the uncertainties of gaining permission to drill in territorial waters. The WPAC request of PCOM to expand Leg 124 to 60 days has been approved; the remaining priority sites include BANDA2, CS1 and one of the three equivalent sites SS1, 2 or 3.

2) Leg 125

Planned sites include BON6, MAR3a and 3b; BON7 is an alternate. These comprise a 56 day Leg.

3) Leg 126

Planned sites include BON1, 2, 5a and 5b for a 58 day Leg. Bottom hole temperatures at BON1 are expected to be between 50° and 300° C.

4) Leg 127

Planned sites include J1b, d, e and J3a to make a 56 day Leg. Relocation of J1d (recommended by SSP in March, 1988) is difficult to achieve and still meet objectives. Additional surveying is scheduled in 1988 and early 1989 that may be of help. J3a has been relocated to J3b as requested by SSP.

5) Leg 128

A 41-day Leg is planned to drill sites J2a and JS2; 10 days are allotted to return to J1b to deploy the downhole seismometer and conduct an oblique seismic experiment.

6) Leg 129

Sites NKT1 and 2 will be drilled on a 57 day Leg. An offset vertical seismic experiment is planned, pending the availability of a second ship.

H. Recent Co-chiefs reports

1) Leg 119

Birger Larsen summarized results of Leg 119 drilling on Kerguelan Plateau and Prydz Bay. The items discussed relevant to feedback for SSP were two: 1) Alan Cooper arrived at the ship with a re-processed version of Line 21 across Prydz Bay, though this version has not been deposited in the Data Bank; and 2) calculations designed to place core recoveries on the available reflection profile were based on unreversed sonobuoys deployed and reduced on the *Resolution* during the pre-site surveys. Because of depths and strategies imposed by safety considerations, these measurements were especially critical for the success of the Leg.

ACTION - Carl Brenner to write to Alan Cooper requesting a copy (on reproducible substrate if possible) of the version of the seismic line he feels is most useful to the interpretation of drilling results in Prydz Bay.

2) Leg 121

John Peirce summarized results of Leg 121 drilling on Broken Ridge and the Ninetyeast Ridge. He reported on two experiences that underscore the importance of accurate site survey data being passed along to the drilling engineers. First, a serious underestimate of drilling times at Broken Ridge resulted in the need to re-prioritize strategies while on-site. Second, the difficulties in locating and re-entering the mini-cone deployed at 752 strongly suggested that the mini-cone buried itself in soft surficial sediments. In previous site surveys, core samples were considered essential only if a standard re-entry cone and casing were anticipated.

ACTION - Jack Baldauf will assemble the history of mini-cone deployment, noting especially performance in various surficial sediment types, and will relay findings to both the TAMU engineers and to Greg Mountain.

Shipboard paleomagnetics of double HPC's deployed at Site 758 underscored the value of this procedure: although the recovery of each HPC by itself appeared good, there were differences in the down-hole reversal patterns of each one. By staggering the penetrations by 1/2 of a core length, gaps introduced at section boundaries, pipe couplings, or successive coring attempts were eliminated. The combined paleomag record was complete back to the upper part of Chron 6, and showed that the recovery of each HPC by itself was approximately 80%.

3. SITE SURVEY ASSESSMENTS OF SCHEDULED LEGS

A. Leg 124E (Jack Baldauf)

Jack Baldauf reported on the progress of planning for the engineering test leg. Four sites are scheduled: ENG1 - to test the a) diamond coring system, b) pressure core sampler, c) Navidrill core barrel, and d) latest extended core barrel; ENG2 - old Site 453, to test logging capabilities; ENG3 - old site 452, to assess recovery in alternating hard/soft lithologies; and ENG4 - to evaluate performance and limitations in reaching ultra-deep targets. The locations of all but ENG1 have been determined; surface currents pose a concern at this latter site in the Luzon Strait. Fred Duennebier recently collected survey data across Seamount 853 near Guam, and volunteered to make this data available to ODP/TAMU for their evaluation as a possible re-location for ENG1.

ACTION - Fred Duennebier will send to Jack Baldauf data recently acquired on Moana Wave across Seamount 853 to provide TAMU the opportunity to re-locate ENG1.

B. Leg 125 (Fred Duennebier)

Site survey matrix is found in Appendix G1. In contrast to the report at the last SSP meeting, no piston cores are available at BON6; if this is to be a re-entry site, the ODP/TAMU engineers must be alerted to this inadequacy.

ACTION - Jack Baldauf to inform ODP/TAMU engineers of the lack of piston cores in the vicinity of potential re-entry site BON6.

Patty Fryer participated in *ALVIN* diving on the seamount that is to be drilled at MAR3. She reported serpentinite sands and unrecoverable, interstitial "fluffy" material. No information has yet been made available to SSP with regards to a piston core scheduled to have been taken at this location during the recent *Sonne-57* cruise.

ACTION - Heinrich Meyer will search for the record of a piston core taken near MAR3 during the recent Sonne 57 cruise, and will forward a report to Jack Baldauf.

SSP CONSENSUS - Available information suggests there is little sediment cover at MAR3, and while SSP points out the likelihood of this being an effectively "bare-rock" site, unsupported spud-in may be possible.

C. Leg 126 (Fred Duennebier)

The only remaining SSP issue pertaining to this Leg involves the concern over local complexity of heat flow values in the vicinity of BON1. Ideally, much could be learned by drilling in a zone of known hydrothermal upwelling, but this may pose concerns that must be reviewed by ODP/TAMU engineers and/or PPSP. A letter from Marc Langseth (5 June, 1988; Appendix E1+2) summarized what was known prior to a transect of measurements across BON1 conducted during the summer by GSJ. A telex reporting preliminary results of the latter is in Appendix E3+4.

SSP CONSENSUS - Survey data is adequate for drilling at BON1. However, heat flow values obtained by GSJ between 30° 48' N and 30° 55' N near 139° 50' E indicate large variability, suggesting intensive hydrothermal circulation. There exists the possibility of encountering high temperatures within upwelling zones, possibly in the immediate vicinity of normal fault

scarps. SSP urges the proponents finalize recent measurements, incorporate them with previous data and with the known fault distribution, and discuss anticipated target depth temperatures with both ODP/TAMU engineers and with PPSP.

ACTION - Kiyoshi Suyehiro to coordinate the discussions of probable target depth temperatures at BON1 between site proponents, ODP/TAMU engineers, and PPSP. Correspondence is to be copied to Greg Mountain.

D. Leg 127 (Kiyoshi Suyehiro)

Site survey matrix is found in Appendix G3-5. New MCS profiles across two sites not yet approved by SSP were reviewed. The most recent lines are 8-second displays, complicating their comparisons with the older 7-second displays. Nonetheless, with crossing lines now available, survey data across Site J1d are adequate for drilling.

Site J1e, the complementary site to the fully approved Site J1b, was reviewed. Previously acquired MCS and recent GSJ seismic data intersect at the proposed drill site. Although the latter are single channel analog profiles, SSP feels they provide adequate three-dimensional control and approves Site J1e for drilling.

Seismic lines over the Okushiri Ridge do not as yet provide a clear image of basement. The primary objective at this site, J3b, is to recover the sediment-basalt contact and provide time constraints on the development of obduction and a new plate boundary within the northern Japan Basin. Two profiles were reviewed by SSP; a third, nearby MCS line was not. A strong, irregular reflector presumed by the proponents to be the top of obducted basement is visible on the E-W lines a few kilometers west of J3b. By contrast, this and many other reflectors are very difficult to identify directly beneath J3b due to the steep dip on this, the eastern flank of Okushiri Ridge. Furthermore, there is roughly 350 msecs of acoustic stratification beneath the presumed basement reflector that warrants further study.

ACTION - Greg Mountain will write to Ken Tamaki (on bitnet via Kiyoshi Suyehiro) requesting that as site proponent Ken Tamaki 1) analyze pertinent stacking and sonobuoy calculations for velocities that may resolve the ambiguous designation of basement at J3b; 2) deliver location maps of this and all Japan Sea sites showing MCS lines with shotpoints or common-depth-point annotations; and 3) attempt to unify the display scales of the various profiles critical to the proposed Japan Sea sites. Tamaki will be urged to bring these items with him to the October meeting of WPAC for discussion and deposit in the Data Bank.

ACTION - Carl Brenner and Greg Mountain will locate any relevant sonobuoy data in the vicinty of J3b contained in the L-DGO archives. Greg Mountain will review these findings, plus information delivered to the Data Bank by Ken Tamaki, and will forward an SSP comment on this site to PCOM .

Kiyoshi reviewed the status of the development of the downhole seismometer to be installed at J1b. Construction will be completed by March, 1989. The device will include a digital, event-driven detector able to identify events of magnitude 5 or more within 10° of the site, and greater than magnitude 7 from any distance. Events as long as 30 minutes with periods from 0.1 to 100 seconds will be digitized at 25 msecs and recorded on 60-megabyte tapes. A ship will return to the site roughly every six months to drag for and retrieve the submerged recorder, change the tape, and re-deploy. Possible future developments include either telemetering to shore via a floating radio transmission buoy, or direct communication to shore via a fiber optic cable.

E. Leg 128

Site survey matrix is found in Appendix G6. Sites J2a and JS2 were approved by SSP at its last meeting.

F. Leg 129

Sites NKT1 and NKT2 were approved by SSP at its last meeting.

4. SITE SURVEY ASSESSMENTS OF OTHER DRILLING PACKAGES

A. WPAC

1) North East Australian Margin (Peter Davies)

As a proponent of the NEA drilling program, Peter Davies was invited to present the site survey package to the Panel. He opened by thanking SSP and the JOIDES office for the opportunity to attend the meeting. He provided the panel with several references describing the regional tectonic history, which he then summarized.

Three physiographic features dominate the study area: the Great Barrier Reef, Queensland Plateau, and Marion Plateau; Queensland Trough separates the first two, and Townsville Trough separates the latter two. While the actively growing reefs of the Great Barrier region extend across one of the world's largest reef belts, actual reef rocks are no more than 200 m thick; most of the sediment below 200 m sub-bottom accumulated before northward drift of the Australian plate brought the region into tropical climates favorable to reef growth. Marion Plateau is an offshore extension of the Great Barrier reef that is largely too deep to support framework reef buildup. Queensland Plateau is the world's largest carbonate platform; about 20% of it is modern reefs.

No exploratory wells have been drilled within this region; age of seismic units as a result is poorly controlled. The Australian Bureau of Mineral Resources has collected a considerable amount of high quality survey data. From this has been developed a drilling program based on 13 proposed drill sites, all of which are crossed by intersecting MCS lines. From 3 to 9 reflectors have been traced in the vicinity of each proposed site, and structure contour maps (in travel time) have been produced for each.

The proposed drilling program is made up of two transects of sites. An E-W series (NEA1-NEA6) from the margin of Great Barrier Reef across Queensland Trough to Queensland Plateau, will evaluate relationships between sea level change and cycles of reef growth and destruction. A second series of holes (NEA8-NEA14) will extend these objectives across a N-S transect between Queensland and Marion Plateaux to evaluate the influence of paleolatitude on these processes. Furthermore, studies of carbonate diagenesis and the development of a deep boundary current will be addressed along this proposed transect.

SSP CONSENSUS - An exceptionally thorough data package across 13 NE Australia sites was presented to the Panel. SSP commends the proponents for their adherence to placing all sites at the intersections of MCS lines, and for their preparation of from 3 to 9 travel-time structure maps at every site. The data packages at all sites (NEA1-6 and NEA8-14) are approved.

The following are SSP comments. Concerns about possible closures on stratigraphic traps at several locations are probably addressable by moving locations a few kms, or by developing a specific sequence of drilling. Furthermore, alternate sites ought to be prepared. Closure within two or more sequences may force NEA8 to be moved a few kms. Deconvolution of the source signature could improve the clarity of all seismic lines seen by SSP, and would especially benefit the fine-scale acoustic stratigraphy at NEA 13 and 14.

SSP points out that although drilling times have not been calculated in great detail, the 54 operating days estimated by SOHP may be overly optimistic. Furthermore, this estimate is based on at least one site (NEA6) targeted to stop above a cleanly resolved, reachable, and presently unsampled basement reflector that SSP feels PCOM or an advisory committee may consider a valuable goal.

2) Lau Basin (Lindsay Parson)

The Lau Basin drilling program prior to the Spring of 1988 had been built upon objectives derived from several survey cruises. Cooperation among the many proponents had led to the formation of the Lau Basin Working Group and to a multi-faceted and yet well-integrated set of objectives to be addressed at Sites LG1 through LG7. During initial reviews of these data, SSP flagged survey inadequacies that included: a) the need for a high-res seismic line near 18°45' S between 176° and 178° W and tied to the *Sonne* seismic grid; and b) side scan imagery of this same region.

In May of this year, the *Darwin* conducted a 22-day survey designed to meet the above survey shortfalls and to clarify the complex tectonic fabric of the central Basin. The insight gained from these new data has led to revisions in the tectonic models of the observed features, and has prompted additional site proposals (LG8 through LG10). Lindsay Parson, Chief Scientist on the recent *Darwin-33* cruise, was invited to present these findings to the Panel.

The mainstay of *Darwin-33* was 11 days of GLORIA surveying. This was matched by analog air gun seismic profiling, 3.5 KHz echosounding, magnetics, gravity and narrow-beam bathymetry. To this was added numerous dredges and piston cores collected during an 11 additional days.

The immediate objective of providing an E-W seismic line at 18°45' S was met. However, due to the relatively small air gun size, the complex interlaying of volcanoclastic sediments, pelagics, possible volcanic sills, and generally rugged terrain, clear images of basement were not recorded across all proposed sites located within sediment ponds. It is unlikely that any of these ponds are much more than 250 m thick, and uncertainties in this range should not pose a significant problem to estimating drilling times. To ensure that an adequate number of sites were available along this E-W transect, a new LG8 site was surveyed and added to potential targets.

The other goal of imaging the fabric of the central basin was met, perhaps even surpasssed; GLORIA uncovered such complexity that SSP is probably not alone in saying that a re-evaluation of objectives is called for. North and south Lau Basins appear to be very different from each other. Bright patches with a NW-SE grain near the intersection of Peggy Ridge and the Central Lau Spreading Center (CLSC) near 17° S suggest recent lava flows resulting from transtentional "leaks"; a RRR triple junction may be developing at this location. Based on the GLORIA records, bathymetry, and dredges from this and other cruises, it now appears that the CLSC constitutes the best defined propogating spreading center yet mapped with GLORIA; it terminates near 19° S where it then is offset eastward along instantaneous transforms. From there, subdued topography can be followed southwards along the Eastern Lau Spreading Center (ELSC) and connected to the Valu Fa Ridge. Between 20° and 21° S, bright patches on the GLORIA records suggest recent volcanic flows 100 km west of the ELSC, despite all other evidence pointing to Valu Fa as the presently active center in the south. Lindsay proposed that this western ridge is an extinct spreading center that jumped eastward sometime between 1 and 3 Ma. More work with regional magnetics is required to define it with precision, but a suture zone ought to be located between this location and the ELSC; sites (with alternates) straddling this axis were proposed as LG9 and LG10. The former would date and characterize the petrology of the oldest back-arc crust formed at the now-extinct axis; the latter would do the same for the oldest crust formed at the ELSC. Additional sites LG3 and LG6 were crossed, but the quality of the seismics is greatly below that of existing MCS lines.

SSP CONSENSUS - The discussion that followed the presentation of the new Lau Basin data clearly established that before SSP can evaluate the adequacy of the total survey package, a unified set of drilling objectives must be developed. The Lau Basin Working Group will be meeting for this purpose just before the upcoming WPAC meeting at L-DGO.

SSP recommendations of follow-up actions re: Lau Basin were as follows. The A-D conversion and digital processing of all seismics from *Darwin-33* is not thought to be worth the effort; the re-processing of key profiles across those sites remaining after the working group review, however, may be beneficial. More seismics, with 3.5 KHz and SeaBeam, however, are not only desirable, but possible as well: Jim Hawkins (Scripps) will be passing through the region on the *Washington* in 1989. Again after the working group deliberations, a request that Hawkins collect these kinds of data may be advisable.

ACTION - After the Lau Basin Working Group re-defines proposed objectives and drill sites, Lindsay Parson will finalize the Darwin -33 track, send it to Fred Duennebier who will then compose a letter to Jim Hawkins requesting seismics, 3.5 KHz and SeaBeam data be collected in the Lau Basin during his upcoming cruise on the Washington.

ACTION - After targets are re-focused by the Lau Basin Working Group, Lindsay Parson will expedite the A-D conversion and reprocessing of Darwin -33 seismic profiles across Lau Basin sites.

3) Vanuatu (Greg Mountain)

The Vanuatu site survey matrix is found in Appendix G10+11. All elements of the Vanuatu data package appear to be in good shape with one important exception: the velocity structure, depth to target horizon, anticipated hole conditions, and drilling strategy at DEZ2. This is the most important site of the Leg, and deserves careful attention.

One problem revolves around the uncertain velocity structure above the target décollement. Two of the site proponents, Mike Fisher and Jean-Yves Collot, calculate that interval velocities increase rather uniformly from a start of about 2 km/sec at the seafloor to about 3 km/sec just above the décollement. They arrive at this by dismissing what they interpret to be spurious velocity information that results from diffracted reflections. In contrast, Brian Taylor points out that to proceed cautiously, one must anticipate that velocities have been undercalculated. His estimates stress the higher range of possible velocities (from 3 to 3.6 km/sec), and these values necessarily require a reconsideration of likely drilling times at DEZ2.

SSP examined the data that Fisher + Collot used to arrive at their lower velocities, and concurred that although ambiguous, the weight of evidence favors their lower numbers. An additional test of the velocity structure was discussed, and will be requested.

ACTION - Greg Mountain will contact Fisher + Collot and request they prepare several semblance velocity profiles for CDP's 10 km to either side of DEZ2 on Lines 104 and 1022. Artifacts caused by diffracted arrivals ought to show variable rms velocities; values derived from true reflections should remain consistent across the several analysis points. These velocity graphs are to be made available to WPAC and to Greg Mountain.

In a letter to Mike Fisher (11 May 1988; Appendix F), Brian Taylor raised a second issue at DEZ2 concerning the structural character (regardless of velocities) in the accretionary prism above the décollement. These rocks probably contain fractured volcanics, derived either from the arc of the upper plate, or scraped off the downgoing plate. Hole conditions may be poor, and SSP points to the likelihood of having to set casing to keep the hole open to target depths that may range from 850 to 1200 m (depending on, again, the velocities of the rocks). No one has yet calculated drilling times at DEZ2 that incorporate casing the hole.

Considering the uncertainties at DEZ2, Taylor has proposed a drilling strategy that SSP feels represents a reasonable approach. It requires drilling DEZ2 first, before DEZ1 (the "calibration" site for recognizing unaltered rocks of d'Entrecasteaux Ridge). If hole conditions and/or projected depths make penetrating the décollement an especially lengthy task, then the Co-Chiefs will have an important decision to make. But in this scheme, they will not have already invested many days in drilling the complementary "calibration" hole at DEZ1 that will be unnecessary if they decide to pull out of DEZ2 and push on to subsequent sites.

SSP CONSENSUS - Velocities at DEZ2 are reasonably interpreted by Fisher + Collot. However, due to the uncertainties of deriving interval velocities in this terrain of poor continuity of sub-bottom reflectors and diffracted arrivals, plus the reasonable chance that rocks above the décollement will be highly fractured, the drilling plan proposed by Brian Taylor is endorsed by SSP as a prudent strategy. SSP stresses that in this tectonic setting, penetration to the most optimistic target depth of 850 m may call for re-entry. Consequently, SSP points to the need for supplying the ODP/TAMU engineers with surficial sediment analyses. No piston cores are available, and SSP recommends that PCOM evaluate the need for this information and consider sending a request to New Caledonia for ORSTOM to collect piston cores at proposed Site DEZ2.

ACTION - For Vanuatu Site DEZ-2, ODP/TAMU (via Jack Baldauf) will provide to WPAC at their October meeting (with copies to G. Mountain and M. Fisher/J.-Y. Collot) a response on the drillng strategy, time estimates, and potential need for piston cores to achieve the site objectives, taking into account: 1) water depth of 2600m ; 2) range of likely penetrations from 800-1300m sub-bottom; and 3) possible occurrence of indurated and fractured volcanoclastic sediments.

ACTION - Depending on the outcome of the ODP/TAMU engineers' report and further discussions at the October meeting of WPAC, Laurent d'Ouzouville will notify PCOM of the lack of piston cores at DEZ2, a shortfall that could be met by requesting ORSTOM collect these samples.

4) Geochemical Reference Sites (Brenner and Mountain)

The three-hole geochemical reference site program discussed at the last PCOM meeting for inclusion in the 2nd year of WPAC was discussed by SSP and the following consensus was reached: 1) sufficient data exist for specifying the location of BON8, though this has yet to be done; 2) MAR4 (old Site 452 and upcoming ENG-3) is sufficiently well surveyed, but the chance for adequate drilling recovery in hard-soft layers is yet to be determined; and 3) survey data and specific site location for MAR5 have not been identified.

ACTION - Carl Brenner will contact Geochemical Reference Site proponent Jim Natland to offer his assistance in compiling data packages for the geochemical reference sites BON8, MAR4, AND MAR5.

B. CEPAC

In July, 1988, CEPAC published its first prospectus of 14 programs that it advocates for drilling after the second year of WPAC. Many of the programs are not yet mature enough for meaningful review by SSP. Nonetheless, SSP applauds the efforts of CEPAC to make these items available for timely identification of shortfalls that may exist in some surveys packages. Below is the list of the CEPAC programs as entitled in the prospectus, with brief SSP comments.

1) Flexure of the Lithosphere
- not discussed at Swansea meeting
- chronostratigraphic control is essential; pilot study based on paleomagnetics is forthcoming

2) Chile Triple Junction

- processing of MCS is complete through brute stack and constant velocity migration
- all other survey requirements have been met, and with the preliminary MCS profiles, tentative sites have been selected

3) Cascadia Accretionary Prism
   A. Vancouver décollement
   - crossing MCS lines are needed at proposed sites
   - better three-dimensional definition of accretionary wedge is strongly recommended to optimize exact site locations

   B. Oregon transect
   - SSP urges that before the next MCS survey grid is collected that PPSP be consulted for its advice re: track spacing, acquisition parameters, extent of processing, etc.

4) Old Pacific Crust
   - basement at recently surveyed Sites PIG3+4, EMB1+2 is inadequately imaged
   - additional Sites PIG1+2 to be surveyed by *Suroit* in early '89; SSP stresses need for large volume airguns, sonobuoys and magnetics
   - due to probability of encountering chert and/or volcanic sills, SSP suggests that chances of meaningful recovery AND successful drilling to basement should be re-evaluated after Navidrill test on 124E

5) Paleogene and Mesozoic Paleoceanography and Sea Level Seamount-Guyot and Subsidence Histories: Central Pacific
   - site survey matrix in Appendix G12+13
   - preliminary review of recently acquired SCS and 3.5 KHz underscore complex subsidence histories of guyots and need for integration with regional tectonic models
   - data processing progressing, and proponents are aware of SSP requirements

6) Ontong-Java Plateau
   - survey cruise scheduled for Nov, '88
   - SSP urges the SCS grid consist of more than one dip line tie across steeply dipping flank to maximize chance of establishing good seismic correlations between shallow and deep survey areas

7) Neogene Paleoceanography in the Eastern Equatorial Pacific
   - SSP urges proponents to continue search for better available seismics than are shown in prospectus; if none are found, then additional N-S hi-res SCS and 3.5 KHz profiles are needed

8) North Pacific Neogene
   - Patton Seamount data package adequate
   - SSP awaits the presentation of a mature data package for Sites Meiji 1+2 and NW 1, 3 + 4. SSP stresses the need for a dense net of SCS profiles that would ensure the maximum amount of intact Neogene at Meiji 1, and the minimimum contribution of slumps derived from the flank of Detroit Seamount at Meiji 2. The proponents ought to look into the possible availability of survey data collected during reconaissance of the U.S. EEZ.
   - For each of the NW sites, the proponents ought to exhaust all available repositories of high-res SCS (including DSDP Leg 86 surveying). The small-volume air gun records shown in the prospectus (incorrectly identified as 3.5 KHz profiles) are inadequate.

9) The Bering Sea: High-latitude Record of Late Mesozoic to Cenozoic Climate and Tectonics
   - not discussed at Swansea meeting
   - survey package appears to be adequate from SSP perspective

10) Shatsky Rise, Anoxic Events
   - SSP awaits the presentation of a mature data package for drilling on Shatsky Rise. Bottom current erosion and slumping have been important processes on the flanks of this feature, and optimal site location requires a dense net of high-res SCS to define the targets.

11) Lower Crust: Penetration of Layer 3
   - Adequate data exist for deepening Hole 504B.

12) EPR Bare Rock Drilling
   - Considerable work, based on a large data base, has been assembled to frame the major objectives. Nonetheless, specific locations have not been selected. The report of the EPR working group demonstrates that the likely proponents are aware of the need to integrate a complex array of survey technologies.

13) Hydrothermal Processes at Sedimented Ridge Crests
   - not discussed at Swansea meeting

14) Early Stages of Hot Spot Volcanism: Loihi
   - site survey matrix in Appendix G10
   - adequte survey package lacking only in side-scan imagery from a deep-towed source

5. OTHER BUSINESS

A. Possible new vessel in the US fleet (Mountain)

Lamont-Doherty has won a bid to purchase the *M/V Bernier*, a survey vessel offered for sale by PetroCanada. A proposal for the US National Science Foundation to return to Columbia University the $10.7M purchase price is presently under review.

The impact on site surveying for JOIDES would be: a) the *Robert D. Conrad* would be retired this coming winter; b) there would be a 6-12 month gap in Lamont-Doherty's sea-going operations; c) a diversified, modern platform would be available near the beginning of 1990.

The strengths of the *Bernier* are several: 1) it is a 4 1/2 year-old vessel that could be acquired and, by way of cross-decking from the *Conrad*, equipped to conduct deep-sea research at less than 1/3 the cost of constructing and outfitting an AGOR-23 class vessel; 2) an ice-strengthened hull and 45-day endurance extend its operations to all regions in which the JOIDES *Resolution* can operate; 3) equipment crucial to the many operations of marine research would be installed, and include dynamic positioning, SeaBeam, unobstructed space along the rail for rigging a 30-m piston core, starboard and aft A-frames capable of faring cables from either of four winches, 2950 sq ft of main deck space plus another 3000 on decks A + B, 2800 sq ft of lab space and room for four 20-ft vans; and 4) compressors that provide 3150 SCFM of air (several times the *Conrad* at present), which could fire a 14-gun array (to be transferred from *Conrad*) at 2500 psi every 18 seconds.

Peter Davies mentioned that although BMR's *Rig Seismic* has dynamic positioning, it is rarely used while surveying. He felt that the need for steering a predetermined track was a far more common requirement than precise station-keeping, and this calls more for excellent navigation and seamanship than it does for computer-aided control of the engines.

B. Special survey requirements of bare-rock sites

Bottom photographs were not gathered during the site survey for Leg 118. As a result, 17 days of ship time were spent on the *Resolution* using the bottom-hole televiewer to locate a site suitable for setting the guide-base. The spectacular results at Site 735b, however, should not obscure the fact that with more "bare-rock" targets in the future, an assessment of survey criteria and SSP recommendations ought to be conducted. A small amount of time at the close of the Swansea meeting was devoted to this topic.

Bob Ballard and Hartley Hoskins of The Deep Submergence Laboratory at WHOI contacted Greg Mountain last Spring, inquiring about SSP's interest in "engineering-scale" surveys. Applications to such problems as locating sites for the bare-rock guide base were suggested by DSL as an item of common interest. Mountain suggested to Ballard that he submit to the JOIDES office an "idea proposal" outlining the capabilities of DSL instruments, and how they could be used for surveying ODP sites. Mountain also suggested that someone from DSL appear before SSP to describe the equipment that is under development.

No one from DSL traveled to Swansea, but Mountain outlined for the Panel the features of the DSL towed vehicle named Argo. The vehicle is connected to a 6 km conducting cable tethered to a vessel surveying at 1 to 2 knots. A standard 35 mm camera takes ASA 400, still B+W photos on command from the surface. Real-time monitoring of the bottom is maintained by low-light sensitive TV cameras (Silicon Intensified Target technology, or SIT) that have a gray-scale dynamic range of 50:1. These analog images are transmitted up the cable to a lab housed in a deck-mounted (i.e. portable) van. A third imaging system is a digital still camera based on charged couple device technology (CCD). This camera has a dynamic range of 10,000:1, and because the image is constructed digitally, a large number of enhancement techniques can be employed. Each image is nearly 1/2 megabyte of information, and consequently at19.2 Kbaud takes about 3 minutes to be transmitted up the cable. The result is that at 25 m above the seafloor, these digital images are reportedly comparable in quality to 35 mm photos that, due to lighting requirements and backscattering, are restricted to about 1/2 that height. The field of view of the CCD camera (about 200 sq. meters) at its operating height of 25 m is about the same size as it would be with a wide-angle (16 mm) lens on the photo camera at its 12 m height. The advantage of greater height is easier obstacle avoidance in rough terrain.

The two big advantages of Argo over standard camera vehicles are: 1) real-time TV monitoring allows for "hand-picked" CCD or 35 mm images; 2) bottom time does not have to be restricted by a need to return to the surface to re-load film. Another plus is the ability to place a variety of other sensors on the towed vehicle and transmit real-time information to the the ship. These others sensors include side-scan sonar, transmissometers, temperature probes, etc. Disadvantages include: 1) shipboard operations require as many as 5 people per watch, and together with costs for equipment refurbishment, insurance and shipping, a recent 21-day cruise on the EPR where Argo was used for 4 continuous days cost over $200K; and 2) the demands for deck space and over-the-side gear are not clear at this time, nor is it clear how portable the facilities actually are. Like any well-navigated bottom survey, an Argo grid would have to be navigated within a transponder net. If conducted in advance of an ODP drilling expedition, this net would probably be left in place to aid the location of the *Resolution* .

Discussion by SSP was limited by the time remaining at the end of the meeting. John Peirce relayed comments from Dick von Herzen that the televiewer surveying on Leg 118, though providing visual information, revealed nothing about composition, grain size or physical integrity of rock outcrops, each of which were crucial to setting the guide base. A picture may be valuable, but it would be doubly so if matched to an actual sample. Future developments of the Argo system may include a tethered sampling vehicle (Jason). It was also suggested by Fred Duennebier that while Argo may presently be the only system of its kind, similar ones are in various stages of development. It is clear that if bare-rock sites of the CEPAC program (e.g. East Pacific Rise or Loihi) remain high on the list of priorities that a need for detailed imaging and sampling of proposed sites may yet have to be done.

John Peirce reports that the Canadians at the Pacific Geoscience Centre are attempting to extend the depth range of an operational ROV to 2500 m. New data transmission and available towing cable will be tested over the nect year. Extra power is available on ROV for piggyback science packages such as an impact sampler.

SSP CONSENSUS - SSP encourages the Deep Submergence Lab to submit to the JOIDES office an "idea proposal" describing the capabilities of its towed vehicles, and suggesting applications to upcoming site surveys. The Panel stresses that the exceptional capabilities of this system may lie in some future

capacity to retrieve rock samples as well as to provide real-time, high-quality visual images.

C. Revising the SSP matrix

Survey standards requested by the SSP were discussed briefly. A revised matrix was developed (Appendix B1+2) that will be distributed to new drilling proponents by the JOIDES office. There are five changes worth noting: 1) "Side Scan Sonar" and "Photography" (formerly data categories 8 and 13, respectively) have been merged into one category (number 8) entitled "High Resolution Imagery"; 2) "Deep Penetration SCS" and "MCS" (categories 1 and 3) have been dropped as alternative requirements for environment E, "Ocean Crust with Thin Sediment Cover"; 3) "High Resolution SCS" (category 2) is upgraded from "desirable" to "vital" for "Aseismic Ridge, Oceanic Plateau or Seamount" (environment G); 4) "Deep Penetration SCS" and "MCS" have been added as "Desirable, but may be required in some cases" for "Bare-rock Drilling" (environment F) to accomodate deep crustal targets such as axial magma chambers; and 5) dredging (category 12) is now "Vital" for all "Bare-rock Drilling" environments. Other changes to the matrix are relatively minor. After discussion on the need for current meters in a survey package, it was decided to leave this category unchanged, but subject to further review at the next meeting.

D. Rotations, replacements, liaisons

John Perice will rotate off the Panel after this meeting. Keith Louden (Dalhousie) will be the new Canadian/Australian representative on SSP. All Panel members join Greg Mountain in thanking John for his superb leadership over the last several years, and wish him well in his future endeavors.

SSP CONSENSUS - Effective dialogue between SSP and JOI/USSAC has proven beneficial in the past, and has been maintained by Fred Duennebier's attendance in both groups. Fred has rotated off JOI/USSAC, and soon will depart SSP as well. It is hoped that his replacement to SSP can be drawn from the list of members presently serving on USSAC.

ACTION - Greg Mountain will contact Dave Scholl (USSAC chairman) for names of recommended USSAC members appropriate for replacement of Fred Duennebier to SSP.

CEPAC Liaison : Ann Arbor, Michigan, Oct. 17-19 -- Steve Lewis
WPAC Liaison : Palisades, New York, Oct 27-29 -- Carl Brenner

6. SCHEDULING OF NEXT MEETING

Fred Duennebier offered to host the next meeting. Possible locations are at HIG or at a remote University of Hawaii convention center. Availability of the center has to be determined.

ACTION - Fred Duennebier to arrange for reservation of remote University of Hawaii convention center for three days during the first two weeks of March, 1989.

Greg Mountain thanked Rob Kidd for the exceptional hospitality that he extended to the Panel members and guests. If only the weather for the next day's field trip were to be so warm......

APPENDICES

A1 - A10	Ship Schedules
B1 - B2	Revised SSP matrix
C	Revised SSP mandate
D	SSP comments on Underway Geophysics
E1 - E4	Correspondance re: heat flow at BON1
F	excerpt of Taylor letter to Fisher, 11 May, 1988
G1 - G14	site survey matrices

RV/ENDEAVOR 1989 SCHEDULE

SCIENTIST	AREA	DATES	FUNDING	DAYS
TOWNSEND	G.OF MAINE	2-12 JAN	NSF(2)	11
BERTEAUX	W.N.ATL	15-21 JAN	ONR(2)	7
MCDOWELL	W.N.ATL	25-29 JAN	EPA(2)	5
SMITH	SEEP	21-30 MAR	DOE(1)	10
BISCAYE/BACON	SEEP	1-13 APR	DOE(1)/NSF(2)	13
ROSSBY	G.STREAM	16APR-14MAY	NSF(1)	28
WATTS	G.STREAM	17MAY-14JUN	NSF(1)/ONR(1)	28
WINN	GEORGES B.	18-23JUN	NSF(1)	5
TRANSIT	ICELAND	28JUN-8JUL	NSF(1)	11
JGOFS	ICELAND	10-19JUL	NSF(2)	10
DEMING	ICELAND	22JUL-12AUG	NSF(1)	22
WORCESTER	GNLAND SEA	15AUG-13SEP	NSF(1)	33
BERTEAUX	GNLAND SEA	16-24SEP	ONR(1)	10
TRANSIT	AZORES	26SEP-1OCT	NSF(1)	6
BOYLE	AZORES	3OCT-17OCT	NSF(1)	17
JGOFS(HONJO)	AZORES	20OCT-9NOV	NSF(2)	23
TRANSIT	NO.ATL	11-19NOV	NSF(1)	9

TOTAL 248 (202 FUNDED)

NSF	205
DOE	21
ONR	17
EPA	5

CRUISES HELD BUT NOT YET ACCOMMODATED:

WIMBUSH W.N.ATL AUG NSF(2) 2

FUNDING CODE: (1) FUNDED (2) SUBMITTED (3) TO BE SUBMITTED

R/V OCEANUS
1989 - Tentative Schedule

June 16, 1988

DATES	CHIEF SCIENTIST	PORT ARRIVING	CHARGE DAYS	FUNDING
		Bridgetown		
01/05 - 01/28	Richardson	Fortaleza	26	NSF (1)
02/01 - 02/20	Richardson	Las Palmas	23	NSF (1)
02/24 - 03/20	Roemmich/Hall	Bridgetown	29	NSF (1)
03/25 - 04/09	Stoecker	Charleston	19	NSF (1)
04/13 - 05/02	Joyce/Kelly	Woods Hole	22	NSF/NASA (2)
05/10 - 05/15	Weller/Butman,C.	Woods Hole	6	NSF (1)
05/19 - 06/03	Winn	Woods Hole	16	NSF (1)?
06/08 - 06/24	Zafiriou	Woods Hole	17	NSF (1)
06/29 - 07/12	Fuhrman	Woods Hole	14	NSF (1)
07/15 - 07/19	Purdy	Woods Hole	5	NSF (1)
07/22 - 07/24	Grassle	Woods Hole	3	NSF (2)
07/28 - 08/03	Berteaux/Jenkins	Woods Hole	7	NSF (2)
08/08 - 09/02	Watts, R.	Woods Hole	25	NSF (1)

09/06 - 10/09	Shipyard	Woods Hole		
10/10 - 10/23	Olson, R.	Woods Hole	14	NSF (1)
10/27 - 11/09	Fuhrman	Bermuda	15	NSF (1)
11/13 - 11/27	Sayles	Woods Hole	17	NSF (1)
11/30 - 12/04	Purdy	Woods Hole	5	NSF (1)
12/07 - 12/13	Wiebe	Woods Hole	7	NSF (1)
12/15 - 12/18	Grassle	Woods Hole	4	NSF (2)
12/21 - 12/22	Weller	Woods Hole	2	NSF (1)

TOTALS FOR 1989 — 276 days
NSF - 276
Funded - 247

R/V KNORR
1989 TENTATIVE SCHEDULE

01/01 - 09/15	REFIT AND STRETCH		OUT OF SERVICE	
09/16 - 10/06	Bryan	Jacksonville	23	NSF (2)
10/11 - 11/10	Bryan	Jacksonville	35	NSF (2)
11/15 - 12/15	Paull	Jacksonville	35	NSF (2)
12/18 - 12/23	Transit	Woods Hole	7	NSF

Total: 100 All NSF All unfunded

R/V ATLANTIS II
1989 TENTATIVE SCHEDULE

01/01 - 02/28	Maintenance	Woods Hole
03/01 - 03/01	JGOFS program	Madeira to Reykjavik
06/30	End JGOFS work	Woods Hole
07/01	Resume ALVIN operations with loading submersible on board, sea trials, certification dives and transit to first site in ATLANTIC.	
12/88	Drydock ATLANTIS II	

SHIP OPERATING SCHEDULE 1989
R/V MELVILLE

Cruise Period	Area and Objectives	Chief Scientist	End Port	Agency Days
12/04-01/12	HYDROS LEG 2		(30 days in 1988)	
	South Atlantic Ventilation Experiment	Smethie	Capetown	NSF-44
01/17-03/01	HYDROS LEG 3 SAVE	Smethie	Montevideo	NSF-49

			or Rio	
03/07-04/15	HYDROS LEG 4 Long Line Phys.Oc.	McCartney/Talley	San Juan	NSF-45
04/19-04/28	HYDROS LEG 5 Reentry experiment	Orcutt/Spiess	Jacksonville	APL-10
05/01-06/03	HYDROS LEG 6 Benthic biology	Williams/Druffel	Jacksonville	NSF-37
06/07-07/07	HYDROS LEG 7 Reentry experiment	Orcutt/Spiess	Jacksonville	APL-33
07/08	To shipyard for refit/overhaul ??			
July 89--April 90 OVERHAUL/REFIT				

SHIP OPERATING SCHEDULES 1989

R/V THOMAS WASHINGTON

Cruise Period	Area and Objectives	Chief Scientist	End Port	Agency Days
12/30-01/09	Seismic survey	T. Shipley	Majuro	NSF- 9 F
01/09-01/16	Transit		Suva	NSF- 9 F
01/21-01/28	SeaBeam/SCS	J. Hawkins	Tonga	NSF- 8 F
01/29-02/23	SeaBeam/Dredging Lau Basin	J. Hawkins (one day gained on dateline)	Pago Pago	NSF-30 F
02/25-03/13	Transit			NSF-10 F
	Transit			Navy- 1 F
	Water Sampling	D. Keeling	Honolulu	NSF- 7 S
03/14-03/17	SeaMarc II installation		Honolulu	
03/19-03/31	SeaBeam/SeaMarc Survey	D. Epp	Honolulu	Navy-14 F
04/03-05/13	Benthic Biology	K. Smith	San Diego	NSF-43 F
05/14-07/30	BIENNIAL OVERHAUL		San Diego	
07/31-08/24	Topographic effects Fieberling Guyot	Lonsdale/ Haury et al	San Diego	Navy-25 F
Schedule A				
08/30-10/06	SeaBeam, dredging	R. Batiza/ J. Hildebrand	Manzanillo	NSF-40 S
10/11-11/12	SeaBeam, dredging East Pacific Rise 8N	J.Bender/ C.Langmuir	Acapulco	NSF-37 F
11/15-11/22	transit		Guayaquil	NSF- 8 S
11/25-12/25		J. Orcutt/ A. Harding	Easter Is.	NSF-34 S
12/29-01/28		J. Orcutt/ A. Harding	Guayaquil (+ 8 in 1990)	NSF- 4 S
Schedule B				
08/30-09/28	SeaMARC	Hilde	Manzanillo	NSF-31 S
10/02-11/03	SeaBeam, dredging East Pacific Rise 8N	J.Bender/ C.Langmuir	Acapulco	NSF-37 F
11/06-11/16	Transit		Easter Is.	NSF-12 S
11/20-12/25	SeaBeam/dredging	Schilling	Easter Is.	NSF-40 S
12/30-01/30	SeaBeam/gravity/dredging	Winterer	Papeete (+ 31 in 1990)	ONR- 4 S
Schedule C				
08/30-10/02	SeaBeam	Hayman/Fornari	Manzanillo	NSF-36 S
10/07-11/08	SeaBeam, dredging East Pacific Rise 8N	J.Bender/ C.Langmuir	Acapulco	NSF-37 F

11/11-11/21	Transit	Easter Is. NSF-12 S
11/25-12/29	SeaBeam/SeaMARC studies Lonsdale	Easter Is. NSF-39 S
01/03-02/03	SeaBeam/gravity/dredgingWinterer	Papeete

Agency	Funded	Proposed	Total	Unsched.	Total
NSF	146	94	240	187	427
ONR	40	0	40	35	75
Total	186	94	280	222	502

SHIP OPERATING SCHEDULE 1989
R/V MOANA WAVE

TENTATIVE

PORTS	DATES	PROJECT TITLE AREA OF OPERATION	NO. DAYS REQUESTED	STATUS
HONOLULU HONOLULU	01 JAN 15 JAN	MAINTENANCE	15	N/A
HONOLULU GUAM	16 JAN 29 JAN	TRANSIT	15	NSF(F)
GUAM KWAJALEIN	02 FEB 26 FEB	10oN TRANSECT (BRYDEN)	28	NSF(F)
KWAJALEIN HONOLULU	02 MAR 26 MAR	10oN TRANSECT (BRYDEN)	27	NSF(F)
HONOLULU RODMAN	03 APR 12 MAY	10oN TRANSECT (BRYDEN)	41	NSF(F)
RODMAN CRISTOBAL	16 MAY 23 JUN	SeaMARC II CARIB PLATE (MANN)	42	NSF(F)
CRISTOBAL RODMAN	27 JUN 04 AUG	SeaMARC II-COLUMBIAN MARGIN (BREEN)	42	NSF(F)
RODMAN RODMAN	05 AUG 25 AUG	MAINTENANCE	19	N/A
RODMAN GALAPAGOS	26 AUG 30 AUG	TRANSIT	07	NSF(S)
GALAPAGOS EASTER IS.	03 SEP 13 OCT	SeaMARC II-GALAPAGOS HOTSPOTS (DUNCAN)	44	NSF(S)
EASTER IS. TAHITI	17 OCT 21 NOV	SeaMARC II-JUAN FERNANDEZ MICROPLATE (LARSON)	39	NSF(S)
TAHITI HONOLULU	25 NOV 22 DEC	SeaMARC II-LINE IS SEAMOUNT (KEATING)	30	NSF(S)

OPERATING DAYS 315

R/V ROBERT D. CONRAD
Operations Schedule: 1989
ATLANTIC PLUS PACIFIC OPTIONS SCHEDULE

Cruise Period	Area and Objectives	Chief Scientist	End Port	Agency, Days Status
12/03/88- 01/07/89	27-32N MAR Sea Beam	Purdy	Azores	NSF-35-F
01/11/89- 01/31/89	22N MAR MCS-SB	Detrick/ Mutter	Fortaleza	NSF-14-F JOI- 3-F NRL- 3-F
02/04/89 03/06/89	Eq Atl Sea Beam, Drdge	Fleming	Fortaleza	NRL-30-F
03/10/89 03/17/89	Open		Barbados	NSF- 3-F NRL- 4-F
03/21/89- 04/24/89	22N MAR HF, Cor	Langseth	San Juan	NSF-34-F
04/28/89 05/02/89	Open		Panama	4

****

OPTION A:

Cruise Period	Area and Objectives	Chief Scientist	End Port	Agency, Days Status
05/04/89 05/23/89	Open		Papeete	19
05/27/89- 07/01/89	Society Is MCS (2-Ship)	McNutt/ Mutter	Papeete	NSF-34-F
07/05/89 07/24/89	Open		Panama	19
07/28/89 08/05/89	Open		New York	8
08/10/89 08/20/89	Hudson River MCS, SCS	Diebold/ Bond	New York	10

****

OPTION B:

Cruise Period	Area and Objectives	Chief Scientist	End Port	Agency, Days Status
05/04/89 05/28/89	Open		S.Fran- cisco	14
06/01/89 06/18/89	Oregon Margin MCS	Kulm/ Moore	S.Fran- cisco	NSF-17-F
06/21/89 07/04/89	Open		Panama	14
06/08/89 07/16/89	Open		New York	8
07/20/89 07/30/89	Hudson River MCS, SCS	Diebold/ Bond	New York	10

NERC RESEARCH SHIPS PROGRAMMES 1989/90

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Weeks	3 10 17 24	01 08 15 22 29	05 12 19 26	03 10 17 24 31	07 14 21 28	04 11 18 25	02 09 16 23 30	06 13 20 27	04 11 18 25	01 08 15 22 29	05 12 19 26	05 12 19 26
RRS Charles Darwin	10/14 VALPARAISO 38 Price *Edinburgh* Geochemistry Off Peru	10/13 BALBOA 39 Sinha *Cambridge* Geophysics E Pacific Rise	14/18 BALBOA 40 Westbrook *Birmingham* Geophysics Off Colombia	18/20 BALBOA Passage 30	02 WHOI 41 Hogg *WHOI* Physics NW Atlantic 24/27 WHOI Passage	08 15 BARRY 42 Saunders *IOSDL* Physics NW Atlantic	09/13 TROON 43 Taylor + Smith *IOSDL UMIST* Physics NE Atlantic	15/18 TROON 44 Ellett *DML* Physics NE Atlantic 22/29	UK PORT Refit	03 US Barter or Charter		
RRS Discovery	01 BARRY 181 Pollard *IOSDL* Physics Azores	02/06 FALMOUTH 182 Fasham *IOSDL* BOFS NE Atlantic	06/09 TROON 183 Harris *PML* BOFS NE Atlantic	12/14 FALMOUTH 184 McCave *Cambridge* BOFS NE Atlantic	15/19 FALMOUTH 185 Rice + Priede *IOSDL A'deen* Biol. Physiol. Porc. Bight	18/21 LISBON 186 Tyler *Southampton* Biology Iberian Pen.	16/20 LISBON 187 Weaver *IOSDL* Geochemistry Iberian Pen.	14/17 MADEIRA 188 Searle *IOSDL* Geophysics Canary Basin	21 BARRY	Vessel Conversion (or Lay-Up or Charter)		
RRS Challenger	29 GY 49 Sur 10/12 GY 50 Burton *So'ton* Chemistry 25/27 GY 51 Sur	09/11 GY 52 Reid *PML* Sedim. 24/26 GY 53 Sur	07/09 GY 54 Joint *PML* Biology 22/24 GY 55 Sur	07/08 GY 56 James *POL* Physics 22/24 GY 57 Sur	06/07 GY 58 Hill *UCNW* Physics 21/23 GY 59 Sur	04/06 GY 60 Reid *PML* Sedim. 19/21 GY 61 Sur	03/05 GY 62 Watson *PML* Physics 23/26 BARRY	Refit 30	Charter or Lay-Up		27 BARRY	01 63 Gordon+Ellett *DML* Biology Physics NE Atlantic 31 TROON
Charter Ships		8 days Ellett *DML* Physics			8 days Ellett *DML* Physics							

Final Version (03 August 1988)

This programme is provisional, subject to Council approval in September 1988, and is therefore NOT for publication or wider distribution at this time.

A-6

SONNE Operations-schedule 1988

Fahrt-Nr.	Charterzeitraum	Anfangshafen	Endhafen	Charterer	Fahrtbezeichnung
SO 55	15.04.88 - 31.05.88	Hong Kong	Okinawa	Uni Hamburg (IfG)	Okinawa Trog, Geophysik
SO 56	01.06.88 - 01.07.88	Okinawa	Okinawa	TU Clausthal	Okinawa Trog, Geologie/Geochemie
SO 57	02.07.88 - 11.08.88	Okinawa	Hong Kong	Uni Kiel	Philippinische See/ Marianen Rücken
SO 58	12.08.88 - 30.09.88	Hong Kong	Kota-Kinabalu	BGR	Südchinesisches Meer, Sulu See, Nordborneo
	01.10.88 - 22.10.88	Singapur		RF	Werftzeit
SO 59	23.10.88 - 01.12.88	Singapur	Honolulu	Uni Hamburg	Sedimentfallenbeprobung
SO 60	02.12.88 - 01.02.89	Honolulu	Panama	Uni Karlsruhe	HYMAS II
SO 61	02.02.89 - 03.04.89	Panama	Callao	Uni Hamburg	Umweltexperiment
SO 62	04.04.89 - 03.07.89	Callao	Valparaiso	BGR	Geometep 5
SO 63	04.07.89 - 01.09.89	Valparaiso	Callao	Uni Marburg	Hydrothermale Lagerstätten am EPR
SO 64	02.09.89 - 02.10.89	Callao	Callao	Uni Hamburg	Umweltexperiment
	03.10.89 - 24.10.89	Valparaiso		RF	Werftzeit
SO 65	25.10.89 - 23.12.89	Valparaiso	Tahiti	Uni Kiel	Midplate 2
SO 66	27.12.89 - 15.02.90	Tahiti	Fidji Inseln	TU Clausthal	Midpac 4
SO 67	16.02.90 - 30.04.90	Fidji Inseln	Fidji Inseln	BGR	Back-arc/Trainingsfahrt CCOP/SOPAC

FS METEOR Operations-schedule 1988

TABELLE 1 FS METEOR Fahrtplanung 1989/90 Stand: Mai 1988

Zeit	Fahrtabschnitt/ Endhafen	Aufgabe: Arbeitsgebiet	Aufgabe: Themen/Programm/wiss. Disziplinen	Koordinator	Fahrtleiter
1989					
29.12. - 10.01.	M9/1 Funchal	östl. Nordatlantik	SFB 133	Zenk	Zenk
12.01. - 25.01.	M9/2 Praia	östl. Nordatlantik	SFB 133	Zenk	Müller
25.01. - 16.02.	M9/3 Dakar	östl. Nordatlantik	SFB 133	Zenk	Müller
19.02. - 16.03.	M9/4 St.Cruz de Tenerife	östl. Nordatlantik	SFB 133	Zenk	Wefer
19.03. - 27.04.	M10/1 Pt.Delgada	Zentr.Nordatlantik	"Plankton 89"	Zeitzschel	Zeitzschel
27.04. - 12.06.	M10/2 Reykjavik	Zentr.Nordatlantik	"Plankton 89"	Zeitzschel	Lenz
15.06. - 12.07.	M10/3 Reykjavik	Zentr.Nordatlantik	"Plankton 89"	Zeitzschel	Zeitzschel
15.07. - 31.08.	M10/4 Hamburg	östl.Nordatlantik	BIOTRANS	Zeitzschel	Thiel
	Werftzeit				
03.10. - 31.10.	M11/1 Rio Grande	Atlantischer Transect	SFB 133	Roether	Müller
02.11. - 21.11.	M11/2 Ushuaia	Drake Passage	Tracerozeanographie	Roether	Roether
23.11. - 21.12.	M11/3 Mar del Plata	Patagonischer Schelf	Fischereibiologie	Roether	Nellen
1990					
27.12. - 22.01.	M11/4 Ushuaia	Antarktische Halbinsel	Krill/BIOMASS	Roether	Sahrhage
24.01. - 26.02.	M11/5 Kapstadt	Zirkumpolarstrom	Tracerozeanographie	Roether	Roether
01.03. - 28.03.	M12/1 Pt. Delgada	südl. Ostatlantik	Partikelsedimentation	Wefer	Wefer
31.03. - 12.05.	M12/2 Pt. Delgada	Zentralatlantische Kuppen	Geophysik/Petrologie	Wefer	Weigel
15.05. - 19.06.	M12/3 Hamburg	östl. Nordatlantik	BIOTRANS/JGOFS	Wefer	Thiel

SHIP SCHEDULE (MG&G cruises) SEP. 30, 1988

JAPANESE RESEARCH VESSELS

R/V HAKUHO-MARU (new)	Jun 01- Jun 15	1989	test (K. Kobayashi)
(ORI, U. of Tokyo)	Jun 20- Jun 26	1989	test (A. Taira)
	Jul 03- Jul 26	1989	Nankai (J. Segawa)
R/V TANSEI-MARU	Nov 27- Dec 04	1988	Nankai (H. Fujimoto)
(ORI, U. of Tokyo)			
R/V HAKUREI-MARU	Nov - Mar	88/89	Antarctica (NE Bellingshausen)
(GSJ/JNOC)		1989	Okinawa Trough
		1989	Mariana Trough
		1989	Japan Sea
R/V TAKUYO	routine seafloor mapping / Philippine Sea		
(Hydrographic Dept. MSA)			
CHARTERED SHIP	to be determined		

DELP project (national lithosphere program)

To: SSP
From: John Peirce
Date: Oct. 2, 1988
Subj.: Canadian ship schedule for 1989

There will be no firm schedule for Canadian ships until about late November. From conversations with people at the Atlantic and Pacific Geoscience Centres, the following plans seem likely to happen sometime next summer:

ATLANTIC

(for further info, contact Keith Manchester, 902-426-3411).

1. Deep seismic in the East Newfoundland Basin (C. Keen and I. Reid).

2. Giant Piston Core testing.

3. CSS HUDSON will be in a mid-life refit and is unlikely to be available until July, 1989. Schedule for the remainder of the summer is uncertain.

PACIFIC

(for further info, contact Earl Davis, 604-356-6453).

1. K. Rohr and M. Purdy (WHOI) - crustal structure of Juan de Fuca using bottom shot-bottom receiver system.

2. K. Rohr and H.P. Johnson (U. of Wash.) - Sea Marc I and Seabeam, west flank of Juan de Fuca - Fall, '88.

3. E. Davis - multiple penetration pore fluid gradient experiment. Juan de Fuca and possibly Gorda-Escanaba Tr. On same cruise Jim Franklin will use the Dalhousie rock drill.

4. L. Law - Active EM experiment on scaler of 100's of m, tentatively planned for 1990.

ODP OPERATIONS SCHEDULE

Leg	Objective	Departs Port	Departs Date	Arrives Port	Arrives Date	Port Days	Days at Sea
121	Broken Ridge & Nintyeast	Fremantle	5/06/88	Singapore	6/28/88	6/28-7/02	53
122	Exmouth Plateau	Singapore	7/03/88	Singapore	8/28/88	8/28-9/01	56
123	Argo Abyssal Plain & Exmouth Plateau	Singapore	9/02/88	Singapore	11/01/88	11/01-05	60
124	SE Asia Basins	Singapore	11/06/88	Manila	1/04/89	1/04-08	59
124E	Engineering I	Manila	1/09/89	Guam	2/15/89	2/15-19	37
125	Bon/Mar	Guam	2/20/89	Tokyo	4/18/89	4/18-22	57
126	Bon 2	Tokyo	4/23/89	Yokohama	6/19/89	6/19-23	57
127	Japan Sea I	Yokohama	6/24/89	Hakodate	8/20/89	8/20-24	57
128	Japan Sea 2	Hakodate	8/25/89	?	10/5/89		41
	- - - - - - - - D R Y D O C K (14 D A Y S) - - - - - - -					10/5-10/18	
129	Nankai	?	10/19/89	?	12/18/89	12/18-22	60
129E	Engineering II	?	12/23/89	?	1/21/90?	?	30?

SITE SURVEY DATA STANDARDS

DRILLING ENVIRONMENT

DATA TYPE		A Paleoenvironment or Fan (APC/XCB)	B Passive Margin	C Active Margin	D Ocean Crust (> 400 m sediment cover)	E Ocean Crust (< 400 m sediment cover)	F Bare-rock Drilling	G Aseismic Ridge, Plateau or Seamount
1	Deep Penetration SCS	(X)	(X)	(X)	X or 3			(X)*
2	High Resolution SCS	X	(X)	(X)	(X)	X	X	X
3	MCS & Velocity Determination		X	X	X or 1		(X)*	(X)*
4	Grid of Intersecting Seismic Lines	(X)*	X	X	(X)*	(X)	(X)	(X)*
5	Refraction		(X)*	(X)*	(X)*	(X)	(X)*	(X)*
6	3.5 KHz	X	X	X	X	X	X	X
7	Multi-Beam Bathymetry	(X)*	(X)*	X or 8	(X)	(X)*	X	(X)*
8	High Resolution Imagery	(X)*		X or 7		(X)*	X	(X)*
9	Heat Flow		(X)*	(X)*		(X), H	(X), H	
10	Magnetics & Gravity		(X)	(X)	(X)*	(X)*	X	(X)
11	Cores : paleoenvironment geotechnical	X	(X) R	(X) R	R	R,H		(X)* R
12	Dredging					(X)*	X	(X)*
13	Current Meter (for bottom shear)	(X)*	(X)*	(X)*			(X)*	(X)*

X = Vital
(X) = Desirable
(X)* = Desirable, but may be required in some cases
R = Vital for re-entry sites
H = Required for high temperature environments

11/10/88

SITE SURVEY DATA PACKAGE REQUIREMENTS

Site Survey data must be presented in a reasonable format. Data presented should include, at a minimum, a track line map at a working scale in the region of proposed sites (including enough data to correlate with seismic lines), bathymetric maps, and other data along track. In many situations, structural and isopach maps may be required for use by the various panels prior to approval for drilling. Digital seismic data should be processed to a reasonable level; the more processing the better. Data at each step of processing should be part of the data package.

Site Survey Panel

Mandate approved by EXCOM 15 September 1988. (Changes in 7.1.2 (a) and (b).)

7.1 Site Survey Panel: Mandate

7.1.1. The general purpose of the Site Survey Panel is to provide information and advice to the Planning Committee on the adequacy of and need for site surveys in relation to proposed drilling targets.

7.1.2. The Site Survey Panel is mandated to:

(a) Review site survey data packages prepared by the ODP Data Bank and to make recommendations as to their adequacy to the Planning Committee in light of the needs defined in mature proposals of the Detailed Planning Groups and thematic panels.

(b) Identify data gaps in proposed future drilling areas and to recommend appropriate action to ensure that either sufficient site survey information is available for pinpointing specific drilling targets and for interpretation of drilling results or that sites not be drilled.

(c) Provide guidelines for proponents and panels as to required site survey data and to examine the opportunities and requirements for the use of new technologies for surveying potential drill sites.

(d) Promote international cooperation and coordination of site surveys for the benefit of the Ocean Drilling Program, particularly between participating ODP nations' survey activities.

(e) Promote the lodging of all data used for planning drilling targets with the ODP Data Bank.

7.1.3. The Panel maintains liaison with the ODP Site Survey Data Bank Manager and the non-U.S. liaison at the JOIDES Office, who both attend SSP meetings.

UNDERWAY GEOPHYSICS

SSP comments in response to ODP/TAMU request

The SSP continues to be concerned about the shortcomings of underway geophysics on board the *Resolution*, and requests a report back from ODP regarding issues raised by Alan Cooper's letter following Leg 119 and Fred Dunnebier's comments thereto. Concerning seismics, what action is being contemplated with regard to:

(1) improvements to HIGHRES software;
(2) efforts to provide adequate documentation for HIGHRES software;
(3) tests of high speed streamers;
(4) deployment tests to optimize towing depth of streamers and sources; and
(5) possibility of using depth control birds on streamers?

On other matters as well, the Panel would also like to receive reports regarding: 1) the performance of the 3.5 and 12 KHz systems in deep water following installation of the new dome forward of the moonpool; and 2) the time standards presently on board--(e.g. is there a clock sufficiently accurate to track GPS on 2 satellites to navigate in the rho-rho mode with LORAN?)

The SSP urges TAMU to seriously consider that an underway geophysicist with experience on the Masscomp/Highres system be included on legs where significant amounts of geophysical data collection are planned. Experience has shown that geophysicists who sail in other capacities do not have time to work on underway data.

In terms of improvements to on-board recording, the SSP recommends as a first priority that a review be made of the manner in which navigation data are logged, plotted and integrated with underway geophysics. In particular:

(1) all navigation parameters (e.g. parameters indicating quality of sat fixes) should be logged; and

(2) there is a critical need for a system that plots in real-time all fix information (e.g. red for DR, blue for GPS, green for SATNAV, orange for LORAN) in <u>both</u> the geophysics laboratory and on the bridge. This would provide useful and identical perspective of navigation quality to both the scientists and the bridge in a timely manner that is not presently possible. HIG, LDGO and URI all have such systems in use with SeaBeam and SEAMARC mapping;

3) smoothed navigation plots should be produced routinely within 24-48 hours. This requires upgrading the level of on-board experience on how to do this as well as either: a) improving the efficiency of the current software, or b) bringing in new software from other institutions. It also means some reprioritization of technical responsibilities. If the real-time plots of fix information are available, then it should be a relatively easy matter for one of the on-board geophysicists to work with the marine technician to edit the original set of fixes into a "best guess" set of fixes;

(4) software should be available to plot any of numerous measurements along track, to any scale, and at many projections -- this is not a routine procedure at present;

(5) a normal output for quality control should be a strip plot of time, course, speed, water depth, and magnetics.

Implementing the preceding changes will require some investment of time by an ODP staff scientist as well as by the technical staff.

Improvements to the on-board seismic processing system are needed, but these should take a lower priority than the improvements to navigational processing systems discussed above. Several parts of the HIGHRES processing system simply do not work. The entire HIGHRES system needs to be reviewed, inadequacies corrected, and the documentation needs to be improved to a level easily understood by a first-time user.

The SSP compliments ODP for their efforts to improve the underway geophysical capability of the *Resolution* and hopes that similar improvements can be achieved in the future.

June 5, 1988

To: Greg Mountain

From: M. Langseth

Re: The thermal regime the Sumisu Rift near ODP proposed Site Bonin 1 (BON 1).

A question was raised at the last Site Survey Panel about Proposed Site Bonin 1 and whether high temperatures might be encountered during the drilling of this hole. It is located on an actively spreading rift and recent volcanism and high temperature hydrothermal activity are anticipated.

Yamazaki (1988) has just reported 11 heat flow measurements in the rift at about 31^{o} N. The gradient measurements were made with relatively short 1.5 and 2 m probes. The volcanoclastic sediments in the rift made penetration difficult. At 6 of the 11 stations only 2 sensors were buried. The heat flow is generally high and variable the range is 38 to 700 mW/m^2.

The observations most relevant to assessing the thermal regime near BON 1 is a short E-W transect of closely spaced measurements (.5 to 1km spacing) across the most active zone of the rift at 30^{o} 48' N. See Figure 5 from Yamazaki. This zone has the thickest sediment and the deepest basement. All of the values along this short section are high 124-700 mW/m2. The gradients range from 139 to 840 deg/km just below the sea floor, but probably decrease by 20 to 30% with depth due to the increase of conductivity. Nonetheless, over the active part of the rift temperatures could reach 300 to 400 ^{o}C at depths > 500 m.

The scale of the variability is not well determined, but appears to be on the order of the thickness of the sedimentary cover, which is somewhat greater than km below the transect. This suggests that the variation is due to hydrothermal circulation in the basement crust below the sediment and there may be a significant flow of water through the sediment especially along faults, as Yamazaki speculates. In a submarine hydrothermal regime very high gradients and very low gradients can be found within several hundred meters of each other.

Yamazaki's measurement verify that the final locations of BON 1 holes should be based on a detailed 2-D survey of the sea-floor heat flow and porewater gradients of calcium and magnesium. This will allow BON 1 to be placed is on spot where the thermal gradient is low enough not to cause problems with drilling or downhole measurements, and assure that the drill holes locations relative to the hydrothermal circulation pattern are be known. We will learn a lot more from the hole if we know where we are drilling relative to the heat and fluid flow pattern.

I am sending a copy of this letter to Suyehiro to pass to his colleagues who will be making further heat flow measurements this year.

cc: Y. Suyehiro ✓
Brian Taylor
N. Pisias

Yamazaki, T. Heat Flow in the Sumisu Rift, Izu-Ogasawara (Bonin) Arc. Bull. Geol. Survey of Japan, 39(1) 1988.

*
* MOM SVP
* 3652570AIST J
* 3652570AIST J#
ENULM 202601F
TO M. YUASA, GEOLOGICAL SURVEY OF JAPAN

PCOM HAS REQUESTED THAT WPAC PROVIDE ALTERNATE PRIORITIES AND SITES IN THE EVENT THAT TEMPERATURES AT THE BON1 SITE ARE HIGH. WHAT WERE THE RESULTS OF YAMAZAKI'S HEAT FLOW PROFILE ACROSS THE BON1 SITE DURING YOUR AUGUST CRUISE ? PLEASE PROVIDE THIS INFO TO ME IN PARIS ASAP AS WELL AS TO SUYEHIRO WHO WILL ATTEND SSP IN EARLY OCTOBER.

REGARDS.
BRYAN TAYLOR
(202601 F ENULM)

>00113

* #
ENULM 202601F
* 270 0758
* 3652570AIST J
* TO DR.B.TAYLOR,
* WE SUCCESSFULLY MADE HEAT FLOW TRANSECT AT [illegible]'
* NORTH BETWEEN 139,51.3' AND 54.2' EAST. TOTALLY
* EIGHT SITES WERE MEASURED AND HEAT FLOW VALUES
* WERE TENTATIVELY DETERMINED. RELATIVELY HIGH HEAT
* FLOW VALUE(HIGHER THAN 200 MILLIWATT PER SQUARE
* METER) WAS MEASURED AT WESTERNMOST SITE. THE
* OTHER VALUES ARE LOWER THAN 100 MW/M2. IF
* POSSIBLE, WE WILL ENTRUST DR.SUYEHIRO,ORI,WITH THE
* FINAL RESULTS.
* BEST REGARDS, MAKOTO YUASA,GEOL.SURV.JAPAN
* #
ENULM 202601F/....
<

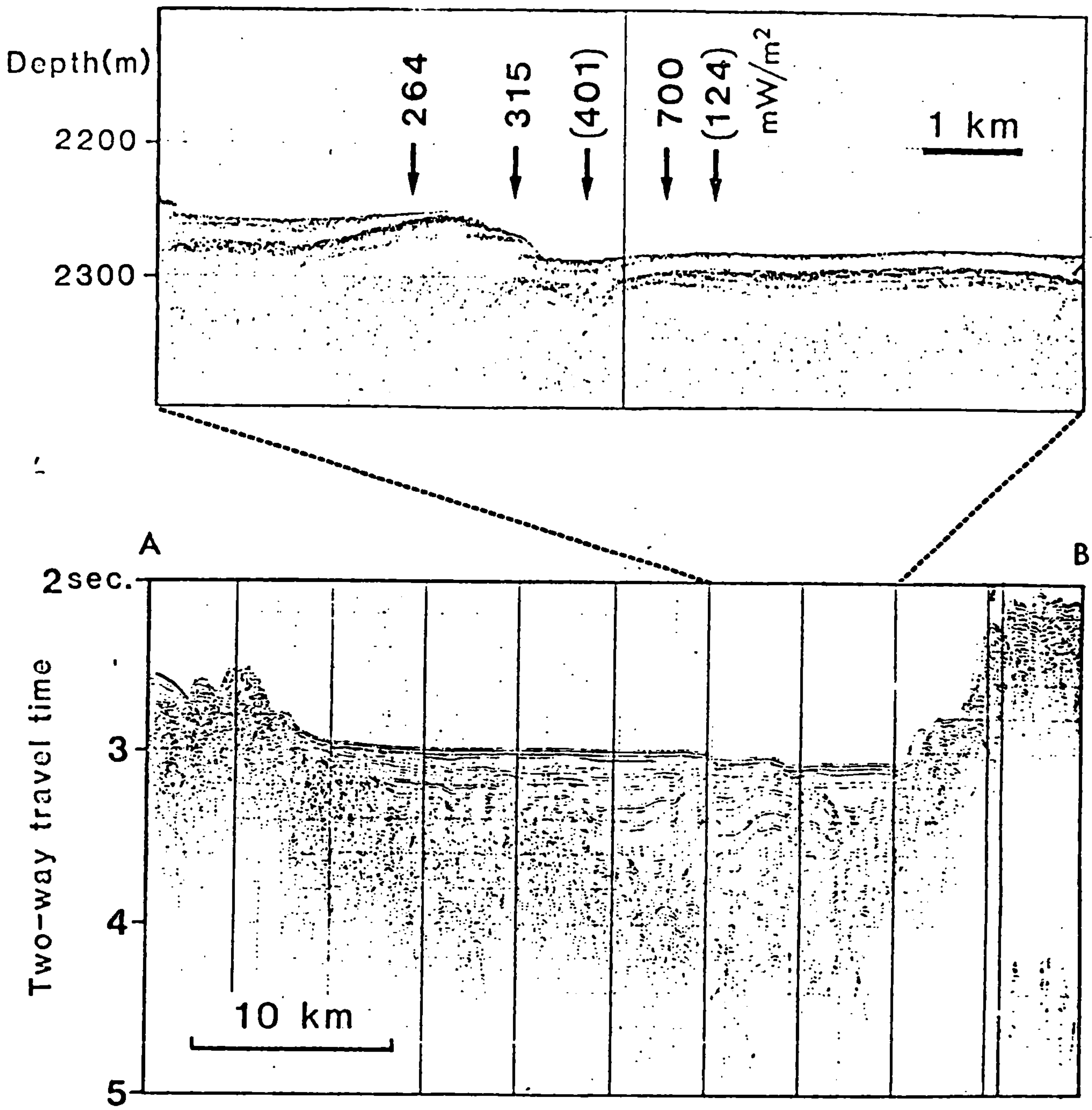


Fig. 5 Five closely spaced heat flow sites across an active normal fault. (Upper) Record of 3.5 kHz subbottom profiler and distribution of heat flow. Values in parenthese are less reliable. (Bottom) Seismic reflection profile. Location of the record is shown in Fig. 2. Several normal faults can be recognized on the profile.

From : Yamazaki, T. (1988), Heat flow in the Sumisu Rift, Izu-Ogasawara (Bonin) Arc. Bull. Geol.Surv. Japan, 39(1)

11 May 1988

MEMO TO: Michael Fisher, USGS
Jean-Ives Collot, ORSTOM
FROM: Brian Taylor, WPAC Chairman
RE Vanuatu Drilling: DEZ-2

Clearly the forearc wedge on Line 104 is not an an accreted sedimentary prism. While I agree with you that fresh crystalline rock is not to be expected, I suggest that fractured and altered arc basement (whether Eocene or Miocene) is the most likely material to be drilled. To drill a 900m hole (50m into the lower plate) at penetration rates which may be only 2m/hr would require setting a re-entry cone and would take half a leg to complete. Although you resist this interpretation, all the panel members that have seen your data suggest that it is the most likely scenario

In light of this , unless you can suggest a better alternative, I will make the following recommendation to WPAC, and with their concurrence, to PCOM: Keep the revised DEZ-2 site in the drilling plan, but allow a maximum of 16 days drilling plus logging DEZ-1 and DEZ-2. If arc basement is encountered at shallow depths at DEZ-2, and the penetration rate is slow the co-chiefs can determine whether or not to pull out early. DEZ-2 should be the first hole drilled so that if it encounters Miocene arc basement (i.e. no material transfer) then the reference site DEZ-1 should not be drilled and more time can be allocated to DEZ-2 or to remaining sites.

SITE SURVEY DATA SUMMARY : AREA: BONIN 1

TARGET SITE:	BON-1	BON-2	BON-5a	BON-5b	BON-6
latitude:	30 55 N	30 55 N	32 26 N	32 23 N	31 54 N
longitude:	139 53 E	140 00 E	140 47 E	140 48 E	141 06 E
region:	back-arc graben	back-arc horst	upper-slope basin	upper-slope canyon	outer-arc high
Environment:	E/F (REENTRY)	E/F (REENTRY)	E	E	E(REENTRY)
water depth:	2270m	1100m	2700m	3400m	2850m
sed. thickness:	850m	500m	>1500m	900m	950m
penetration:	870m	700m	950m	950m	1100m
TECHNIQUE:					
1. Single-Channel Seismic (a) high resolution	-	-	-	-	-
(b) deep penetration	GSJ (Geological Survey of Japan)	GSJ	HIG & JNOC	HIG & JNOC	LDGO
3. MCS, including velocities	JNOC (Japan National Oil Co.) also GSJ	JNOC	JNOC	JNOC	JNOC & LDGO
4. Crossing Seismic Lines or Survey Grid	HIG, Taylor, 1987 Site survey on R/V Fred Moore - all sites, also JNOC				
5. Seismic Refraction	profile at 32 N across arc, Honza and Tamaki, 1985				
6. 3.5 kHz	GSJ & HIG				
7. Multi-beam Bathymetry	SASS, Bay St. Louis, & SeaMARC II, HIG				
8. Side Scan Sonar a. Shallow Source	SeaMARC II, HIG				
b. Deep Towed Source	-	-	-	-	-
9. Heat Flow	Japanese data indicate high temp expected	GSJ			
10. Magnetics and Gravity	GSJ & HIG				
11. Coring A - paleoenvironment B - geotechnical	cores available (GSJ?), tech work needs to be done for reentry info.				
12. Dredging					NO CORES - must do for reentry
13. Photography	ALVIN dives, 1987				
14. Current Meter (for bottom shear)					

UPDATE: 10/13/88

SITE SURVEY DATA SUMMARY : AREA: BONIN 2

TARGET SITE:	BON-7	BON-8 (geochem. ref. site)	Mariana Ref Hole
latitude:	30 58 N	31 18 N	(near452) Langmuir & Natland
longitude:	141 48 E	142 54 E	?
region:	lower slope domes	Pacific Plate	
Environment:	E	G	G
water depth:	4650m	6000m	?
sed. thickness:	200m	500m	?
penetration:	600m	600m	?
TECHNIQUE:			
1. Single-Channel Seismic (a) high resolution	-	-	-
(b) deep penetration	GSJ see Taylor, p.9	GSJ	?
3. MCS, including velocities	-	LDGO	?
4. Crossing Seismic Lines or Survey Grid	July 1987, HIG, Taylor		?
5. Seismic Refraction	profile at 32 N acrossarc, Honza and Tamaki, 1985		-
6. 3.5 kHz	HIG	HIG	-
7. Multi-beam Bathymetry	SASS, Bay St. Louis	SASS, Bay St. Louis	-
8. Side Scan Sonar a. Shallow Source	SeaMARC II, HIG	-	-
b. Deep Towed Source	-	-	-
9. Heat Flow	-	-	-
10. Magnetics and Gravity	HIG	HIG	-
11. Coring A - paleoenvironment B - geotechnical	-	-	-
12. Dredging	ALVIN in area in 1987, but sites too deep for dive		-
13. Photography	-	-	-
14. Current Meter (for bottom shear)	-	-	-

UPDATE: 10/11/88

Sep 29, 1988

SITE SURVEY STATUS of the Proposed Japan Sea Sites

LEG 127

SITE J1b: *northern end of YAMATO BASIN*

	LAT	LON	W.D.	Penetration	Line/shot#
	40°11.4'N,	138°14.2'E	2861m	700m	DELP85-E #3851
ALT.	40°13.6'N,	138°14.7'E	2823m	680m	DELP85-E #3932
ALT.	40°17.6'N,	138°16.0'E	2892m	555m	DELP85-E #4096

Target **D**: Ocean crust w. thick sed. cover

Drilling plan: Hole A-APC/XCB to 600 m, Hole B-RCB w. re-entry cone

1	Deep SCS	YES (GSJ:J23)
(2)	High res SCS	NO
3	MCS & velocity	YES (DELP85-E; KH86-02:L10; KT88-09:107-110)
4	Cross lines	YES
5	Refraction	NEARBY
(6)	3.5 kHz	YES
(7)	Multi-beam	NO
(8)	Sidescan	NO
(9)	Heat flow	NEARBY
(10)	Mag & gravity	YES
11b	Core geotech	NO (TAMU approval)

SITE J1d: *northern end of JAPAN BASIN*

	LAT	LON	W.D.	Penetration	Line/shot#
	44°00.2'N,	138°52.7'E	3374m	700m	KT87-06-1 #543
ALT.	44°00.2'N,	138°57.5'E	3406m	825m	KT87-06-1 #674

Target **D**: Ocean crust w. thick sed. cover

Drilling plan: Hole A-APC/XCB to 650m, Hole B-RCB

1	Deep SCS	YES (GSJ:J8, J102)
(2)	High res SCS	NO
3	MCS & velocity	YES (KT87-06; KT88-09:101-103; JNOC88)
4	Cross lines	YES
5	Refraction	NEARBY
(6)	3.5 kHz	YES
(7)	Multi-beam	NO
(8)	Sidescan	NO
(9)	Heat flow	NEARBY
(10)	Mag & gravity	YES

SITE J1e: *southern YAMATO BASIN*

38° 36.7'N, 134° 32.6'E W.D. 2945m Penetr. 650m GSJ-J1e 08:53

Target **D**: Ocean crust w. thick sed. cover

Drilling plan: Hole A-APC/XCB to 600m, Hole B-RCB

1	Deep SCS	YES (GSJ: L38, GH88)

(2) High res SCS NO
3 MCS & velocity YES (JNOC)
4 Cross lines YES
5 Refraction NEARBY
(6) 3.5 kHz YES (GH88)
(7) Multi-beam NO
(8) Sidescan NO
(9) Heat flow NEARBY
(10) Mag & gravity YES

<u>SITE J3b</u>: <u>*OKUSHIRI RIDGE(incipient obduction)*</u>

	LAT	LON	W.D.	Penetration	Line/shot#
	42° 50.3'N,	139° 24.6'E	2298m	670m	KH86-2-6 # 805
ALT.	43° 00.0'N,	139° 22.2'E	2312m	990m	KH86-2-6 #2190

Target C: Active margins
Drilling plan: Hole A-APC/XCB to 620m, Hole B- RCB
(1) Deep SCS YES (GSJ)
(2) High res SCS NO
3 MCS & velocity YES (KH86-02: L6; KT88-09)
4 Cross lines YES
(5)* Refraction NEARBY
(6)* 3.5 kHz YES
7 Multi-beam NO
8 Sidescan NO
(9)* Heat flow NEARBY
(10) Mag & gravity YES
(11) Core paleo-environ NO
(14)* Current meter NO

<u>SITE J1a</u>: <u>*YAMATO BASIN*</u>
39° 53.0'N, 137° 21.5'E W.D. 2530m Penetr. 610m JNOC10-1 #3371
Target D: Ocean crust w. thick sed. cover APC/XCB
1 Deep SCS YES (GSJ)
(2) High res SCS NO
3 MCS & velocity YES (JNOC)
4 Cross lines YES
5 Refraction NEARBY
(6) 3.5 kHz YES
(7) Multi-beam NO
(8) Sidescan NO
(9) Heat flow NEARBY
(10) Mag & gravity YES

<u>SITE J1c</u>: <u>*JAPAN BASIN*</u>
40°20.13'N, 136° 54.1'E W.D. 2400m Penetr. 580m JNOC10-1 #3360
Target D: Ocean crust w. thick sed. cover APC/XCB SITE 302 of LEG31

1	Deep SCS	YES (GSJ:J23)
(2)	High res SCS	NO
3	MCS & velocity	YES (JNOC)
4	Cross lines	YES
5	Refraction	NEARBY
(6)	3.5 kHz	YES
(7)	Multi-beam	NO
(8)	Sidescan	NO
(9)	Heat flow	NEARBY
(10)	Mag & gravity	YES

LEG 128

SITE J2a: *Kita-Yamato Trough (paleo-rift)*

	LAT	LON	W.D.	Penetration	Line/shot#
	39°14.0'N,	133° 51.0'E	2085m	1610m	JNOC13-4 #7179
ALT.	39°07.6'N,	133° 58.6'E	1860m	975m	JNOC13-4 #6833

Target **G**: Aseismic ridges, oceanic plateaus/seamts

Drilling plan: Hole A-APC/XCB to 600m, Hole B-RCB w. re-entry cone

(1)* Deep SCS	YES (GSJ:L38)
(2) High res SCS	NO
(3)* MCS & velocity	YES (JNOC)
(4)* Cross lines	YES (V2815)
(5)* Refraction	NEARBY
(6) 3.5 kHz	YES
(7)* Multi-beam	NO
(8)* Sidescan	NO
(9) Heat flow	NEARBY (low about 75mW)
(10) Mag & gravity	YES
11b Core geotech	NO (TAMU approval)
(12)* Dredging	NO
(13) Photography	NO

SITE JS2: *OKI RIDGE (paleo-environment)*

37°02.2'N, 134°48.5'E W.D. 863m Penetr. 730m GSJ-JS2 #20480

Target **A**: Paleo-environment

Drilling plan: Hole A-APC/XCB/NCB, Hole B-APC to 120m

(1) Deep SCS	YES (GSJ: L35)
2 High res SCS	NO
(3) MCS & velocity	YES but no vel (GH86-4)
(4) Cross lines	YES
6 3.5 kHz	YES
(7)* Multi-beam	NO
(8)* Sidescan	NO
11a Core paleo-environ	YES
(14)* Current meter	NO

SITE SURVEY DATA SUMMARY : AREA: LAU BASIN

TARGET SITE:	LG-1	LG-2	LG-3 (W)	LG-3 (E)	LG-4
latitude:	18 38.2 S	18 37.2 S	22 09.9 S	22 09.8 S	22 22 S
longitude:	176 07.0 W	177 56.6 W	175 48.1 W	175 40.2 W	176 35 W
region:	CENTRAL LAU BASIN (youngest)	WESTERN LAU BASIN (oldest)	TONGA ARC PLATFORM	TONGA PLATFORM	VALA FA RIDGE (VFR)
Environment:	E/F re-entry	E - reentry?	D	D	E/F re-entry
water depth, m:	3539	2576	745	660	2400
sed. thickness, m:	-	300-450	400	400	50
penetration, m:	220	350	500	500	300
TECHNIQUE:					
1. Single-Channel Seismic (a) high resolution	Antipode (71), Papatua(86)	Antipode (71), Papatua(86) CD-33(88)			
(b) deep penetration	SIO	-	USGS?	USGS?	USGS?
3. MCS, including velocities	-	-	USGS & industry	USGS & industry	USGS,82,84- SP Lee, Line I8
4. Crossing Seismic Lines or Survey Grid	DESIRABLE	Antipode (71), Papatua(86) CD-33(88)	USGS? Papatua(86) CD-33(88)	USGS? Papatua(86) CD-33(88)	DARWIN-34
5. Seismic Refraction	-	SIO & HIG	sonobuoy (USGS?)	sonobuoy (USGS?)	DARWIN-34
6. 3.5 kHz	CD-33(88) SONNE-48(87) SONNE-35(84-85)	HIG, SIO,CD-33 SONNE-48(87) SONNE-35(84-85)	DARWIN CD-33(88)	DARWIN CD-33(88)	USGS,82,84- SP Lee, Line I8
7. Multi-beam Bathymetry	SIO, BGR SONNE-48(87) SONNE-35(84-85)	SeaBeam SONNE-48(87) SONNE-35(84-85)	NEEDED?	NEEDED?	SeaBeam BGR & IFRE-MER
8. Side Scan Sonar a. Shallow Source	DARWIN CD-33(88) GLORIA	DARWIN CD-33(88) GLORIA	DARWIN CD-33(88) GLORIA	DARWIN CD-33(88) GLORIA	desirable
b. Deep Towed Source		-	-	-	-
9. Heat Flow	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
10. Magnetics & Gravity	BGR, HIG, SIO Antipode (71), Papatua(86),CD-33	BGR, HIG, SIO,CD-33 Antipode (71), Papatua(86)	DARWIN CD-33(88)	DARWIN CD-33(88)	USGS,82,84- SP Lee, Line I8 mag
11. Coring a. paleoenvironmental b. geotechnical	SIO SONNE-48(87) SONNE-35(84-85)	TANGAROA(81) Imp. Col. Darwin (87,88) SONNE-35(84-85)	USGS? Tongatapu Isl.	USGS? Tongatapu Isl.	SONNE-35(84-85)
12. Dredging	SIO(Papatua) SONNE-35	BGR, HIG, SIO Antipode (71), Papatua(86)	USGS?	USGS?	BGR/USGS, Lee NAUTILE 1989
13. Photography	SONNE-48(87) SONNE-35(84-85)	SONNE-48(87) SONNE-35(84-85)	-	-	NAUTILE, 1989
14. Current Meter (for bottom shear)	-	-	-	-	-

UPDATE: 10/13/88

SITE SURVEY DATA SUMMARY : AREA: LAU BASIN

TARGET SITE:	LG-6 (W)	LG-6 (E)	LG-6 (S)	LG-7
latitude: longitude: region:	21 48.2 S 174 33.6 W TONGA FOR-ARC TERRACE	21 51.4 S 174 28.7 W TONGA FOR-ARC TERRACE	23 21.3 S 175 10.3 W TONGA FOR-ARC TERRACE	18 38.6 S 176 59.8 W LAU BASIN (intermed)
Environment: water depth, m: sed. thickness, m: penetration, m:	E 3790 600+ 550	E 4113 ? 550	E 5665 500+ 550	E - reentry? 2407 200-250 200
TECHNIQUE:				
1. Single-Channel Seismic (a) high resolution	-	-	-	DARWIN CD-33(88)
(b) deep penetration	USGS?	USGS?	USGS?	-
3. MCS, including velocities	USGS & industry	USGS & industry	USGS & industry	-
4. Crossing Seismic Lines or Survey Grid	USGS? DARWIN CD-33(88)	USGS? DARWIN CD-33(88)	USGS? DARWIN CD-33(88)	CD-33 (88)
5. Seismic Refraction	-	-	-	-
6. 3.5 kHz	USGS? CD-33(88)	USGS? CD-33(88)	USGS? CD-33(88)	DARWIN CD-33(88)
7. Multi-beam Bathymetry	DESIRABLE	DESIRABLE	DESIRABLE	SeaBeam SONNE-48(87) SONNE-35(84-85)
8. Side Scan Sonar a. Shallow Source	CD-33(88)	CD-33(88)	CD-33(88)	DARWIN CD-33(88) GLORIA
b. Deep Towed Source	-	-	-	-
9. Heat Flow	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
10. Magnetics & Gravity	CD-33(88) USGS?	CD-33(88) USGS?	CD-33(88) USGS?	DARWIN CD-33(88)
11. Coring a. paleoenvironmental b. geotechnical	-	-	-	Imp. Col.
12. Dredging	USGS?	USGS?	USGS?	desirable
13. Photography	-	-	-	-
14. Current Meter (for bottom shear)	-	-	-	-

UPDATE: 10/13/88

SITE SURVEY DATA SUMMARY : AREA: LAU BASIN

TARGET SITE:	LG-8	LG-9	LG-9a	LG-10	LG-10a
latitude: longitude: region:	18 37.6 S 177 22.0 W LAU BASIN	20 07.6 S 176 42.8 W LAU BASIN	20 49.7 S 176 51.3 W LAU BASIN	20 05.1 S 176 34.3 W LAU BASIN	20 48.0 S 176 37.8 W LAU BASIN
Environment: water depth, m: sed. thickness, m: penetration, m:	E 2085 <200 200	E 2550 200-300 200	E 2292 250-300 200	E 1910 100-200 200	E 2360 <200 200
TECHNIQUE:					
1. Single-Channel Seismic (a) high resolution	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)
(b) deep penetration	-	-	-	-	-
3. MCS, including velocities	-	-	-	-	-
4. Crossing Seismic Lines or Survey Grid	CD-33 (88)	CD-33 (88)	CD-33 (88)	CD-33 (88)	CD-33 (88)
5. Seismic Refraction	-	CD-33 (sonobuoys)	CD-33 (sonobuoys)	CD-33 (sonobuoys)	CD-33 (sonobuoys)
6. 3.5 kHz	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)
7. Multi-beam Bathymetry	SeaBeam SONNE-48(87) SONNE-35(84-85)	SeaBeam SONNE-48(87) SONNE-35(84-85)	SeaBeam SONNE-48(87) SONNE-35(84-85)	SeaBeam SONNE-48(87) SONNE-35(84-85)	SeaBeam SONNE-48(87) SONNE-35(84-85)
8. Side Scan Sonar a. Shallow Source	DARWIN CD-33(88) GLORIA	DARWIN CD-33(88) GLORIA	DARWIN CD-33(88) GLORIA	DARWIN CD-33(88) GLORIA	DARWIN CD-33(88) GLORIA
b. Deep Towed Source	-	-	-	-	-
9. Heat Flow	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
10. Magnetics & Gravity	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)	DARWIN CD-33(88)
11. Coring a. paleoenvironmental b. geotechnical	Imp. Col.	Imp. Col.	Imp. Col.	Imp. Col.	Imp. Col.
12. Dredging	desirable	desirable	desirable	desirable	desirable
13. Photography	-	-	-	-	-
14. Current Meter (for bottom shear)	-	-	-	-	-

UPDATE: 10/13/88

VANUATU SITE SURVEY MATRIX - SEPT '88

	Site	DEZ-1(WPAC)	DEZ-2(WPAC)	DEZ-2'(Fisher+Collot)	DEZ-4(WPAC)
	Previous Site	NHA-2(#187)	DEZ-1(#190)		
	Previous Site		~NHA-1 (#187)		
	Target type	Active Margin	Active Margin	Active Margin	Active Margin
	Latitude	15° 20.5' S	15° 19.2' S	15° 19.5' S	15° 57' S
	Longitude	166° 16.5' E	166° 21.7' E	166° 21.7' E	166° 47.5' E
	Water depth	2500	2130	~2550	900
	Sed thickness	200	900	?900	>1000
	Penetration	300	1000	?1000	1000
	Re-entry	N	N	N	N
	Deep SCS	•	•	•	•
D	Hi Res SCS	*Charcot '85	*Charcot '85	*Charcot '85	*Charcot '85
R	MCS w/ vels	L104 sp 630	L104 sp 840	L104 sp 782	L100 sp 540
R	Cross lines	NO (perhaps SCS)	L106 sp 792	M1022 sp 228	L107 sp 782
D	Refraction	•	•	•	•
D	3.5 KHz	LEE	LEE	LEE +	LEE
R	Swathmap	*Charcot '85	*Charcot '85	*Charcot '85	*Charcot '85
	Shallow sidescan	•	•	•	•
	Deep sidescan	•	•	•	•
D	Heat flow	•	•	•	•
D	Magnetics	LEE	LEE	LEE +	LEE
D	Paleo-env coring	•	•	•	•
	Geotech coring	•	•	•	•
	Dredging	*Charcot '85	*Charcot '85	*Charcot '85	*Charcot '85
	Photography	•	•	•	•
D	Current meter	•	•	•	•
	Distance to xing	0.6 km	0.6 km		0.3 km
	* Where are the data and locations of SCS, SeaBeam + dredges?				
	**where is the refraction data + locations?				
	† ~0.6 km to M1041 sp 800				

VANUATU SITE SURVEY MATRIX - SEPT '88

	Site	DEZ-5(WPAC)	IAB-1a(WPAC)	IAB-2a(WPAC)
	Previous Site	DEZ-2(#190)	IAB-1a (#190)	IAB-2(#190)
	Previous Site			
	Target type	Active Margin	Active Margin	Active Margin
	Latitude	16° 01' S' S	14° 47.5' S	14° 38.3' S
	Longitude	166° 40.5' E	167° 35' E	167° 55' E
	Water depth	1100	3075	2600
	Sed thickness	700	>1000	>1000
	Penetration	750	1000	1000
	Re-entry	N	N	N
	Deep SCS	•	•	•
D	Hi Res SCS	*Charcot '85	?	?
R	MCS w/ vels	L100 sp 792	L19 sp 860	L19 sp 1598
R	Cross lines	L106 sp2345	L17 sp 242	NO (perhaps SCS)
D	Refraction	•	ORSTOM/UTIG?**	ORSTOM/UTIG?**
D	3.5 KHz	LEE	LEE +	LEE
R	Swathmap	*Charcot '85	*Charcot '85	*Charcot '85
	Shallow sidescan	•	•	•
	Deep sidescan	•	•	•
D	Heat flow	•	•	•
D	Magnetics	LEE	LEE +	LEE
D	Paleo-env coring	•	•	•
	Geotech coring	•	•	•
	Dredging	*Charcot '85	•	•
	Photography	•	•	•
D	Current meter	•	•	•
	Distance to xing	0.2 km	0.6 km	
	* Where are the data and locations of SCS, SeaBeam + dredges?			
	**where is the refraction data + locations?			
	† ~0.6 km to M1041 sp 800			

SITE SURVEY DATA SUMMARY : AREA: Central Pacific Guyots

TARGET SITE:	SYL 1	SYL 1	HAR 1	HAR 3
latitude:	11 55 N	11 30 N	05 29 N	05 30 N
longitude:	164 40 E	165 00 E	172 20 E	172 05 E
region:	Sylvania Guyot	Sylvania FLANK	Harrie Guyot	Harrie Guyot
Environment:	G	G, E	G	G, E
water depth:	1350	4600	1500	4500
sed. thickness:	400	700	400	700
penetration:	650	800	650	800
TECHNIQUE:				
1. Single-Channel Seismic (a) high resolution	HIG, MW8805 KK810626-04	HIG, MW8805 KK810626-04	KK810626-02	KK810626-02
(b) deep penetration	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
3. MCS, including velocities	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
4. Crossing Seismic Lines or Survey Grid	HIG, MW8805 KK810626-04	HIG, MW8805 KK810626-04	KK810626-02	KK810626-02
5. Seismic Refraction	HIG, MW8805	HIG, MW8805	DESIRABLE	DESIRABLE
6. 3.5 kHz	HIG, MW8805 KK810626-04	HIG, MW8805 KK810626-04	KK810626-02	KK810626-02
7. Multi-beam Bathymetry	HIG, MW8805	HIG, MW8805	none	none
8. Side Scan Sonar a. Shallow Source	HIG, MW8805	HIG, MW8805	KK810626-02	KK810626-02
b. Deep Towed Source	-	-	-	-
9. Heat Flow	-	DESIRABLE	-	DESIRABLE
10. Magnetics and Gravity	HIG, MW8805	HIG, MW8805	KK810626-02	KK810626-02
11. Coring	-	-	-	-
12. Dredging	HIG, MW8805 KK810626-04	HIG, MW8805	KK810626-02	KK810626-02
13. Photography	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
14. Current Meter (for bottom shear)	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE

UPDATE: 9/26/88

G-14.

SITE SURVEY DATA SUMMARY : AREA: LOIHI SEAMOUNT

TARGET SITE:	LH1	LH2
latitude:	18 54 N	18 59 N
longitude:	155 14 W	155 16 W
region:	LIOIHI Summit	LOIHI north flank
Environment:	G,F	G,F
water depth, m:	1000	1000
sed. thickness, m:	0	0
penetration, m:	300-400	100-300
TECHNIQUE:		
1. Single-Channel Seismic (a) high resolution	HIG, USGS	HIG, USGS
(b) deep penetration	DESIRABLE	DESIRABLE
3. MCS, including velocities	DESIRABLE	DESIRABLE
4. Crossing Seismic Lines or Survey Grid	HIG, USGS	HIG, USGS
5. Seismic Refraction	USGS	USGS
6. 3.5 kHz	HIG, USGS	HIG, USGS
7. Multi-beam Bathymetry	HIG, USGS, SASS, SeaBEAM, SeaMARCII	HIG, USGS, SASS, SeaBEAM, SeaMARCII
8. Side Scan Sonar a. Shallow Source	HIG SeaMARC II	HIG SeaMARC II
b. Deep Towed Source	NEEDED	NEEDED
9. Heat Flow	Sub dives	Sub Dives
10. Magnetics and Gravity	HIG	HIG
11. Coring	-	-
12. Dredging	HIG, submersibles	HIG, submersibles
13. Photography	submersibles	submersibles
14. Current Meter (for bottom shear)	HIG	HIG

UPDATE: 9/26/88

SITE SURVEY DATA SUMMARY : AREA: Mid Pac Guyots

TARGET SITE:	Allison Guyot	Menard Guyot	Wilde Guyot	Isakov Guyot	Takuyo-daini Guyot
latitude:	18 30 N	20 45 N	21 09 N	13.3 N	34 15 N
longitude:	179 25 W	173 25 E	163 15 E	151.1 E	143 50 E
region:	Mid Pacs	Mid Pacs	Mid Pacs	Geisha Smts	Geisha Smts
Environment:	G	G	G	G	G
water depth, m:	1650	1370	1270	1340	1450
sed. thickness, m:	900	700?	<200	<100	?
penetration, m:	1000	800	500+	200-300	200-300
TECHNIQUE:					
1. Single-Channel Seismic (a) high resolution	1971, SIO Aries V	1971, SIO Aries V	1971, SIO Aries V	1971, SIO Aries V	1971, SIO Aries V
(b) deep penetration	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
3. MCS, including velocities	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
4. Crossing Seismic Lines or Survey Grid	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
5. Seismic Refraction	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
6. 3.5 kHz	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
7. Multi-beam Bathymetry	DESIRABLE	DESIRABLE	SASS, Smoot	SASS, Vogt, Smoot	SASS, Vogt, Smoot
8. Side Scan Sonar a. Shallow Source	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
b. Deep Towed Source	-	-	-	-	-
9. Heat Flow	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
10. Magnetics and Gravity	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
11. Coring	-	-	-	-	-
12. Dredging	DESIRABLE	SIO Aries V #12, 15	SIO Aries V #19, 20	DESIRABLE	DESIRABLE
13. Photography	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE
14. Current Meter (for bottom shear)	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE	DESIRABLE

UPDATE: 9/26/88

RECEIVED APR 0 4 1988

OCEAN DRILLING PROGRAM
SITE SURVEY PANEL MINUTES

Lamont Doherty Geological Observatory
Palisades, New York

March 15-17, 1988

Present:
John Peirce* (Chairman, Canada)
Fred Duennebier* (USA)
John Jones* (UK, alternate for Kidd)
Steve Lewis* (USA)
Alain Mauffret* (France)
Heinrich Meyer* (Germany)
Greg Mountain * (USA, incoming Chairman)
Kiyoshi Suyehiro* (Japan)
Carl Brenner (ODP Data Bank)
John Ladd (soon to be at NSF)
Marc Langseth (PCOM liaison)
Bruce Malfait (NSF)
Audrey Meyer (TAMU)
Brian Taylor (WPAC)
Michael Wiedicke (JOIDES Office)

Regrets:
Birger Larsen (ESF)
Tom Pyle (JOI)

**Panel members*

SITE SURVEY PANEL

Palisades, New York
March 15-17, 1988

EXECUTIVE SUMMARY

1. SSP flags several possible safety concerns, and urges that potential Co-Chiefs/proponents seek early review by PPSP.
   - A. Sulu Sea sites 5A, SS2 and SS3
   - B. most Japan Sea sites, especially including J1b and J1d
   - C. NE Australia
   - D. S. China Margin

2. Scheduled legs were reviewed.
   - A. Leg 121 - Broken Ridge / Ninety-East Ridge
     - 1) All sites approved by SSP.
   - B. Leg 122 - Exmouth Plateau
     - 1) No discussion by SSP.
   - C. Leg 123 - Argo Abyssal Plain
     - 1) All survey data are adequate. However, there is a discrepancy between locations of M-25 plotted by the Data Bank and those of published reports that is critical to the location of AAP2, and resolution of the problem must precede final approval by SSP. Co-Chief informed and is taking action to resolve.
   - D. Leg 124 - Banda/Celebes/Sulu/S.China Sea Basins
     - 1) Banda Sea
       - a) Currently available seismic data does not image complex basement features adequately for BNDA1. *Darwin* profiles collected across the site in late February will be reviewed and an SSP decision relayed to PCOM ASAP.
       - b) Existing data is adequate across BNDA2 and 3.
     - 2) Celebes Sea
       - a) CEL1 approved.
     - 3) Sulu Sea
       - a) Although data is sufficient for scientific purposes, we draw attention to the possibility of gas at both sites 5A and SS2.
       - b) SS3 appears to be isolated from gas possibly migrating updip from the trench, but this is based on structural contours derived from BGR lines spaced 20-30 miles apart. We have contacted and recommend to Bob Thunell that he run three analog SCS lines when in the region this summer aboard *Moana Wave*, with the purpose of i) defining the basement trends more reliably, and ii) providing a crossing line at SS3.
     - 4) S. China Sea
       - a) WPAC wants to move SCS9 to the location of Anomaly 6 on either BGR Line 17 or 18. Provided the merging of the magnetics and seismic data can be completed in time for the April meeting of WPAC, this site is approved.
       - b) SCS5B approved by SSP.
   - E. Leg 124E - Engineering test leg
     - 1) SSP does not need to formally review these sites, but stands ready to assist in whatever way possible.
   - F. Leg 125 - Bonins I
     - 1) Adequate data are available for the drilling objectives with exception of MAR3 and 3A, where piston cores are needed.

G. Leg 126 - Bonins II
 1) Sites BON2, 3, 4, 5a and 5b approved for drilling.
 2) There is a possibility of high temperatures at Site BON1. Suyehiro will try to locate and send pertinent GSJ heat flow data to Langseth and Mountain in time for review and recommendations to the April meeting of WPAC.

H. Leg 127 - Nankai Trough
 1) SSP approves sites NKT1, 2, 3 and 5.

I. Legs 128/129 - Japan Sea
 1) Sites J1b, J2a and JS2 are adequately surveyed for approval by SSP, though we reiterate our earlier recommendation for high-resolution seismics across the latter site.
 2) MCS data across J3a needs to be migrated.
 3) Site J1d needs a crossing MCS line.
 4) It is strongly recommended that the nominated Co-Chiefs (Suyehiro and Tamaki) seek an early review by PPSP to maximize the chance of making effective planning changes should they be necessary.

3. Additional WPAC drilling packages were reviewed.

A. NE Australia
 1) An excellent grid of data exists across all proposed sites.
 2) Processing incomplete, and SSP recommends steps be taken to ensure that i) migration is performed on profiles across slope sites; ii) structure and isochron or isopach maps be prepared to identify optimum site location and to demonstrate lack of closure to PPSP; and iii) cruise reports, core descriptions and full-scale profiles are delivered to the Data Bank ASAP.

B. S. China Margin
 1) An excellent data set exists across all proposed sites.
 2) Processing is well advanced, and SSP recommends that i) all profiles near target sites be migrated; ii) structural maps to key horizons be prepared; iii) careful velocity measurements and T.D. calculations be prepared to provide accurate estimates of drilling time; and iv) a detailed bathymetric map be prepared at a working scale.

C. Lau Basin
 1) Detailed review postponed to next meeting when this summer's *Darwin* cruise data will be examined.

D. Vanuatu
 1) DEZ1 and 5 appear to be OK.
 2) Question remains as to thickness of sediment cover at DEZ2. Additional velocity analysis and review of 3.5 KHz records are required.

E. Reference Sites
 1) Data adequate at unnumbered Bonin reference site.
 2) Imprecise site location of Marianas reference site precludes assessment by SSP.

4. High priority CEPAC sites given initial review.

A. East Pacific Rise
 1) Discussion postponed until publication of Working Group synthesis.

B. Neogene Paleo-environmnent
 1) Ontong-Java Plateau
  a) Sites to be chosen after Winterer cruise.
  b) SSP emphasizes importance of seismic tie from top of Plateau to basin, and urges that every effort possible is made for optimum reflector continuity across this transect.

C. Equatorial Pacific
   1) SSP discussion cannot advance without proponents assembling seismic data.
D. Mesozoic Paleoceanography
   1) Discussion postoponed until after Duennebier cruise.
E. Shatsky Rise
   1) SSP very concerned that drilling may proceed with only analog, small-volume airgun profiles. High-res SCS and side scan data needed.
F. Chile Triple Junction
   1) Recently acquired *Conrad* data promises to be excellent. Further discussion awaits specific drilling proposal.
G. Hawaii Moat
   1) Question of adequate chronostratigraphic control to meet drilling objectives.
H. Marquesas
   1) SSP agrees that two-ship seismic data advocated by proponents is needed.

5. Next meeting tentatively scheduled for Sept. 27-29 in Swansea, Wales.

SITE SURVEY PANEL

Palisades, New York
March 15-17, 1988

ACTION ITEMS

ACTION: DUENNEBIER to read Cooper's letter and provide A. Meyer with comments. (completed at meeting)

ACTION: LEWIS to get copy of *FARNELLA* cruise reports and track charts pertaining to Hawaii moat for Data Bank.

ACTION: PEIRCE/BRENNER call Gradstein, Hiertzler, and WHOI to insure that a plan of action is agreed upon to resolve the discrepency between the plotted magnetic anomalies across Argo Abyssal Plain and their published interpretation (done March 18).

ACTION: JONES to get Masson to send copies of *DARWIN* data and track chart over BNDA 1, 2 and 3 to H. Meyer, C. Brenner, A. Meyer and B. Taylor ASAP. BRENNER to send data presently in Data Bank to H. Meyer in time for WPAC meeting.

ACTION: H. MEYER will review *DARWIN* data with WPAC at their April meeting. He will complete site survey matrices and send via Telemail final recommendations regarding BNDA-1 to G. Mountain for review and transmission to PCOM before their meeting in mid-April.

ACTION: BRENNER will contact BGR for core location map in Sulu Sea. If no cores are found near SS3, Thunnel is requested (in letter from MOUNTAIN) to take one at this location on *Moana Wave* this summer.

ACTION: H. MEYER will work with BGR staff to plot magnetics plotted at seismic scales for site SCS-9 before the WPAC meeting. At that meeting he will complete a new site survey matrix for sites SCS-9 and SCS-5B to be hand carried by Pisias to PCOM, and also forward them by computer mail to Mountain. MEYER will also expedite sending SO-49 magnetics to ODP Data Bank.

ACTION: DUNNEBIER will be crossing Marianas Trench axis at potential deep-water engineering test site twice next month on *MOANA WAVE*. He will send profiles to A. Meyer with copies to the Data Bank.

ACTION: SUYEHIRO will look for Japanese data on Caroline Ridge for Leg 124E and feed back to A. Meyer

ACTION: DUENNEBIER prepare site survey matrix for Leg 125. Included as Appendix L.

ACTION: SUYEHIRO contact Nishi Mura of the GSJ and forward heat flow data (paper/preprint?) by courier to M. Langseth for review. LANGSETH and MOUNTAIN make recommendations regarding possibilities of high temperatures at site BON1 prior to WPAC meeting in April. There may be some chance for a detailed heat flow profile by the GSJ.

ACTION: DUENNEBIER to complete matrix for Leg 126 sites for inclusion in minutes as Appendex M. SUYEHIRO to ask GSJ for a set of selected core descriptions near planned sites for submission to Data Bank to provide background info for TAMU engineers. Any failed coring attempts because of hard bottom are especially important to know about.

ACTION: SUYEHIRO to coordinate submission of Nankai SSP profiles (ESP's shot with one ship held stationery in strong current) to ODP Data Bank.

ACTION: JONES contact Parson to insure that required Lau Basin SCS line is obtained by *Darwin*. BRENNER provide Parson with a copy of *SONNE* cruise report.

ACTION: SSP will review *DARWIN* data from Lau Basin at next meeting in order to give advice to Hawkins. KIDD coordinate sending *DARWIN* data to DUENNEBIER for review prior to meeting.

ACTION: MAUFFRET write to Fisher at USGS (cc: Brenner, Mountain and Taylor) to request analysis of velocities and 3.5 kHz data over DEZ-2 to resolve questions regarding spudding in and depth to décollement surface.

ACTION: MOUNTAIN to contact Detrick to get specific location of Marianas ref. site. BRENNER will send all site data to KIDD for review at next meeting.

ACTION: LEWIS contact Detrick and prepare a synopsis review of EPR and 504B for next meeting.

ACTION: BRENNER provide SUYEHIRO with available data on Shatsky Rise for review at next meeting. DUENNEBIER will talk to Schlanger and LEWIS will talk to Sliter for their views before the next meeting.

ACTION: BRENNER send data package for Old Pacific proposals to KIDD for review at next meeting. KIDD contact Shipley and Lancelot regarding new data to include in review.

ACTION: MAUFFRET/MOUNTAIN brief new French representative on review responsibilities for next meeting.

ACTION: MOUNTAIN arrange with Rea, Taylor, and Pisias for CEPAC and WPAC liaisons. Also appoint liaison for summer meeting of PPSP. Also contact Davis/Detrick regarding need for liaison to EPR Working Group.

ACTION: MOUNTAIN request formal approval for next SSP meeting at appropriate time, no later than July 1.

SITE SURVEY PANEL

Palisades, New York
March 15-17, 1988

MINUTES

1. PRELIMINARY MATTERS

The Chairman welcomed Greg Mountain as a new panel member and as incoming Chairman.

Denny Hayes welcomed the SSP to Lamont.

There were no changes to the minutes from the last meeting.

National ship schedules were brought by all representatives and are attached as Appendices A-F.

2. REPORTS

A. PCOM (M. Langseth)

Indonesian clearance for Leg 124 is viewed as a potential problem. June 3 is the drop date if clearance is not obtained.

The tentative 2nd year of WPAC drilling is

- Nankai II
- Reference Sites (BON-8 and MAR-6)
- South China Sea Margin
- Northeast Australia
- Vanuatu (DEZ 1-5 and IAB 1A, 2A)
- Lau Basin (No guide base, include forearc site).

TAMU has requested a second engineering leg in the Lau Basin to test drilling in fractured basement rock.

The tentative CEPAC program is attached as Appendix G and watchdogs listed.

The discussions on the restructuring of panels were reviewed. The subcommittee report goes to PCOM in April and then to EXCOM.

B. TAMU (A. Meyer)

At its meeting last week, PPSP rejected Exmouth Plateau sites EP-6, 7 and 12, while approving sites EP-2 and 11. Sites EP-9 and 10 were approved with the following guidelines:

1) a number of seismic lines must be shot across EP-9 by the JOIDES *RESOLUTION* during the first NW Australia leg; and

2) EP-10 can be drilled on the second leg only if EP-9 is completed without major indications of gas.

A further meeting of PPSP will be held on April 5 to see if alternative sites ("twins" to dry industry wells?) can be salvaged.

On the Engineering Leg (124E), TAMU will probably sail a "science advisory board" of 4-6 scientists with shipboard experience.

Results of Legs 116-119 and the beginning of Leg 120 were presented.

In reviewing the TAMU action items from the previous minutes, the following points were made.

1) The Navidrill was successfully tested on 118 and will be tested again on 121.

2) TAMU is strongly encouraging inclusion of site survey chapters in Volume A. Accomplishing this is sometimes limited by having only one free back pocket foldout in each Part A. There was an inconclusive discussion on the extra money needed to best display site survey results in Part A.

3) Underway Geophysics

A letter received by A. Meyer from Alan Cooper (USGS), who was the geophysicist on Leg 119, outlines numerous recommendations for improving underway geophysics on the JOIDES *RESOLUTION*. Many of these recomendations are precluded by the lack of money for new equipment and others by a lack of sufficient availability of marine techs.

ACTION: **DUENNEBIER to read Cooper's letter and provide A. Meyer with comments.** (completed at meeting)

C. JOIDES OFFICE (M. Wiedicke)

The JOIDES Office moves to Hawaii on October 1, 1988. Ralph Moberly will be the new PCOM Chairman. The non-U.S. liaison is Laurent D'Ozouville from France.

D. ODP DATA BANK (C. Brenner)

Brenner distributed the FY'87 report on Data Bank activity.

The Data Bank budget for FY 87 was $198K. For FY 88 the budget is $204K. For FY 89, the budget is projected at $208K.

The microfilm reader, which has been sought by the Data Bank for some time, is being bought by the JOI Special Projects fund.

Data storage space at the Data Bank is considered adequate through the CEPAC drilling.

E. CEPAC REPORT (A. Mauffret)

The last CEPAC meeting was in October.

The EPR Working Group has met and reported to LITHP.

The USSAC-funded EPR synthesis is expected to be completed this summer. Three copies of this synthesis report will be produced, one of which will go to the Data Bank.

An aeromag survey (Tamaki, Kobayashi, Handschumacher and Sager) is reported to have found anomaly M-38 in the Pigafetta Basin. Reportedly there were no sills detected in this area on the Larson/Shipley cruise. The survey was cut short by equipment problems - the undone portion in the Nauru Basin may be done on *WASHINGTON* as an SCS program. Other ODP site survey cruises for 1988 include:

1) Chile Triple Junction (Cande on *CONRAD*) Acquired 1800 miles of MCS data and 100% SeaBeam coverage.

2) Hawaii Moat (Detrick on *WASHINGTON*, ETD May 17) High resolution seismics planned. Chronologic reolution question is still left open. The USGS Gloria surveys on *FARNELLA* reportedly collected digital SCS on a wide grid.

ACTION: Lewis to get copy of *FARNELLA* cruise reports and track charts pertaining to Hawaii moat for Data Bank.

3) W. Pacific Atolls (Schlanger on *WASHINGTON*, 4-5/88); will include SCS, SeaMarc, magnetics and dredging.

4) NW Pacific Hotspot (Lonsdale) and NE Pacific Meija Sediment Drift (Keigwin) (both on *WASHINGTON*, 8/88).

5) W. Pacific Guyots (Winterer on *WASHINGTON*, 11/88).

6) Ontong-Java Transect (Winterer on *WASHINGTON*, 12/88).

3. SITE SURVEY ASSESSMENTS OF SCHEDULED LEGS.

A. 121 - Broken Ridge/Ninetyeast Ridge (Weissel/Peirce)

The Broken Ridge sites were reviewed by Weissel in light of the results from Leg 119.

The Ninetyeast Ridge sites were reviewed by Peirce.

All sites on Leg 121 are approved by the SSP. The site survey matrix is attached as Appendix H.

B. 122 - Exmouth Plateau

Further discussion of this leg was irrelevant given the PPSP decision of last week.

C. Leg 123 - Argo Abyssal Plain (Brenner)

All data for AAP1B is at the Data Bank. For AAP2 there is a potentially serious discrepancy between the plotted magnetic anomalies and their published interpretation.

This appears to be a timing error in the merged data tape, but it is critical as AAP2 is positioned on M25.

ACTION: PEIRCE/BRENNER call Gradstein, Hiertzler, and WHOI to insure that a plan of action is agreed upon to resolve the discrepency between the plotted magnetic anomalies across Argo Abyssal Plain and their published interpretation.

D. Leg 124 - Banda/Celebes/Sulu/S. China Sea Basins (H. Meyer)

A table of site locations and data was distributed by B. Taylor to correct previous ambiguities arising from typos and other errors. It is attached as Appendix I.

The Site Survey matrix submitted by H. Meyer is attached as Appendix J.

1) Banda Sea

On February 29 the *DARWIN* surveyed an 18 mile long SCS line, oriented NE/SW, over BNDA-1 and a 40 mile long SCS line, oriented NW/SE, over BNDA-2, and a short line over BNDA-3.

ACTION: JONES to get Masson to send copies of *DARWIN* data and track chart over BNDA 1, 2 and 3 to H. Meyer, C. Brenner, A. Meyer and B. Taylor ASAP. Brenner to send data presently in Data Bank to H. Meyer in time for WPAC meeting.

Previously planned and funded site surveys for this area foundered because of the lack of Indonesian clearances. On the currently available data BNDA-1 is not drillable from a site survey perspective because the complex basement is very poorly imaged. The basement at BNDA-2 is more clearly imaged and the SSP feels that there is adequate data to drill it even without the *DARWIN* data.

Seismic refraction data are not considered essential to these sites because the availability of the minicone makes exact depth determinations a low priority need.

Sediment isopach maps are needed for both areas.

ACTION: H. MEYER will review *DARWIN* data with WPAC at their April meeting. He will complete a site survey matrix and send via Telemail final recommendations regarding BNDA-1 to G. Mountain for review and transmission to PCOM before their meeting in mid-April.

2) Celebes Sea

The CEL-1 site survey data were reviewed. This site is approved by the SSP.

3) Sulu Sea

Site 5A on line 7 appears to be undrillable because of indications of gas migrating out of the trench. At the moment there is no map at a useful scale of core locations, heat flow locations, or bottom photography stations.

Proposed site SS2 on line 4 also seems to be a high risk site as there are several features on the seismic line which can be interpreted as gas indicators.

Proposed site SS3 on line 5 is separated from the trench by a basement ridge which appears to interrupt potential migration paths from the trench. The seismic line does not appear to have the same possible indications of gas (as noted on line 4 above) near the SS3 location. However, the seismic grid is wide (20-30 miles), the geometry of the ridge is uncertain, and its effectiveness as a block to possible migration is equally uncertain.

Although there is enough data in this area for scientific purposes, in order to convince PPSP that a safe site can be found the following additional work needs to be done near the proposed site SS3:

a) A detailed depth to basement map is needed, incorporating SeaBeam data to get some sense of the strike of outcropping ridges. There appear to be no SCS tracks in the area which can help constrain the strike of the ridge near SP 2800 on line 5.

b) Maps of all available station data in the area are needed at a useful working scale.

c) A core is needed at the proposed location.

d) Bob Thunell (U. South Carolina) will be running a coring cruise in the area on *MOANA WAVE*. Fred Dunnebier telephoned Thunnel during the meeting, and when asked, Bob said he would be willing to spend about a day acquiring analog seismic lines on either side of line 5 to confirm the strike length of the isolating basement ridge and a cross line across the site. The cruise is scheduled for Aug. 88.

e) Mountain has written Thunell a letter specifying the positions of these lines along with a request to take a core at SS3 if necessary; a copy of this letter is attached as Appendix K. If PPSP meets before the cruise departs, their conclusions may significantly affect the need for this additional data.

ACTION: **BRENNER will contact BGR for core location map in Sulu Sea. If no cores are found near SS3, Thunnel is requested (in letter from MOUNTAIN) to take one at this location on *Moana Wave* this summer.**

4) South China Sea

Site SCS-9 is planned to confirm the age of magnetic anomaly 6. WPAC wishes to move the site onto either line BGR 17 or 18. In order to accomplish this at their next meeting, it is necessary that the magnetic profile be plotted at the same horizontal scale as the seismic data even if the final magnetic corrections are not yet ready.

ACTION: **H. MEYER will work with BGR staff to plot magnetics plotted at seismic scales for site SCS-9 before the WPAC meeting. At that meeting he will complete a new site survey matrix for sites SCS-9 and SCS-5B to be hand carried by Pisias to PCOM, and also sent by computer mail to Mountain. MEYER will expedite sending SO-49 magnetics to Data Bank.**

Site SCS-5 was originally placed on the axis of the extinct spreading center in the SW China Sea. Site SCS-5B was chosen to place the site in Philippine waters to minimize clearance problems. It is placed on a LDGO MCS/SeaBeam/heat flow profile where crossing SCS and ESP's are available.

The SSP approves sites SCS5-B and SCS-9, assuming that the plans above are carried out without difficulty.

The only data not resident in the Data Bank are the SO-49 magnetics.

E. Engineering Leg 124E, Manila-Guam, December, 1988 (A. Meyer)

1) 8000 m W.D. site

Objectives: Test APC coring and positioning capability with nearly full drill string deployed. Also test bending stress on pipe.

Requirements: 8000 m W.D. Sediment thickness and type not important, but need to avoid sites where Cretaceous chert is exposed at surface in order to spud in without difficulty.

The best chance seems to be in the axis of the Marianas Trench, but there are no records showing unequivocal evidence of sediment there near Guam.

ACTION: DUNNEBIER will be crossing Marianas Trench axis at location of potential deep-water engineering test site twice next month on *MOANA WAVE*. He will send profiles to A. Meyer with copies to the Data Bank.

2) Test of rented mining system

Requirements: Desire 50-200 m of sediment over a basalt section. T.D. of hole should be 1000-1700 m. Limits are positioning stability for shallower depths and specs of drill rod strength for deeper depth.

Possibilities:

a) Seamount 853 was surveyed for IPOD, but probably basement depth of 2150 m is too deep.

b) Forearc may offer some sites.

c) Caroline Ridge is possible. Japanese may have data there.

ACTION: SUYEHIRO will look for Japanese data on Caroline Ridge for Leg 124E and feed back to A. Meyer

3) XCB/Navidrill/Logging Tests

Objectives: Series of side by side holes to test different operating parameters and compare core recovery. Section with alternating hard/soft sediments would be ideal. Logging to test BHTV and perhaps packer, so they need consolidated seds.

Possibilities:

a) Perhaps Patty Fryer knows of some serpentine diapirs which are shallow enough.

b) Over Benham Rise, just east of Luzon, LDGO MCS lines C2006 and V3613 may offer possibilities.

Summary: The SSP does not need to formally review these sites, but we stand ready to assist in whatever way we can.

F. Leg 125 - Bonins I (Duennebier and Taylor)

1) Sites MAR 3 and 3A on Conical Seamount.

Active venting of cold water was discovered in ALVIN dives by Fryer. Seamount is a diapiric feature made up of serpentinite derived from mantle of upper plate being mobilized by dewatering of subducted slab.

Seismic is unsuccessful at imaging any internal structure to these diapirs.

Stoffers (Kiel) will take a core here this summer on SO-57.

With the exception of this core, all necessary data are at the Data Bank

2) BON-7

Similar flow features are seen on SeaMarc on this serpentinite constructional feature as on Conical Seamount. Adequate data are available for drilling.

3) BON-6

Final site position not yet chosen by WPAC, but adequate data is available for optimizing location and drilling. Adequate cores are available in area if reentry is needed.

All Leg 125 sites are approved by SSP, subject to the core being taken at MAR 3.

ACTION: DUENNEBIER prepare site survey matrix for Leg 125. Included as Appendix L.

G. Leg 126 (Taylor)

1) BON 5a/5b.

Sites near and in canyon to sample complete forearc section.

Some spudding in problems may be encountered at Site 5b if hard sands are present on floor of canyon. If so, hole can be moved to edge of canyon.

New seismic and SeaMarc data need to be deposited at the Data Bank.

2) Sites 1/2

In forearc rift and adjacent to it. There is concern that high temperatures may be encountered at site BON-1.

ACTION: SUYEHIRO contact Nishi Mura of the GSJ and forward heat flow data (paper/preprint?) by courier to M. Langseth for review. LANGSETH and MOUNTAIN make recommendations prior to WPAC meeting in April. There may be some chance for a detailed heat flow profile by the GSJ.

3) BON-3 and 4 are adequately supported by available data.

Summary: SSP approves sites BON 2, 3, 4, 5a and 5b; BON1 not yet approved.

ACTION: DUENNEBIER to complete matrix for Leg 126 sites for inclusion in minutes as Appendix M. SUYEHIRO to ask GSJ for a set of selected core descriptions near planned sites for submission to Data Bank to provide background info for TAMU engineers. Any failed coring attempts because of hard bottom are especially important to know about.

H. Leg 127 - Nankai (Suyehiro)

Reviewed new data. Site survey matrix included as Appendix N.

SSP approves sites NKT - 1, 2, 3, 5.

ACTION: SUYEHIRO to coordinate submission of SSP profiles (ESP's shot with one ship held stationery in strong current) to ODP Data Bank.

I. Legs 128/129 Japan Sea (Suyehiro)

As many of the proposed sites in the Japan Sea may raise concerns with PPSP, because of the possibility of shallow gas, **the SSP strongly recommends that the nominated Co-Chiefs (Suyehiro and Tamaki) seek an early review by PPSP** in order to forestall last minute planning surprises.

Site Jlb. The nearest core (VM 28-271P) is 35 miles away and it recovered sandy/silty clay with ash layers. This and DSDP holes seem to be adequate for engineering.

There is adequate data for Site J1b available for PPSP to make an informed decision.

J3a - Site on possible obducted slice of crust. The tectonics of this site are indiscernable without migrated sections. **The 1988 survey should plan crossing lines, with migration.**

J1D - Site on presumed fossil spreading center. It is located on a structural high and may be vetoed by PPSP. A crossing MCS line is planned for 1988.

J2a - Yamato Rift. This site is adequately documented with existing data and does not appear to present any safety problems.

JS2 - SSP strongly urges that a watergun profile be collected across this site.

Sites Jlb, J2a and JS2 are approved from an SSP perspective, noting that there may be safety concerns at Jlb and that JS2 really needs high resolution seismic data to optimize its value. Sites J3a and J1d are not approved until new (planned) seismic data are reviewed.

Suyehiro reviewed the downhole seismic experiment planned for site J1b. The basic instrument will be built and tested this summer. The instrument could be hard-wired to shore even after being placed in the hole. Deployment may be tested on the Engineering Leg (124E).

4. SITE SURVEYS OF OTHER WPAC DRILLING PACKAGES

A. NE Australia (Jones)

The recent site survey has an excellent grid over all the proposed sites. There is good distribution of cores to resolve spudding in questions.

The following additional work will be needed to complete the site survey package:

1) Completion of processing, including migration on slope sites. Full sections need to be displayed. Do not cut off the bottoms of the sections!

2) Submission of cruise report and core descriptions to the ODP Data Bank.

3) Structure and isochron or isopach maps at appropriate intervals in order to properly choose sites and demonstrate lack of updip closure to PPSP.

The SSP strongly recommends that the NE Australia drilling package be presented on a preliminary basis by the site proponents to PPSP in order to get their advice on viable site alternatives and what documentation they will require for allaying safety concerns.

The SSP notes that the safety package for Leg 101, which referred to a similar environment, was well received by PPSP and suggests that it should be used as one possible model for preparing NE Australia safety package.

Site NEA-4 - The crossing lines appear to be out by about 500 m. A discussion of navigational accuracy should accompany structure maps for each site.

Site NEA-10A - The target is the upper part of a Miocene reef in a relatively unstructured position. Dredges on the scarp of the platform indicate that the reef section is breeched. Structural maps will be needed to demonstrate that the position of breeching is structurally higher than and connected to the reef section at the proposed site.

Detailed notes of the SSP watchdog and site survey matrix are attached as Appendix O.

B. South China Margin (Mountain)

Mountain reviewed the science and the supporting data for the proposed drilling. The available data set appears to be excellent (see attached site survey matrices, Appendix P), but more work is needed in order to properly choose site locations, specifically including:

1) All lines near target sites need to be migrated (plans are in place to do this).

2) Structural maps need to be made at all proposed sites, specifically including at least the top of the pre-rift section, the top of the syn-rift section, and an isopach of the syn-rift section.

3) Careful velocity scans and depth estimates need to be done at all proposed sites in order to get accurate drilling time estimates for planning purposes. The current proposal seems unduly optimistic as to how much can be accomplished in one leg.

4) A detailed bathymetry map at a working scale is needed.

SSP urges a preliminary safety review of these data at the earliest convenience of the site proponents and the PPSP panel.

C. Lau Basin (Duennebier)

DARWIN will be surveying there with GLORIA in June with Larry Parson (IOS) as Chief Scientist. There is a critical need for a seismic profile on 18° 40' S between 176°-178° W and tied to *SONNE*'s survey grid.

ACTION: **JONES contact PARSON to insure that required Lau Basin SCS line is obtained. BRENNER provide PARSON with a copy of *SONNE* cruise report.**

Hawkins has a cruise planned on *WASHINGTON* in January, 1989 including SeaBeam, SCS (air and water guns), 3.5 kHz, and dredging.

ACTION: **SSP will review *DARWIN* data at next meeting in order to give advice to Hawkins. KIDD coordinate sending *DARWIN* data to DUENNEBIER for review prior to meeting.**

D. Vanuatu (Mauffret)

USGS data at Data Bank. French seismic data still being processed at USGS.

DEZ-1 Velocity analysis indicates velocities of 2 km/sec in cap rock at SP 703. Spudding in should not be a problem.

DEZ-2 The calculated velocities of 3.5 km/sec above the décollement indicate that the overriding plate is igneous. Soft sediment for spudding in still has not been demonstrated.

SSP requests further velocity analysis and a look at 3.5 kHz data at DEZ-2 and downslope where overriding plate is thinner. Both USGS and French data should be looked at.

ACTION: **MAUFFRET write to Fisher at USGS (cc: Brenner, Mountain and Taylor) to request analysis of velocities and 3.5 kHz data over DEZ-2 to resolve questions regarding spudding in and depth to décollement surface.**

DEZ-5 - Velocities in the cap rock are about 2.35 km/sec, indicating that no difficulty in spudding in should be expected.

E. Reference Sites (Taylor)

At the Bonin reference site (unnumbered) there appears to be adequate data (crossing MCS, magnetics, ESP'S, and 3.5 kHz).

In the Marianas there is still no precise site location chosen, so data adequacy is impossible to assess. LITHP has been asked by PCOM to define a site location.

ACTION: **MOUNTAIN to contact Detrick to get specific location of Marianas ref. site. BRENNER will send all site data to KIDD for review at next meeting.**

5. INITIAL REVIEW OF HIGH PRIORITY CEPAC SITES

A. East Pacific Rise.

Discussion premature until we have synthesis and the Working Group Report.

ACTION: **LEWIS contact Detrick and prepare a synopsis review of EPR and 504B for next meeting.**

B. Juan de Fuca.

No discussion as Peirce not prepared to give a report. Will review at next meeting.

C. Neogene Paleo-environment (H. Meyer)

1) Ontong Jave Plateau depth transect (#142E).

No specific sites have been chosen yet. Winterer will acquire high resolution SCS in the area with SeaBeam in 11/88.

The SSP feels that a critical objective of this site survey is to obtain good seismic correlations from the top of the plateau across the slope into the basin, if possible. Every effort should be made to obtain optimum seismic continuity across the slope region.

2) Equatorial Pacific (#221E)

There is no information on the available survey data to support the proposed sites.

The SSP requests that the site proponents for the Equatorial Pacific proposal document the seismic evidence backing up each of the proposed sites. The proposal cannot advance further without this documentation.

D. Mesozoic Paleoceanography (Duennebier)

A site survey of 13 guyots is scheduled by Duennebier in March-April, 1988. The survey plan is to run a SeaMarc ring around each guyot, looking for dredge sites. Then they will shoot two crossing SCS lines, and then they will dredge both the igneous basment and the cap rock. Further review scheduled at the next meeting.

E. Shatsky Rise (Suyehiro)

The proposal is based on DSDP drilling and old airgun seismic records. The site survey matrix of existing data is attached as Appendix Q.

The SSP is very concerned that drilling on the Shatsky Rise may proceed only on the old data currently available. Given the sedimentary complexity of the Shatsky Rise and the problems expected with drilling chert, more data appears to be needed to adequately support drilling. In particular, high resolution SCS and side scan sonar data are needed.

ACTION: **BRENNER provide SUYEHIRO with available data on Shatsky Rise for review at next meeting. DUENNEBIER will talk to Schlanger and LEWIS will talk to Sliter for their views before the next meeting.**

F. Chile Triple Junction (Lewis)

The site survey areas include one area north of the ridge/trench collision zone, the collision zone itself, and an area south of the collision zone where collision appears to have happened about 4 m.y. ago. The north and south grids are less dense than the main survey area.

The survey included SeaBeam with 80 cu. in. watergun, MCS at 10 km grid with 4000 cu. in. airgun array, 240-channel, 96-fold data and 12 sec recording.

The data set presently available looks superb and should allow well documented sites to be proposed. No further review by SSP is appropriate until a specific drilling proposal has been made.

G. Hawaii Moat (Mauffret)

Further survey planned as discussed above. The major problem seems to be establishing that adequate biostratigraphic age control of 100,000-200,000 years is achievable. The available core data is being reworked to look at this problem.

H. Marquesas (Mauffret)

The available data include SeaBeam, SCS, gravity, magnetics, dredging and coring. There is a proposal by McNutt, Detrick, and Mutter under consideration by NSF to obtain MCS and SeaBeam and conduct a two ship seismic experiment with Francheteau in 1989.

The SSP agrees with the site proponents that more data is necessary to make this a viable drilling proposal. There is little point in further review until more data are available.

I. Old Pacific proposals

No review prepared.

ACTION: **BRENNER send data package for Old Pacific proposals to KIDD for review at next meeting. KIDD contact Shipley and Lancelot regarding new data to include in review.**

6. OTHER BUSINESS

A. JOI/USSAC Workshop on Sea Level Changes.

The Workshop is scheduled for October 24-26 in El Paso with a field trip to the Guadeloupe Mts. led by Peter Vail scheduled for the weekend previous, October 22-23. Contact Mountain for further details, as he is one of the organizers.

B. Industry representation on SSP.

SSP requests that PCOM appoint an industry person with exploration experience to SSP. Peirce will be rotating off SSP at the end of 1988 to be replaced by Keith Louden of Dalhousie.

C. Alain Mauffret is rotating off SSP after this meeting.

A replacement is not yet named. The Chairman thanked Mauffret for his effective contributions to the work of the SSP and his long term membership.

ACTION: **MAUFFRET/MOUNTAIN brief new French representative on review responsibilities for next meeting.**

D. Early reviews by PPSP

The SSP recommends that serious consideration be given to holding a special meeting of PPSP for early review of NE Australia, Japan Sea and South China margin.

7. CHANGE OF CHAIRMANSHIP

Greg Mountain officially assumed the position of SSP Chairman.

Mountain acknowledged the excellent leadership that Peirce has provided the Panel, and thanked him for his help in advising Mountain of his new responsibilities.

Mountain reiterated previous expression of thanks to and acknowledgement of contributions from Alain Mauffret, and stated Mauffret's continuation as an alternate member would be a welcomed service to the Panel.

8. LIAISONS

A. S. Lewis to CEPAC in Menlo Park, 23-25 March.

B. H. Meyer to WPAC in Hannover, 11-13 April.

ACTION: MOUNTAIN arrange with Rea, Taylor, and Pisias for CEPAC and WPAC liaisons. Also appoint liaison for summer meeting of PPSP. Also contact Davis/Detrick regarding need for liaison to EPR Working Group.

9. NEXT MEETING

The next meeting is tentatively scheduled for Swansea, Wales, on 27-29 September with Rob Kidd as host. The tentative agenda is attached as Appendix R.

ACTION: MOUNTAIN request formal approval for meeting at appropriate time, no later than July 1.

10. CLOSING

Mountain thanked Brenner for hosting the meeting in Palisades.

SITE SURVEY PANEL

Palisades, New York
March 15-17, 1988

APPENDICES

A. Canadian ship schedule of interest to ODP
B. French " " " " " "
C. German " " " " " "
D. Japanese " " " " " "
E. British " " " " " "
F. U.S. " " " " " "
G. tentative CEPAC Science Program w/ SSP and PCOM watchdogs
H. Leg 121 site survey matrix
I. updated site locations, Leg 124
J. Leg 124 site survey matrix
K. letter to B. Thunell requesting he collect SCS line in Banda Sea
L. Leg 125 site survey matrix
M.* Leg 126 site survey matrix
N. Leg 127 site survey matrix
O. NE Australia site survey matrix and comments
P. S. China Margin site survey matrix
Q. Shatsky Rise site survey matrix
R. Tentative agenda for next meeting

* *to be completed*

1988 CANADIAN SHIP SCHEDULE
(only cruises of interest to ODP shown)

Ship	Dates	Ch. Scientist	Where	Objectives
HUDSON				
	5-30 April	Hendry Yeats/Frank	N. Atlantic	
	24 May - 9 June	Piper	Scotian Shelf	
	13-28 June	Loncarevic	Gulf of St. Lawrence	
	30 June - 21 July	Reid	Scotian Shelf	Seismic Refraction
	22 July - 11 Aug	Louden/ Hesse	Labrador Sea	Refraction - Hi Res SCS - Coring
	8 March - 15 April 89	Clarke	Greenland/ Norwegian Seas	

DAWSON
Various cruises on the eastern continental shelf areas from Labrador to George's Bank.

Ship	Dates	Ch. Scientist	Where	Objectives
TULLY				
	6-26 June	Franklin	Juan de Fuca	MG&G; Hydrothermal
PARIZEAU				
	5-25 Sept.	Davis	Juan de Fuca	Hydrothermal; scale of convection systems.
Contract Seismic Ship				
	Summer 88	?	Queen Charlotte Sound/ Dixon Entrance/ QC Terrace	Deep Seismic
HAHUHO MARU (ORI, Tokyo)				
	15 July - 3 August	Segawa	S. Juan de Fuca	MT sounding; Chemistry of hot plumes

FRENCH RESEARCH VESSELS 1988

(provisional)

JEAN-CHARCOT	January	Mid Atlantic Ride 20°N	RIDATLANTE Petrography Seabeam dredging	IFREMER (Bougault)
" "	February-March	Equatorial Atlantic (Guinea Gulf)	EQUAMARGE Transform-faults Seabeam SCS	GEMC-INSU (Jean Mascle)
" "	June	Norway	MOHNS Crustal study Seismic with vertical streamer and Seabeam SCS	IFREMER (Avedik) and Norway
" "	July-August	North East Atlantic	NORESTLANTE Geology and Geophysics Seabeam SCS	IFREMER (Sibuet)
" "	November December	Eastern Mediterranean	PASIPHAE Two ship experiment	INSU-ENS (X. Le Pichon)
SUROIT	January	Brazil	BYBLOS Sedimentology	INSU-Bordeaux (Faugères)
"	September	Western Mediterranean	VALSIS Two ship experiment	GEMC-INSU (Mauffret)
"	October	South of France	CASANIS Slope and continental shelf stability	IFREMER
"	December	Central Pacific	TEAHICYA Cyana diving on an intra plate Volcanology	IFREMER-IPG (Cheminée)
NOROIT	January	West Mediterranean	ECOMARGE Sedimentology coring	INSU-PERPIGNAN (Monaco)
"	February-March	West Mediterranean	VICOMED Sedimentology coring	INSU-SOHO (Vergnaud-Grazzini)
"	July	East Atlantic Continental shelf	Continental shelf sedimentation and stability	IFREMER

SHIP	TIME	AREA	PROJECT	INVESTOGATOR
NADIR	March	Atlantic	FARE Nautile diving for reentry of tool in a DSDP hole	IFREMER
"	April-May	Mid Atlantic Ridge	HYDROSMAKE Black smokers and hydrothermal deposits. Nautile diving	INSU - PARIS (Mevel)
"	June	Central Atlantic	VEMANANT VEMAFZ Nautile diving	IFREMER (Auzende)
"	August	Easter plate	NAZCOPAC Nautile diving on the Easter plate	INSU - IPG (Francheteau)
"	October	Central East Pacific	NIXONAUT Divers Nautile diving on the nodules field	IFREMER
MARION-DUFRESNE	January-February	Adelie Land Kerguelen South Australia	APSARA IV Paleoclimatology coring	CFR - INSU (Duplessis, Labeyrie)
"	March	Indian Central Ridge	GEODYN Geochemistry Petrography Dredging Seismic profiling	IPG Strasbourg IPG Paris (Patriat)
"	April	Indus fan	PROFINDUS Indus deep sea fan Seismic profiling	GEMC - INSU (L. Droz, G. Bellaiche
"	July	La Réunion	FOURNAISE Volcanism Dredging Coring SAR	IPG - Clermont
"	August	North Mascareigne	Sedimentology Coring Seismic profiling	MUSEUM (Leclaire) IPG Paris (Segoufin)

S O N N E Operations-schedule 1988

cruise	dep. - arr.	from-	to :	charter/...
SO 54	06.03.88 - 14.04.88	Djibouti	Hong Kong	Universität Hamburg Inst. f. Geologie
SO 55	15.04.88 - 31.05.88	Hong Kong	Okinawa	Universität Hamburg Inst. f. Geophysik
SO 56	01.06.88 - 01.07.88	Okinawa	Okinawa	TU Clausthal
SO 57	02.07.88 - 08.08.88	Okinawa	Hong Kong	Universität Kiel Inst. f. Geologie
SO 58	09.08.88 - 27.09.88	Hong Kong	Kota Kinabalu	B.G.R
RF-Werftzeit	28.09.88 - 19.10.88	Singapur		
SO 59	20.10.88 - 12.11.88	Singapur	Honolulu	Universität Hamburg Inst. f. Geologie
SO 60	13.11.88 - 13.01.89	Honolulu	Panama	TU Karlsruhe (Hymas II)

3/88

FS METEOR Operations-schedule 1988

Institut fuer Meereskunde,Leitstelle "METEOR"
Heimhuderstrasse 71,D-2000 Hamburg 13

cruise	dep. - arr.	from - to: (area)	Program	charter/....
M6/7	26 Mar- 19 May 88	Las Palmas-Hamburg	Bio..	Pfannkuche/IHF
M7/1	30 May- 4 Jul 88	Hamburg-Tromsoe	Geophysic	Hirschleber/IFG Hamburg
M7/2	7 Jul- 23 Jul 88	Tromsoe-Trondheim	Geoghysic	Theilen IFGHH
M7/3	26 Jul- 14 Aug 88	Trondheim-Akureyri	marine Geochem.	Balzer/GPI Kiel
M7/4	18 Aug- 05 Sep 88	Akureyri-Hamburg	Gelogy/Sediment.	v.Bodungen/IFM Kiel
M7/5	8 Sep- 27 Sep 88		Geology(Nordmeer)	Thiede GLPIKI
	- 21 Oct 88	SHIPYARD		
M8/1	28 Oct- 20 Nov 88	Hamburg-Bergen	Oceanograph./Greenl.Sea	Quadfasel/IFM Kiel
M8/2	23 Nov- 18 Dec 88	Bergen-Hamburg	Oceanograph./Greenl.Sea	Meincke/IFM Hamburg

FS P O L A R S T E R N 1988

AWI Po.B. 120161,D-2850 Bremerhaven

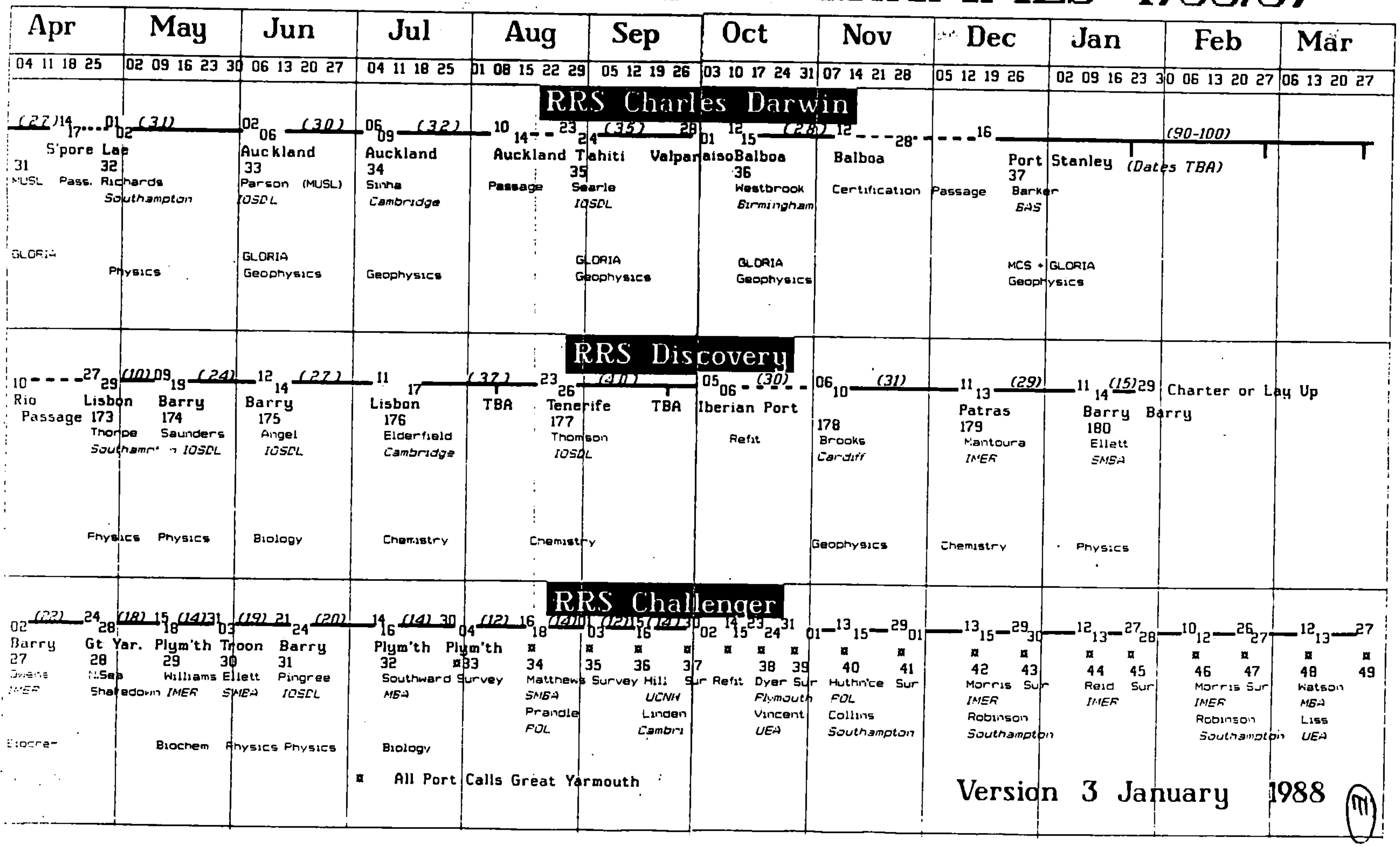
cruise		operation area	dep. - arr.	scientific objectiv
11/4	ANT VI	CapeTown - Bremerhaven	19 Mar - 10 Apr 88	Meteorol./Aerochem.
12/1	ARK V	Greenland-Norweg.Sea	26 Apr - 4 Jun 88	Meteorol./Biology/Hydrotherm.
12/2	ARK V	Greenland Sea	6 Jun - 4 Jul 88	Oceanog./Biology/Meteorology
12/3	ARK V	Greenland Sea	8 Jul - 29 Aug 88	Geology/Geophys. BGR
13/1	ANT VII	Bremerhaven- South America	15 Sep - 9 Oct 88	Meteorol./Aerochem.
13/2	ANT VII	Weddel sea	11 Oct - 20 Nov 88	Biol./Oceano./Chemi./Icebiot.
13/3	ANT VII	South Orkney Is.	22 Nov - 10 Jan 89	Oceanog./Chemistry/Biology

Japanese Research Vessels Mar. 09, 1988

Geological-geophysical cruises

R/V HAKUHO-MARU (ORI, U. of Tokyo)	JUL 15 - AUG 25, 1988	NE Pacific (J. Segawa)
R/V TANSEI-MARU (ORI, U. of Tokyo)	JUN 7 - JUN 13, 1988	NW Japan Sea (K. Kobayashi)
	JUN 16 - JUN 24, 1988	JapanTrench/Nankai (H. Fujimoto)
	AUG 30 - SEP 5, 1988	Nankai (H. Kagami)
	SEP 19 - SEP 25, 1988	S. Japan Sea (A. Taira)
	NOV 27 - DEC 4, 1988	Nankai (K. Kobayashi)
chartered ship (DELP project)	JUL, 1988	Okinawa Trough/Nankai (H. Kinoshita)
R/V HAKUREI-MARU (JAPEX/GSJ)	APR 14 - MAY 23, 1988	Izu Bonin
	MAY 30 - JUL 7, 1988	Japan Sea
	JUL 25 - SEP 2, 1988	Izu Bonin
	SEP 8 - OCT 7, 1988	Japan Sea
	NOV - MAR 88/89	Antarctica
R/V TAKUYO (MSA)	routine	Philippine Sea

NERC RESEARCH SHIPS PROGRAMMES 1988/89



Version 3 January 1988

R/V CAPE HATTERAS 1988 PROPOSED
SHIP OPERATIONS SCHEDULE

Depart 15 March Arrive 7 April	Montego Bay Montego Bay	Baker/Droxler Nicaraguan Rise	NSF	24	Funded
Depart 10 April Arrive 7 May	Montego Bay Montego Bay	Hine/Hallock-Muller Nicaraguan Rise	NSF	28	Funded
Depart 15 June Arrive 5 July	Beaufort Beaufort	Phillips Southeast Shelf	NSF	21	Funded

03/27-04/27	Central Pacific Coring @ 15S to 15N along 135W	Bender	Tahiti Honolulu	NSF 32

2/28 - 3/30	E. Pacific Rise	Bryan/ Thompson	Manzanillo
6/12 - 6/29	Oregon Cont. Slope	Kulm (OSU)	Newport
6/30 - 7/22	Juan de Fuca Ridge	Delaney (UWash)	Newport
7/23 - 8/17	Juan de Fuca Ridge	Embley (NOAA)	Newport
8/18 - 9/10	Juan de Fuca Ridge	Baross (UWash)/ Lewis (UWash)	Newport

7/31 - 8/18	Sea of Marmara	TBA	
8/19 - 9/17	Eastern Med.	TBA	Izmir
9/18 -10/12	Mediterranean Sea	Ballard	Naples
10/13-10/31	Transit/HEBBLE	Hollister	Naples
			Woods Hole

16 JAN 20 FEB	ANTARTIC DISCORDANCE	CHRISTIE	MELBOURNE FREMANTLE	40	NSF(F)
31 MAR 19 APR	SUBUYAN SEA SeaMARC II	KARIG	MANILA GUAM	23	NSF(F)
23 APR 29 MAY	CENTRAL PAC GUYOTES	DUENNEBIER	GUAM GUAM	40	NSF(F)
03 AUG 26 AUG	SULU SEA CORING	THUNELL	MANILA GUAM	27	NSF(F)
30 AUG 12 SEP	TRANSIT	N/A	GUAM HONOLULU	16	NSF(F)
21 SEP 30 SEP	LOIHI SEAMOUNT	KARL	HONOLULU HONOLULU	10	NSF(F)

Oceanographic Research Dep: 07 Jan 88 Valparaiso Arr: 11 Feb 88 Punta Arenas	Cande (29-01) Chile Ridge/Trench MCS & MG&G Survey	NSF (F) 35 Days (SB)
Oceanographic Research Dep: 15 Feb 88 Punta Arenas Arr: 01 Mar 88 Punta Arenas	Mutter (29-02) Southern Andes MCS Survey	NSF (F) 15 Days
Oceanographic Research Dep: 27 Mar 88 Rio de Janeiro Arr: 21 Apr 88 Ascension Is. Dep: 22 Apr 88 Ascension Is. Arr: 16 May 88 Recife	Fleming (29-05) MAR, W. Atlantic MG&G, SCS	Navy (F) 25 Days (SB) 24 Days
Oceanographic Research Dep: 14 Jun 88 Barbados Arr: 14 Jul 88 San Juan	Westbrook (29-07) Barbados Ridge Heat Flow, Deep Tow	NSF (F) 30 Days (SB?)
Oceanographic Research Dep: 11 Aug 88 San Juan Arr: 12 Sep 88 Cape Verde Is	Tucholke (29-08) Kane FZ Sea MARC II	NSF (F) 32 Days
Oceanographic Research Dep: 16 Sep 88 Cape Verde Is Arr: 15 Oct 88 Azores	Purdy (29-09) MAR 23 N. Sea MARC II	NSF (F) 29 Days

Oceanographic Research	Watts (29-11)	NSF (F)
Dep: 30 Oct 88 Cadiz	Valencia Basin	30 Days
Arr: 29 Nov 88 Valencia	MCS (2-Ship)	

R/V OCEANUS

12/02 - 12/31	Fairbanks	Bridgetown	31	NSF

R/V MELVILLE

10/06-10/13	Re-entry Tests	J. Orcutt F. Spiess	San Diego	APL/JH-8
10/14-10/22	G Measurements/CTD Survey; 35 N, 133 W	J. Hildebrand F. Spiess	San Diego	ONR- 9
10/23-11/25	OPEN			

R/V THOMAS WASHINGTON

Cruise Period	Area and Objectives	Chief Scientist	End Port	Agency Days
01/08-02/07	SeaBeam/Seismic OBS; E. Pacific Rise	M. Purdy(WHOI)	Acapulco	NSF-32
02/11-03/13	SeaBeam & Dredging; E. Pacific Rise	R. Batiza (Northwestern U)	Manzanillo	NSF-34
03/15-03/31	Transit/SeaBeam survey	P. Lonsdale	San Diego	NSF- 5 ONR-13
05/02-05/15	Transit/SeaBeam survey ("Big G" program)	J. Hildebrand F. Spiess	Honolulu	NSF- 9 ONR- 5
05/17-06/10	Seismic profiling; SeaBeam; gravity; near Hawaii	R. Detrick (URI)	Honolulu	NSF-27 (ODP)
08/05-09/05	SeaBeam/Dredging Seismic profiling Near Attu, NW Pacific	P. Lonsdale/ L. Keigwin (LDGO)	Dutch Harbor	NSF-27 (ODP) NSF-8
09/08-09/29	ISHTAR (Bering Strait)	P. McRoy (UAk)	Nome	NSF-23
10/01-10/22	ISHTAR (Bering Strait)	Tripp (UW)	Dutch Harbor	NSF-24
10/25-11/05	Transit (one day lost on dateline)		Tokyo	NSF-12
11/09-12/11	SeaBeam/Dredging Seismic Profiling W. Pacific seamounts	E. Winterer	Majuro	NSF-37 (ODP)
12/15-12/28	SeaBeam/Dredging Seismic profiling Ontong-Java Plateau	E. Winterer	Majuro	NSF-15 (ODP)
12/29-01/04	Transit		Suva	NSF- 3

Tentative CEPAC science program as defined at the Sunriver PCOM meeting in December 1987

Program	Relevant Proposals	SSP WATCHDOG
LITHP		
* Structure of lower oceanic crust (about 1.5 leg)	286/E Deepening of 504B	LEWIS
* Magmatic and hydro-thermal processes/ sed-free ridgecrests (2 legs)	76/E EPR 13°N 14/E EPR 13°N	
* Magmatic and hydro-thermal processes/ sedimented ridgecrest (1 leg)	232/E Juan de Fuca 224/E and 284/E Escanaba Trough	PEIRCE
SOHP		
* Neogene paleo-environment (1 leg)	221/E Eq.Pacific 142/E OJP transect	MEYER
* Mesozoic paleoceanography/ atolls and guyots (1+ leg)	202/E Marshall Isl. (203/E Central Pac guyots (260/E Ogasawara Plateau)	DUENNEBIER
* Anoxic events (1 leg)	253/E Shatsky Rise	SUYEHIRO
TECP		
* Ridge-trench processes (1 leg)	8/E Chile 3-junction	
* Flexure in the lithosphere (1 leg)	3/E Hawaii flexural moat 291/E Marquesas	MAUFFRET
ALL PANELS		
* M-series dating/ Reference holes/ Old Pacific	285/E Jr quiet zzzone 287/E M-series drilling 261/E Nauru Basin 267/F Geochemical Ref.Hole	KIDD/JONES

<u>SITE SURVEY MATRIX, ODP LEG 121</u>

	BR-1 to 4 BROKEN RIDGE	NER 5 S. 90E RIDGE	NER 2 C. 90E RIDGE	NER 9/10 N. 90E RIDGE
Environment	D	E	E	E
Water Depth	1056-1178m	1510m	1676m	2830-3040m
Sed Thickness	1000-1500m	250m	340m	425-525m
Penetration	450m	300m	440m	425-575m
1.Deep SCS	no	no	no	no
2. Hi Res SCS	RC2708	RC2708	RC2707	RC2705
3. MCS w/ vels	no	no	no	no
4.Cross lines	RC2708	RC2708	RC2707	wide grid
5. Refraction	RC2708	RC2708	RC2707	no
6. 3.5 KHz	RC2708	RC2708	RC2707	RC2705
7. Multibeam	no	no	no	RC2705
8. Sidescan	no	no	no	no
9. Heat flow	no	no	no	no
10. Magnetics	RC2708	RC2708	RC2707	RC2705
11. Coring				
A. Paleo-env	DSDP255/RC2708	no	RC2707	no
B. Geotech	DSDP255/RC2708	no	RC2707	no
12. Dredging	on south scarp	no	no	no
13. Photography	no	no	no	no
14. Current meter	no	no	no	no

LEG 124 : BANDA - CELEBES - SULU - SOUTH CHINA (HINZ/SILVER)

1. Transit : Darwin to Manila = 10 days

2. Summary of Proposed Sites

Site #	Lat. Long.	Water Depth	Penetration Sed.	Penetration Bsmt	Drilling Days	Logging Days	Total Days	Proposal #
BNDA 1	6°30'S 128°12'E	5000	800	50	12.5	2.0	14.5	131
(Alt. :	5°55'S 128°10'E	5000	1000	50	14.5	2.5	17.0	131)
BNDA 2	4°56.5'S 124°56'E	4800	900	50	13.0	2.0	15.0	131
SUL5A	8°49.5'N 121°36.1'E	4615	1065	50	14.7	2.0	16.7	292
→ (Alt:	(avoid gas)		≤1000	50			16.0	German Data
CEL 1	4°45.4'N 123°28.5'E	4885	750	50	12.2	1.8	14.0	293
SCS 5B	12°34'N 114°32.5'E	4350	750	50	12.0	1.8	13.8	Brenner letter.
SCS 9	16°10'N 117°53'E	4200	500		7.1	1.6	8.7	?

neck.

Max. Operational Days 31.5 : BANDA 1 + 2 = 29.5 days
SUL5B + CEL 1 = 30.0 days
+ 1 to 2 Contingency

CELEBES and SULU SEA

TARGET SITE:	CEL ~~08~~ 1	SUL 5
proposal	BGR	
position(lat/lon)	4.7 N/123.5 E	8.8 N/121.6 E
region :		
ENVIRONMENT :	D	D
water depth:	4885	4615
sed. thick:	750	1060
penetration:	800	1100
TECHNIQUE		
1.Deep penetration SCS		
2.High resolution SCS		
3. MCS with velocities	SONNE 49 (BGR)	SO27,SO49,VA16 (BGR) FRENCH CEPM cruise
4.Seismic data on crosslines	SO49-01/SO49-02	yes
5.Seismic refraction	Murauchi	
6. 3.5 kHz	yes	yes
7.multi-beam bathymetry	sea beam	sea beam
8.Sidescan sonar: A - shallow B - deep-towed		
9. Heat flow		pogo
10.Magnetics	yes	yes
Gravity	yes	yes
11.Coring A paleoenvironmental B geotechnical		
12.Dredging		
13.Photography		
14.Current meter		
15.Remarks		

SULU SEA alternates

TARGET SITE:	SS-2	SS-3	SS-4
proposal position(lat/lon) region :	- 7°59.6'N/120°14.1'E	36R · Submitted to Guides 3-88 8°24'N/121°12'E	 8°04'N/121°52.8'E
ENVIRONMENT : water depth: sed. thick: penetration: TECHNIQUE	D 4320 950 1000	D 4270 1170 1200	C 3885 1185 1200
1.Deep penetration SCS			
2.High resolution SCS			
3. MCS with velocities	✓	✓	✓
4.Seismic data on crosslines	SO-49-04 VA-16-33	SO-49-05 VA-16-30	SO-49-05
5.Seismic refraction			
6. 3.5 kHz	✓	✓	✓
7.multi-beam bathymetry	Seabeam	Seabeam	Sea-beam
8.Sidescan sonar: A - shallow B - deep-towed			
9. Heat flow			✓
10.Magnetics Gravity	mag + grav	mag. + grav.	mag + grav
11.Coring A paleoenvironmental B geotechnical			geochemical
12.Dredging			
13.Photography			
14.Current meter			
15.Remarks			

March 25, 1988

Dr. Robert Thunnel
Department of Geology
University of S. Carolina
Columbia, S.C. 29208

Dear Bob -

This letter is a follow-up to the 'phone conversation that you had with Fred Dunnebier on Wednesday, March 16.

At our meeting here in Palisades, the Site Survey Panel has just concluded that existing data in the Sulu Sea are inadequate with regards to the location of proposed site SS-3 (see the attached track chart prepared by BGR). In particular, the panel feels that three items are needed: 1) a piston core at SS-3; 2) better definition of the basement high between SS-2 and SS-3; and 3) a crossing line at SS-3.

The Germans may have a core that is adequately close to SS-3, but as of this time we are not sure, and are requesting that you try to take one there during your coring cruise this summer on *Moana Wave*. The location is **8°24' N by 121°12' E**. Should we turn up a record of a core before then, I'll let you know and withdraw our request.

The seismic lines should be three: 1) between BGR lines 4 and 5, with endpoints at **8°00' N by 121°40' E** and **8°18' N by 121°00' E**; 2) between BGR lines 5 and 6, with endpoints at **8°20' N by 121°45' E** and **8°37' N by 121°12' E** ; and perpendicular to these, crossing SS-3, tying to BGR lines 5 and 6, with endpoints at **8°00' N by 121°00' E** and **8°50' N by 121°25' E** . At 8 knots these lines could be completed in under 20 hours.

As Fred outlined, the equipment to conduct a short seismic survey will be aboard the *Moana Wave* . We advocate that you deploy the 120 cu. in air gun and tow the gear at ≤ 8 knots to maximize the chances of imaging basement beneath about 1.0 secs of sediment. Fred suggests you use two EPC recorders to record the data with a 4-second sweep; the filter settings he suggests are 20-80 Hz on one machine, and 50-200 Hz on the other. Please feel free to call Fred (808-948-6662) if you have any problems. Aside from the time taken from your program to steam to this location, the seismic survey ought to require about 10 hours.

The drilling program and the future Co-chiefs will appreciate your efforts in achieving this goal.

Best regards,

Greg Mountain
Chairman, ODP Site Survey Panel

encl.

LEG 125 : BONMAR (P. FRYER / J. PEARCE)

1. Transit : Guam to Tokyo : 1421 nmi @ 11 kts = 5.5 d

2. Summary of Proposed Sites

	Site #	Lat. Long.	Water Depth (m)	Penetration Sed.	Penetration Bsmt.	Drilling Days	Logging Days	Total Days	Proposal #
Summit Conical s/m.	MAR 3A	19°32'N 146°39'E	3100	500	—	6	3	9	172
Flank	MAR 3	19°29'N 146°42'E	4300	500	50	7	1.5	8.5	172
	BON 6*	31°54'N 141°06'E	2850	950	150	17.5 - 21.5*	4.0	21.5 - 25.5*	171
	BON 7	30°58'N 141°48'E	4650	500	—	6.1	1.5	7.6	171

3. Total Days :

Transit	5.5
Operational	46.6 - 50.6
Contingency	1
	53 - 57

4. Notes : * Reentry Site

WESTERN PACIFIC

Nankai Trough

【NKT1】Nankai Trough reference 32°18'N 134°58'E W.D.4803 m

APC/Rotary Penetration 900 m

TARGET_C:_Active_margins (basement)

(1)	Deep SCS	yes
(2)	High res SCS	yes (KAIKO waterguns)
3	MCS & vel	yes (JAPEX 55-2; KH86-5; F. Moore)
4	Cross lines	yes
(5)*	Refraction	yes (OBS KH86-5)
(6)*	3.5 KHz	yes (KAIKO)
7/8A	Multi-beam/Sidescan	yes (KAIKO Seabeam)
(9)*	Heat flow	yes
(10)	Mag & gravity	yes (KAIKO)
(11A)	Coring	yes (KH86-5)
(14)*	Current meter	yes

【NKT2】Nankai Trough 32°23'N 134°56'E W.D.4730 m

APC/Rotary Penetration 1300 m

TARGET_C:_Active_margins (basement, reentry)

(1)	Deep SCS	yes
(2)	High res SCS	yes (KAIKO waterguns)
3	MCS & vel	yes (JAPEX 55-2; KH86-5; F. Moore)
4	Cross lines	yes
(5)*	Refraction	yes (OBS KH86-5)
(6)*	3.5 KHz	yes (KAIKO)
7/8A	Multi-beam/Sidescan	yes (KAIKO Seabeam)
(9)*	Heat flow	yes
(10)	Mag & gravity	yes (KAIKO)
(11A)	Coring	yes (KH86-5)
11B	Coring geotech	no (not needed)
(14)*	Current meter	yes

NE AUSTRALIAN [illegible]GIN

TARGET SITE	NEA1	NEA2	NEA3	NEA4	NEA5	NEA6	NEA8	NEA9A	NEA10A	NEA11	NEA13	NEA14
WATER DEPTH (m)	206	275	588	920	1640	995	932	690	455	1000	426	462
PENETRATION (m)	500	500	500	435	350	300	250	500	400	800	250	450
1. Deep penetration SCS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2. High resolution SCS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3. MCS	✓*	✓*	✓*	✓t	✓m	✓*	✓*	✓	✓*	✓	✓*	✓*
4. Seismic data on cross lines	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5. Seismic refractor	-	-	-	-	-	-	-	-	-	-	-	-
6. 3.5 kHz	-	-	-	-	-	-	-	-	-	-	-	-
7. Multi-beam bathymetry	-	-	-	-	-	-	-	-	-	-	-	-
8. Sidescan sonar	-	-	-	-	-	-	-	-	-	-	-	-
9. Heat flow	-	-	-	-	-	-	-	-	-	-	-	-
10. Magnetics	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
11. Cores	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12. Dredging	-	-	-	-	-	-	-	-	-	-	-	-
13. Photography	-	-	-	-	-	-	-	-	-	-	-	-
14. Current Meter	-	-	-	-	-	-	-	-	-	-	-	-

* Further processing required, especially to remove water-layer multiple (migration in case of NEA 6, 8)

t Annotated navigation

m Need seismic record below 3.3s

March 1988

SITE SURVEYS: NORTHEAST AUSTRALIAN MARGIN

Site NEA1

See attached sheet for summary of site details. Located at crossing of 75/43K and 75/43G. The first bottom multiple lies close to the change in style of sedimentation. The multiples need to be removed to clarify the section around the important target near 0.56s TWT.

On cross-line G site in down-dip of culmination near 75.262.1100. Possible safety problem. Piston cores available on NEA1-NEA3 transect. No descriptions available.

Site NEA2

Crossing of lines K and F. Multiple needs to be removed to clarify lower part of section.

Site NEA3

Crossing of lines K and I. Multiple needs to be removed to clarify seismic sequences.

Site NEA4

Needs annotated navigation. 1 piston, 1 gravity core close to site. Acceptable

Site NEA 5

Hole bottoms in small culmination on line F. Possible safety problem?

Site NEA6

Lower 0.15 sec on Line C is complex and would be improved in clarity by migration. Possible safety problem in drilling into old reef which is poorly defined seismically. 1 gravity core close to site.

Site NEA8

Clear seismic definition of section near top of ? reef. Can the latter be defined below 1.9 sec? 1 gravity core close to site.

Site NEA9A

Reflector near bottom of hole defined. 1 piston, 1 gravity core close to site.

Site 10A

Seismic definition adequate but may be safety problems.

NEA 11

Seismic definition adequate. Close to deep? reef structure on Line B. 1 piston core close to site.

NEA 13

Located on crossings of Lines A and F
Penetrates reef structure. Any safety problems?

NEA 14

Crossings of Lines A and H
Seismic definition adequate
Piston core close to site

Recommendations:

1. Sufficient data now exists for alternative sites in case of safety problems. These should be located on cross lines as close as possible to primary targets.

2. Multiple removal necessary at sites NEA 1, 2, 3

3. Migration would assist definition in lower part of section at sites NEA 6, 8.

3/88

SOUTH CHINA MARGIN

Site Survey Matrix

Site	SCS 1	(SCS 1A)	SCS 1B
Target type	Oc crust, thick seds	Oc crust, thick seds	Oc crust, thick seds
Latitude	18° 58'N	?	18° 40'N
Longitude	118° 11'E	?	118° 18'E
Water depth	3750m	?	3790m
Sed thickness	1650m	?	1700m
Penetration	1675m	?	1725m
Re-entry	possible	?	possible
Deep SCS	-	-	-
Hi Res SCS	-	-	-
MCS w/ vels	70/604	70/605	70
Cross lines	70/604	70/605	**NEED**
Refraction	ESP 1	(ESP 1)	(ESP 1)
3.5 KHz	V3614/~~H4~~ C2612	V3614/C2612	V3614
Swathmap	(C2614)*	(C2614)*	(C2614)*
Shallow sidescan	-	-	-
Deep sidescan	-	-	-
Heat flow	C2614	C2614	C2614
Magnetics	V3614/C2612	V3614/C2612	V3614
Paleo-env coring	-	-	-
Geotech coring	**NEED****	**NEED****	**NEED****
Dredging	-	-	-
Photography	-	-	-
Current meter	-	-	-

* where is the SEABEAM data ?

** if re-entry

SOUTH CHINA MARGIN

Site Survey Matrix

Site	SCS 2	SCS 2A
Target type	Passive margin	Passive margin
Latitude	19° 29'N	19° 40'N
Longitude	117° 54'E	117° 47'E
Water depth	3410	3120
Sed thickness	<1000	1650
Penetration	1025	1675
Re-entry	possible	possible
Deep SCS	-	-
Hi Res SCS	-	-
MCS w/ vels	70	70
Cross lines	70/(601)	**NEED**
Refraction	(ESP 2,3)	(ESP 2,3)
3.5 KHz	V3614	V3614
Swathmap	(C2614)*	(C2614)*
Shallow sidescan	-	-
Deep sidescan	-	-
Heat flow	C2614	C2614
Magnetics	V3614	V3614
Paleo-env coring	-	-
Geotech coring	**NEED****	**NEED****
Dredging	-	-
Photography	-	-
Current meter	-	-

* where is the SEABEAM data ?

** if re-entry

SOUTH CHINA MARGIN

Site Survey Matrix

Site	SCS 3	SCS 3A	SCS 3B
Target type	Passive margin	Passive margin	Passive margin
Latitude	19° 57'N	?	20° 04'N
Longitude	117° 40'E	?	117° 54'E
Water depth	2750	?	2920
Sed thickness	1200	?	1500
Penetration	1225	?	1525
Re-entry	possible	?	possible
Deep SCS	-	-	-
Hi Res SCS	-	-	
MCS w/ vels	70	70/(606)	588
Cross lines	**NEED**	70/(606)	**NEED**
Refraction	(ESP 3,4A)	(ESP 4A,5)	(ESP 3,4A)
3.5 KHz	V3614	V3614/C2612	C2612
Swathmap	(C2614)*	(C2614)*	(C2614)*
Shallow sidescan	-	-	-
Deep sidescan	-	-	-
Heat flow	C2614	C2614	C2614
Magnetics	V3614	V3614	C2612
Paleo-env coring	-	-	-
Geotech coring	**NEED****	**NEED****	**NEED****
Dredging	-	-	-
Photography	-	-	-
Current meter	-	-	-

* where is the SEABEAM data ?

** if re-entry

SOUTH CHINA MARGIN

Site Survey Matrix

Site	SCS 4	SCS 4a
Target type	Passive margin	Passive margin
Latitude	20° 47'N	20° 57'N
Longitude	117° 30'E	117° 47'E
Water depth	750	1300
Sed thickness	2000	1000
Penetration	~1000	1025
Re-entry	no	no
Deep SCS	-	-
Hi Res SCS	-	-
MCS w/ vels	70/609	588
Cross lines	70/609	**NEED**
Refraction	(ESP 5,6)	(ESP 5,6)
3.5 KHz	V3614/C2612	C2612
Swathmap	(C2614)*	(C2614)*
Shallow sidescan	-	-
Deep sidescan	-	-
Heat flow	C2614	C2614
Magnetics	V3614/C2612	C2612
Paleo-env coring	-	-
Geotech coring	-	-
Dredging	-	-
Photography	-	-
Current meter	-	-

* where is the SEABEAM data ?

SHATSKY RISE

【SHAT1】Shatsky Rise 32°N 157°50'E W.D.3100 m
Rotary Single bit Sediment 700 m Penetration 800 m
TARGET_G:_Oceanic_plateau (basement)

(1)*	Deep SCS	yes (Vema2110
(2)	High res SCS	
(3)*	MCS & vel	
(4)*	Cross lines	yes (GC LEG 31)
(5)*	Refraction	yes (two-ship Den et al.. 1969)
(6)	3.5 KHz	
(7/8A)*	Multi-beam/Sidescan	no
(9)	Heat flow	
(10)	Mag & gravity	
(12)*	Dredging	yes
(13)	Photography	
(14)*	Current meter	

【SHAT3】Shatsky Rise 32°25'N 157°5'E W.D.3700 m
Rotary Single bit Sediment 700 m Penetration 800 m
TARGET_G:_Oceanic_plateau (basement)

(1)*	Deep SCS	yes (SCAN 3, CONRAD 1007)
(2)	High res SCS	
(3)*	MCS & vel	
(4)*	Cross lines	yes
(5)*	Refraction	no
(6)	3.5 KHz	
(7/8A)*	Multi-beam/Sidescan	no
(9)	Heat flow	
(10)	Mag & gravity	
(12)*	Dredging	
(13)	Photography	
(14)*	Current meter	

TENTATIVE AGENDA FOR SSP MEETING

September 27-29, 1988

College of Swansea
Singleton Park, Swansea
U.K.

1. PRELIMINARY MATTERS

    A. Introductions
    B. Logisitics
    C. Changes in minutes from previous meeting
    D. Updated ship schedules
    E. Other

2. REPORTS

    A. PCOM (Langseth)
    B. JOIDES (Wiedicke)
    C. TAMU (A. Meyer)
    D. Data Bank (Brenner)
    E. CEPAC (Lewis)
    F. WPAC (H. Meyer)
    G. PPSP (to be named)

3. SITE SURVEY ASSESSMENTS OF SCHEDULED LEGS

    A. Leg 124 - Banda/Sulu/S. China Seas (H. Meyer)
    B. Leg 124E - Engineering Tests (A. Meyer)
    C. Leg 125 - Bonin I (Duennebier)
    D. Leg 126 - Bonin II (Duennebier)
    E. Leg 127 - Nankai Trough (Suyehiro)
    F. Leg 128 - Japan Sea I (Suyehiro)
    G. Leg 129 - Japan Sea II (Suyehiro)

4. SITE SURVEY ASSESSMENTS OF OTHER DRILLING PACKAGES

    A. WPAC

1) NE Australia (Kidd)
2) S China Margin (Mountain)
3) Lau Basin (Duennebier)
4) Vanuatu (Mauffret's replacement)
5) Reference Sites - (Larsen)

B. CEPAC

1) East Pacific Rise (Lewis)
2) Juan de Fuca (Peirce)
3) Neogene Paleo-environment (H. Meyer)
4) Mesozoic Paleoceanography (Dunnebier)
5) Shatsky Rise (Suyehiro)
6) Chile Triple Junction (Lewis)
7) Hawaii Moat (Mauffret's replacement)
8) Marquesas (Mauffret's replacement)
9) Old Pacific Crust (Kidd)

5. OTHER BUSINESS

6. SCHEDULING OF NEXT MEETING