Sediments & Ocean History Panel Meeting

University of Michigan
Ann Arbor, Michigan
(October 20 & 21, 1986)

EXECUTIVE SUMMARY OF DRAFT MINUTES

86-1026
RECEIVED DEC 10 1986

1. SOHP Engineering Priorities:

Short term:

A. Complete recovery of sections, in particular (prioritized):
   1 - HPC/APC and drilling recovery in sandy sediments (including unconsolidated carbonates)
   2 - undisturbed recovery in gassy sediments
   3 - enhanced recovery in sections of consolidated and mixed lithologies
B. Pressure core barrel
C. High temperature environment drilling

Long Term:

A. Ability to drill deep (2500-3000 m), stable holes in water depths > 3000 m
B. Ability to drill through salt

2. Sediment Classification Scheme:

The SOHP endorses the adoption of a standardized ODP sediment classification scheme and applauds the efforts of Mazzullo et al. We essentially agree with the proposed sediment classification scheme but recommend several changes before it be accepted. These changes are briefly outlined in the minutes and discussed in more detail in Appendix A.

3. Legs 113 and 114:

The SOHP recommends that:

1 - Leg 114 be extended to the maximum length logistically possible
2 - PCOM reconsider the requirement for Leg 114 to drill the S. Orkney transect in the event that Leg 113 cannot drill at least Site W-7
3 - the requirement for 50 m of basement drilling at each Leg 114 site be relaxed

4. Indian Ocean:

1 - the SOHP endorses the concept of a carbonate saturation transect in the Indian Ocean and urges the PCOM to reconsider the IOP recommendation to combine the Seychelles transect with the Makran program.
2 - the SOHP urges that the final selection of sites for Legs 119 and 120 include Prydz Bay sites and maintain the latitudinal transect.
3 - the SOHP is sympathetic with the need for complete and detailed Mesozoic stratigraphy but found it difficult to justify the 8-10 days of drilling necessary for the Argo A.P. extension.
4 - the SOHP recommends a slightly modified Exmouth Plateau/Argo A.P. program that can meet the objectives of our Deep Stratigraphic Test proposal.

Option 1:

	Section drilled
1 - Move EP-5 seaward past shot point 2000 on line WA-176-1	2000 m
2 - AAPIB as proposed	1000 m
Option 2:	
1 - EP-7 moved to shot point 3200 on line GSI 76-22	1400 m
2 - EP-6 as proposed but deepened to 1000 m	1000 m
3 - AAPIB as proposed	1000 m

5. WPAC

Overall SOHP priorities are:
1 - Great Barrier Reef (with 1000 m Site 2)
2 - Japan Sea
3 - So. China Sea (with industry data)
4 - Sulu Sea

Great Barrier Reef: extremely important to SOHP objectives - critical to have at least one deeply drilled site in slope area. Prioritized site list: NEA1, 2 (deepen to 800-1000 m), 3, 4, 5, 6, 9, 10, 7, 8, 11, 12, 13, 14

Japan Sea: JS-2 is highest priority - should be double HPC'ed

So. China Sea: SOHP recommends that every effort be made to obtain industry data. If this data is not available, new sites will have to be sought to address key questions of margin development.

Bonin-1: SOHP ranks Site 6 as highest priority site but requests that WPAC explore possibility of moving it latitudinally to maximize thickness of sedimentary section.

6. CEPAC: SOHP has developed 6 preliminary themes for CEPAC drilling (prioritized)

1 - Hi-Low latitude and Depth Transects (Paleosecs)
2 - Old Pacific Crust
3 - Atolls and Guyots
4 - Episodicity of Volcanism
5 - Fans and Depositional Processes
6 - Fluid Circulation

The objectives, approaches, site criteria and example sites for these themes are presented in the minutes.

7. Joint CEPAC/SOHP meeting:

Numerous ideas, concerns and specific questions were discussed. The two Panels are on track in many ways, but the joint meeting pointed out a major SOHP theme overlooked by CEPAC (Paleosecs) and an important topic of concern to CEPAC but not discussed by SOHP (fluid circulation). The joint meeting was extremely valuable and will greatly facilitate future CEPAC planning.

Sediments & Ocean History Panel Meeting

University of Michigan
Ann Arbor, Michigan
October 20 & 21, 1986

Draft Minutes

86-1026
RECEIVED DEC 10 1986

Members present:

L. Mayer (Canada), Chairman
M. Arthur (URI)
A. Droxler (S. Carolina)
M. Goldhaber (USGS)
W. Hay (U. of Colorado)
P. Meyers (U. of Michigan)
W. Normark (USGS)
I. Premoli-Silva (ESF)
T. Saito (Japan)
R. Sarg (Exxon)
M. Sarnthein (Germany)
A. Schaaf (France)
N. Shackleton (England)
L. Tauxe (SIO)

In Attendance:

R. Buffler (NSF)
P. Ciesielski (SOP)
B. Clements (ODP)
S. Gartner (PCOM)
J. Ingle (WPAC)
J. LaBreque (LDGO - Leg 114 Co-Chief)
C. Moss (JOIDES Office)
H. Okada (ARP)
D. Rea (NSF)

Absent:

R. Embley (NOAA)
R. Garrison (UCSC)

1. Opening Remarks and Approval of Previous Minutes

1.1 The meeting began at 8:30 a.m. Due to the extremely large number of first time attendees (12), introductions were made. The Chairman welcomed new members and expressed the Panel's thanks to PCOM for responding to our long-standing request for additional members.

1.2 The minutes of the last meeting were approved.

2. Liason Reports

2.1 NSF Report (Buffler)

- U.S.S.R. to join 1 January 1987
- Congress has approved budget ($34.25 M)
- now is an important time for Panel input on matters affecting the budget
- Red Sea: if clearances not in hand by January, Leg will be cancelled
- COSOD II: July 6-10, 1987, Strasbourg - to address post 1991 drilling objectives. Five working groups, 300-350 people, applications will be distributed shortly
- Five field programs funded for FY 87: Bonins, E. Sunda, Old Jurassic Crust, Nankai, Hawaii Moat

2.2 PCOM Report (Gartner)

- PCOM needs input on engineering priorities
- Leg 112 may need to move some shallow sites because of 3% excursion limit. SOHP questioned why this wasn't brought up earlier so that panels could have input in alternate site selections
- Leg 113/Leg 114 - if final sites of 113 cannot be completed (W6, W7, W8) they should be drilled on Leg 114 (at least W7)
- Neogene I Package - one Indus Cone site may be dropped
- Exmouth/Argo - SOHP should evaluate possible extension and how it fits in with Deep Stratigraphic Test Proposal
- SOHP needs to clarify objectives and priorities to PCOM
- SOHP should review WPAC proposed program

2.3 Operators Report (Brad Clements)

- reported on Legs 110 and 111
- briefly outlined proposed program for 112
- described Indian Ocean program options
- publications:
  - 101A & 102A will be joint volume
  - 103A galleys and art sent off
  - 104A partially edited
  - 105A editting beginning
  - some problems with final DSDP volumes

3. Other Matters

3.1 Conflict of interest: the Chairman read PCOM's conflict of interest statement to the Panel. All agreed that good judgement was necessary in evaluating conflict of interest.

3.2 COSOD-II and SOHP: a brief outline of the proposed COSOD II structure was presented. The Panel was pleased to note that three of the five working groups would cover, at least in part, SOHP themes. It was not clear from the proposed outline where physical processes and physical properties would be covered. In addition, it was not clear how key questions of technological developments would be addressed. The idea of a SOHP 'white paper' was discussed and rejected. Lengthy documents have, in the past, not had much impact. Instead, the SOHP will produce short summaries of objectives related to each working group. In light of the large component of new members on SOHP, a summary of the previously established SOHP objectives was distributed; Panel members were asked to think about these and other possibilities and come prepared to discuss them at our next meeting.

3.3 Engineering Priorities

Short term: The primary objective of almost all ODP related drilling operations is the **recovery** of samples. Any problem that prevents the recovery of **COMPLETE** sections thus undermines the primary objectives of the program. The SOHP believes that the highest engineering priority should therefore be directed at ensuring the complete recovery of drilled and cored sections. In particular we would like to see engineering efforts directed to (in order of priority):

1 - HPC/APC (and drilling) recovery in sandy sediments (including unconsolidated carbonates)
2 - undisturbed recovery of gassy sediments
3 - enhanced recovery in sections of consolidated and mixed lithologies (i.e. interbedded cherts and carbonates).

In addition, the SOHP recommends high priority be given to the development of:

- a pressure core barrel
- the ability to recover samples in high temperature environments

Long Term:

- the ability to drill deep (2500-3000 m), stable holes in water depths greater than 3000 m
- the ability to drill through salt

3.4 Sediment Classification Scheme

The SOHP believes that the adoption of an 'official' ODP sediment classification scheme is extremely important in that it provides a standardization of descriptions that greatly facilitates the comparison and interpretation of ODP results. The Panel applauds the efforts of Mazzullo et al. in putting together a comprehensive classification scheme and essentially endorses it. However, we strongly urge that the following changes be made (a detailed discussion can be found in Appendix A):

1 - the term 'siliciclastic' replace 'terrigenous'
2 - the standard grain-size classification of pyroclastic components (Fisher and Schminke, 1984) be used
3 - the term 'neritic' for calcareous detritus be dropped and replaced with 'non-pelagic carbonate' and Dunham's (1966) classification be used
4 - the standard terminology for the induration of carbonates (ooze, chalk, limestone) be retained
5 - the term 'metalstone' be dropped and more conventional (although awkward) nomenclature (i.e. manganiferous claystone) be retained
6 - 'Zeolites' be added to the compositional components of chemical sediments
7 - grain shape and color be considered as descriptors only
8 - 'Sapropel' be considered as a proper classification term
9 - the definition of 'marl' be reconsidered
10 - the dominant texture of pelagic grains be used as a major modifier

A more detailed discussion of these modifications can be found in Appendix A.

3.5 Report on Workshops

Brief reports were made on:

1 - South Pacific Workshop (Ciesielski)
2 - Gulf of California Workshop (Meyers)
3 - Paleomagnetic Workshop (Tauxe)
4 - Physical Properties Workshop (no SOHP representation!)
5 - Canadian ODP Workshop (Mayer)
  - the Canadian workshop recommended that an Arctic regional working group be formed

The SOHP has previously called for the formation of an Artic regional working group and reiterates its support for the formation of such a group.

4. Legs 113 and 114

In order to clarify the specific objectives of the Leg 114 sites, John LaBrecque was requested to review the proposed Leg 114 drilling program. The objectives for Sites SA2, 3, 5, 6, 7 and 8 were presented along with recent site survey results. As a result of this presentation, it became apparent to the SOHP that carefully selected Leg 114 sites had the potential to not only provide insight into Neogene paleoceanographic problems, but also to address the important problem of Paleogene gateways and paleocirculation. A combination of revised sediment thickness estimates, a change in

port stops and incorrect steaming and drilling estimates, however, has severely eroded the program. If Leg 114 is required to spend 10 days on-site at the South Orkney transect, it will leave time for only 2 original Leg 114 sites. Two sites are considered too few by the Co-Chiefs to make a viable program.

Faced with these facts, the SOHP once again reviewed the trade-offs between Leg 113 and Leg 114 and explored several options that could possibly save the integrity of the Leg 114 program. These options included:

1 - requesting that Site W-5 be dropped on Leg 113 to ensure time for at least W-7
2 - requesting that no logging or basement drilling be required on Leg 114
3 - requesting that the requirement of picking up Site W-7 on Leg 114 be dropped
4 - dropping Site SA2 from the Leg 114 program
5 - requesting that Leg 114 be extended to the maximum possible length.

While the SOHP has never been totally comfortable with the site selected for W-5, the objectives of this site are important and, in the absence of a better site, the Panel voted (6-5) that W-5 should be a higher priority objective than W-7.

The Panel voted unanimously that:

- the logging requirement for Leg 114 sites be retained but that the basement penetration requirement be relaxed
- the integrity of the Leg 114 program was of higher priority than Site W-7
- that Site SA2 should not be dropped
- that a request be made to extend Leg 114.

The SOHP recommendations for Legs 113 and 114 are thus:

1 - that Leg 114 be extended to the maximum length logistically possible
2 - that PCOM reconsider the requirement for Leg 114 to drill the South Orkney transect in the event that Leg 113 cannot drill at least W-7
3 - that the requirement for 50 m of basement drilling at each Leg 114 site be relaxed

The Chairman reminded the Panel that the above recommendations represent a complete reversal of our previous recommendation that <u>all</u> Leg 113 sites were of higher priority than <u>any</u> Leg 114 sites. The Panel reconsidered the issue and, in light of the clarification of the Leg 114 objectives, (particularly the potential of a 4-site Leg 114 program to address the problem of Paleogene gateways), as well as the large number of new members on the Panel, reconfirmed the above recommendations.

5. Regional Panel Reports and Discussions

5.1 <u>Indian Ocean Report (W. Hay) and Discussion</u>

The two options for Indian Ocean programs were presented. The Panel then discussed, in detail, those programs of concern to the SOHP. SOHP recommendations with regard to the Indian Ocean are as follows:

Neogene I:
The SOHP continues to consider the Neogene I package as one of its highest priority programs and appreciates the support shown for it by PCOM and the IOP.

Neogene II:
The SOHP strongly endorses the concept of a carbonate depth transect in the Indian Ocean. The revised Peterson proposal for a transect on the Seychelles Platform is a well-conceived program that addresses important global questions of the history of ocean chemistry and climate as well as deep water circulation. The program requires only a small portion of a leg and <u>we urge PCOM to reconsider the IOP</u>

recommendation of combining the carbonate saturation profile with the Makran program. In addition, we request that at least 1 site on top of the Moldives platform (M-3) be added in order to look at a mixed periplatform/pelagic section.

Kerguelen:
P. Ciesielski presented a brief overview of the present status of Legs 119 and 120. SOHP reaffirms its strong support for Kerguelen drilling and, in particular drilling in Prydz Bay. We urge that the final selection of sites preserve the latitudinal transect concept and thus provide key information relating to vertical water mass evolution and the development of latitudinal thermal gradients.

Argo/Exmouth:
The proposed (von Rad et al.) Argo/Exmouth program and the Argo extension program (Gradstein) were reviewed and discussed within the context of SOHP thematic objectives. Our recommendations for work in the Argo/Exmouth region are as follows:

Argo Extension:
The SOHP is sympathetic with the need for a complete and detailed Mesozoic stratigraphy in the Indian Ocean but believes that most of the objectives of the Argo Abyssal Plain drilling can be met at a single, carefully drilled site. Therefore, we find it difficult to justify the additional 8-10 days required for a second Argo A.P. site. We are also concerned with the apparently conflicting objectives of the extension proposal - the desire for stratigraphic overlap and the desire to look at microfossil patchiness. (Vote: 6 against extension, 3 for).

Argo/Exmouth Program:
The SOHP reviewed the Argo/Exmouth program and in particular examined how the proposed program fits within our Deep Stratigraphic Test concept. We reiterate that a series of globally distributed deep stratigraphic test holes aimed at addressing problems of sea level history, sediment supply, passive margin subsidence, black shale formation and margin/basin fractionation, have been, and continue to be, a primary objective of the SOHP. We believe that many of the DST objectives can be met in the Argo/Exmouth region, but not at a single site. We therefore propose a combination of previously proposed sites (with some minor modifications) that we believe adequately meet the DST objectives. In suggesting slight modifications to the location of the sites, we are driven by a desire to:

1 - minimize hiatuses (EP7 appears to show significant gaps)
2 - drill in regions with maximum sedimentation rate

We propose two options for an Argo/Exmouth DST. Option one involves a modified EP-5 which we understand was originally dismissed by the Safety Panel. We believe that the new basinward location may be acceptable to the Safety Panel. It appears to be relatively free of hiatuses and is twice as thick as EP-7. If the Safety Panel still does not approve EP-5, we propose a shift of EP-7 and the addition of a deepened EP-6 in order to maximize section recovery.

	Sediment thickness Drilled
Option 1:	
1 - EP-5 moved seaward past shot point 2000 on line WA-176-1	2000 m
2 - AAPIB as proposed	1000 m
Option 2:	
1 - EP-7 moved to shot point 3200 on line GSI 76-22	1400 m
2 - EP-6 as proposed but deepened to 1000 m	1000 m
3 - AAPIB as proposed	1000 m

We believe that the above program will serve to adequately address the objectives of the Deep Stratigraphic Test concept, and do so in a manner that does not terribly tax present drilling technology. We recognize that the Exmouth Plateau has indeed been extensively surveyed by industry and that there are commercial boreholes in the region. We believe that there will be no duplication of existing results because the commerical boreholes were only sampled by sidewall cores (10-30 m spacing) in the entire post-Triassic to Tertary section. Indeed, the continuous coring provided by ODP in conjunction with the existing seismic and borehole data provides a unique opportunity to examine the evolution of a margin and the numerous paleoceanographic problems associated with it.

The SOHP also supports the concept of geochemical reference sections but believes that AAPIB, not AAP2, is the most appropriate place for this.

5.2 Western Pacific Report and Discussion

A 10.5 leg prioritized WPAC program devised by the WPAC Panel was presented by Jim Ingle. As presented, three regions: Japan Sea, Sulu Sea and Great Barrier Reef are of primary importance to SOHP; there is potential interest in sites in the Bonin-1, Lau Basin, S. China Sea, and Sulu-Negros programs.

Bonin-1:
The SOHP's interest in the BONIN program revolves around the potential to examine the effect of the ridge's history on bottom water circulation and the Pleistocene history of the Kuroshio current. Of the sites proposed, Sites 6 and 7 have the greatest potential for meeting SOHP objectives. Site 7, however, is too deep (4650 m) to yield a reasonable carbonate record. The SOHP thus rates Site 6 as its highest priority in the Bonin region and requests that the WPAC Panel explore the possibility of moving Site 6 latitudinally in order to maximize thickness of the sedimentary section.

Japan Sea:
The SOHP strongly endorses the proposed Site JS-2 and urges that double HPC's be collected there. JS-2 provides a late Miocene to Holocene record above the CCD and will address important questions of anoxic sedimentation, mixing processes, sea-level and upwelling history.

Banda Sulu - So. China Sea:
The So. China Sea, as a young passive margin with a thick sedimentary sequence, presents an excellent opportunity to address several key SOHP objectives: 1) ties between eustasticy and tectionism; 2) early opening and subsidence history of a young basin; 3) development of passive margin basin facies; and 4) the history of a oxygenated basin. The SOHP believes that these objectives can be addressed by Site SCS1 if and only if industry well data for the deeper part of the section becomes available. We strongly recommend that every effort be made to obtain access to industry data. If this data is unavailable, we recommend that new sites be sought that will better address the history of the development of the margin.

- SOHP also supports paleoceanographic drilling in the Sulu Sea, a silled tropical basin, which contains anoxic sediments in a carbonate province. Because of potential programs with turbidites, and with poor geometric control in the pre-late Pleistocene, however, we rate the So. China Sea as higher priority than the Sulu Sea.

Great Barrier Reef:
The Great Barrier Reef program represents some of SOHP's highest priority drilling objectives. Global themes addressed in the Great Barrier Reef - Queensland Trough - Queensland Plateau area include:

1 - Cenozoic sea level changes, major global unconformities and sediment response to sea level fluctuations
2 - Basin/shelf sediment fractionation and basin fill history in response to sea level and subsidence history
3 - Changes in paleoclimate related to plate position and the effect of these changes on sedimentation
4 - Comparison of the tectonic and sediment history of a passive continental margin and an isolated plateau
5 - Diagenesis of a mixed carbonate/siliciclastic province in an undersaturated ocean regime.

WPAC has advised the proponents to re-evaluate drill times in view of the fact that these holes will encounter cemented carbonates; and to re-evaluate the sites to consider tectonic problems (e.g., effect of differential subsidence on isolating sea-level events). The proponents have submitted a revised proposal for comment that significantly shortens the previous holes proposed (by one-half in most cases) and which adds 7 short holes (300 to 800 m drill depth) to address these two problems. SOHP agrees with WPAC concerns, but feels it is critical to maintain one deeper test in the Great Barrier Reef slope area and recommends the following priority for the proposed drill sites.

NEA 1
2 (deepen to 800 - 1000 m drill depth)
3
4
5
6
9
10
7 (an alternate site is recommended because of safety concerns, i.e. present site drills crest of a carbonate build up).
8
11
12
13
14

The SOHP places the following priorities on the proposed WPAC programs:

1 - Great Barrier Reef (with 1000 m Site 2)
2 - Japan Sea
3 - So. China Sea (with industry data)
4 - Sulu Sea

Once again, we applaud the WPAC Panel for their efforts to incorporate thematic guidance in developing their program.

5.3 CEPAC Report (Sancetta) and Discussion

- CEPAC is just beginning to receive a large number of proposals
- ranking based on individual merit and their relevance to thematic packages
- questions for SOHP - How does SOHP rank importance of depositional processes, facies models and fans
  How does SOHP feel about role of paleoceanographic data in history of "accreted terranes"

5.4 SOHP Themes for CEPAC Drilling

Using the SOHP summary of major themes as a guide (though not constrained by it) the Panel then discussed those themes and objectives most relevant to CEPAC drilling. The following recommendations are preliminary; they will be finalized as our new members "come up to speed" and properly review them.

SOHP Themes for CEPAC Drilling: (prioritized)

1. THEME: High-Low Latitude and Depth Transect (Paleosecs)

Objectives: (non-prioritized)
1 - examine biotic changes through time and latitude
2 - record of climatic change (Cretaceous to Recent)
3 - history of bottom water circulation in Pacific
4 - history of surface water circulation in Pacific
5 - paleowinds - fluxes and intensities
6 - seismic stratigraphy: basin-basin fractionation
7 - geochemical mass balance for Pacific
8 - enhanced biostratigraphic correlations
9 - geomagnetic record especially from southern latitudes
10 - pre-Neogene isotopic data
11 - interrelationships of 1,2,3,4,5,6,7 & 10 above
12 - motherhood and apple pie

Approach/Site Criteria:
A high to low latitude (and depth) transect of sites with an initial spacing of at least every 20° of latitude. Criteria for sites are: shallow burial, carbonate, low paleolatitude, continuous sections. Clearly, oceanic plateaus and guyots are primary targets.

Example Sites:
60°N - Sounder Ridge
55°N - Giacameni SM
50°N - Detroit SM
30°N - Shatsky Rise
26°N - Tsuni SM (Ogasawara SM)
20°N - Horizon Guyot
0°N - Ontong Java Plateau
45°S - Louisville Ridge

Need input from CEPAC and working groups - especially for S. Pacific sites.

2. THEME: Old Pacific Crust

Objectives:
- to recover the oldest (Pre M-25) Pacific crust
- to look at the only existing open ocean record for the Cretaceous

Approach/Site Criteria:
Must be pre-anomaly 25 crust in drillable region. Must be carefully surveyed to establish feasibility. New bit technology permitting drilling is alternating lithologies will be important.

Example Sites:
See Larson/Lancelot proposal (OPACC 1-3), Ross Sea.

3. THEME: Atolls and Guyots

Objectives:
1 - sea level fluctuations vs. subsidence history
2 - drowning history - how to make a guyot out of an atoll
3 - carbonate diagenesis as function of sea level history
4 - volcanic episodicity

Approach/Site Criteria:
A series of sites down a number of guyots. Site criteria are similar to those for Theme 1. These objectives can be piggy-backed, along with Theme 1 objectives.

Example Sites:
See Theme 1.

4. THEME: Episodicity of Volcanism

Objectives:
1 - history of explosive volcanism and hydrothermal activity (signal is in Pacific)
2 - changes in spreading rate and its relationship to climatic change
3 - relationship of tectonic cycles to paleoceanographic events with emphasis on earlier part of record

Approach/Site Criteria:
Multiple sites with volcanic record in several regions, proximity to arcs. Once again many sites can piggy back on Theme 1 sites.

Example Sites:
Escanaba Trough vs. Middle Valley
Alaskan Bight
Detroit SM
Ogsawara Plateau

5. THEME: Fans and Depositional Processes

Objectives:
1 - provide modern analogs to important ancient deposits
2 - establish models for fan development
3 - understand the nature of clastic deposition in the deep sea

Approach/Site Criteria:
Need drillstring to get vertical history of modern fans. Piston coring yields only surficial sediment (often stopped by sands) and deeper horizons can only be viewed seismically at a scale (20 - 30 m resolution) inappropriate for understanding depositional history. Should look at fan in small basin on continental crust where sands aren't too thick. Drilling should be in distal overbank deposits to maximize record.

Example Sites:
Navy Fan

6. THEME: Fluid Circulation (discussed after joint CEPAC/SOHP Meeting)

Objectives:
1 - large scale rock/seawater interaction and its affect on seawater chemistry
2 - spreading rate fluctuations vs. hydrothermal activity
3 - geochemical mass balances

Approach/Site Criteria:
Sites at highly sedimented ridge crests with or without organic matter, fracture zones.

Example Sites:
Aleutian Transect, Juan de Fuca, Gulf of California

6. Joint CEPAC/SOHP Meeting

The CEPAC and SOHP Panels met jointly on the afternoon of October 20. The Chairman of CEPAC outlined the status of their proposal reviewing procedure and briefly discussed those programs that had received the most favorable reviews. The Chairman of SOHP reviewed the SOHP themes for the CEPAC region (except for Theme 6 - see preceeding pages). CEPAC then addressed specific questions to the SOHP:

1. CEPAC - How important are accretionary prisms to SOHP?
   SOHP - Questions whether drillstring is most appropriate tool to use to address these problems. Accretionary prisms are of some interest to SOHP (physical properties, diagenesis, fluid flow) but more appropriately discussed by Tectonics Panel.

2. CEPAC - How interested is SOHP in pure sedimentary processes and fans?
   SOHP - Ranking of this on SOHP Thematic priority list (5th out of 6) reflects that while not dismissed, problems associated with fan drilling lead us not to focus on it. Would like to see it but program needs to be very carefully thought out.

3. CEPAC - Boundary currents?
   SOHP - In Pacific problem is tectonic translation. SOHP would be interested if it could be demonstrated that accumulating crust did not move much with time. This is compounded by the fact that Paleogene climatic gradients are often too small to discern.

4. CEPAC - How does SOHP feel about lack of Sites in S. Pacific?
   SOHP - Nothing in SOHP themes precludes S. Pacific drilling, indeed latitudinal transect theme requires S. Pacific drilling. Major prolem with S. Pacific is the fact that sedimentation rates are so slow that it is difficult to get high resolution records.

5. CEPAC - What is stratigraphic resolution that can be expected in mid-ocean, volcanoclastic, turbidite regions (late Cenozoic)?
   SOHP - + 1 million years.

6. CEPAC - Has SOHP considered requesting a stratigraphic synthesis (funded by USSAC) for Pacific?
   SOHP - No, sounds like request CEPAC should make.

7. CEPAC - What are SOHP's engineering priorities?
   SOHP - read engineering priorities (see 3.3).

From this initial get together, it was clear that CEPAC and SOHP were on track in several areas, and most importantly, each panel had overlooked important items. In particular, the CEPAC panel pointed out that SOHP had neglected questions of fluid circulation in developing its themes (rectified) and SOHP made CEPAC aware of its highest priority interest in a high-low latitudinal and depth transect. We believe that the joint meeting was extremely valuable and will greatly facilitate future CEPAC planning.

7. Next Meeting

The next SOHP meeting will take place 9-11 March, 1987, on the west coast (either SIO or Menlo Park).

APPENDIX A
SOHP Comments on Proposed New ODP Sediment Classification

Any utilitarian sediment classification scheme should meet the following criteria:

1. **Ease of use** - with straightforward, "natural" subdivisions and logical methods for applying names to sediments or criteria for application

2. **Comprehensive** - accommodating the anticipated range of sediment compositions and potential mixtures of sediment of diverse origins

3. **Objective, descriptive** criteria for classification, i.e. no explicit genetic (process) interpretations, but some genetic implications are unavoidable.

With the recognition that there are as many opinions on sediment classification as there are sedimentologists, the sediment classification scheme proposed by Mazzullo et al. meets the above stipulations rather well. The SOHP applauds the development of a comprehensive yet reasonable classification scheme. We essentially endorse the proposed classification with the realization that adoption as the "official" ODP classification has significant implications for permissible patterns used on barrel sheets, etc. However, we strongly urge that the following changes to the scheme be implemented before adoption (no implied order of importance):

1. Substitute **"siliciclastic"** for **"terrigenous"** - the latter term has an objectionable implication as to sediment source and depositional process. Siliciclastic describes the composition of the component rather than its derivation.

2. The standard **grain-size classification of pyroclastic components** (e.g. ash, lapilli, etc; Fisher and Schminke, 1984) should be used in the classification.

3. The use of the term **"neritic"** for calcareous detritus on or derived from carbonate platforms is a misnomer. The term implies "nearshore", but in fact, carbonate particles (non-pelagic biogenic) can be derived from a number of environments, including periplatform and mixed pelagic/periplatform sediments. Such particles, exclusive of pure pelagic biogenic sediments, should be termed "non-pelagic" carbonate, and Dunham's (1962) classification used. [See Note A. for additional points relative to the Dunham classification.]

4. The **standard terminology for induration** (which can be determined easily) of pelagic biogenic carbonates, should be retained ("ooze", "chalk", "limestone"), recognizing that those terms should not indicate anything about depositional mechanism or environment. Use of "chalk" and not "limestone" for indurated carbonates may also cause confusion in that "chalk" could be misconstrued as a compositional term.

5. The term **"metalstone"** is an unfortunate choice for chemical sediments composed of metal-ion-bearing minerals. We recommend dropping that term and adopting a more complicated but conventional nomenclature (e.g. chamositic ironstone; glauconitic sand; pyritic shale; manganiferous claystone, etc.).

6. **"Zeolites"** should be added as a compositional component to chemical sediments.

7. **Grain shape and color** should be considered descriptors only, not as a formal part of a classification. The inclusion of these parameters detracts from the overall logic of the classification. These are of less importance than primary sedimentary structures in describing a sediment and drawing inferences about depositional mechanisms.

8. **Sapropels** - these unusual sediments may be improperly considered under "terrigenous"

(now "siliciclastic") sediments. Such units can and often do contain substantially more biogenic pelagic material, which makes this assignment problematic.

The definition of **marl** is unconventional (a quartz sand with carbonate) and its range is covered by "mixed" or "transitional" sediment.

1Ø. **Pelagic sediments:** also the dominant texture of the pelagic grains should be used (if other than normal texture for pelagic sediment) as a major modifier or component in sediment name: e.g. sand-sized foraminiferal ooze or foraminiferal sand or silt; or silt-sized radiolarian ooze or radiolarian silt.

Note A. Calcareous Detritus

Embry and Klovan's (1971) modification of Dunham's classification should be used, at least to introduce the terms:

Greater than 1Ø% > 2 mm components -

Floatstone:	Matrix supported
Rudstone:	Component supported

Less than 1Ø% > 2 mm components -

Grainstone
Packstone
Wackestone
Mudstone

Also Boundstone could be subdivided into:
Bafflestone
[illegible]ndstone
[illegible]mestone

APPENDIX 1

EXECUTIVE SUMMARY
JOIDES SEDIMENTS AND OCEAN HISTORY PANEL
ACTIVITIES, 1985

1) MEETINGS

The SOHP met twice in 1985, the first in Cambridge, U.K., Feb. 21-23 and the second at LDGO, Palisades, N.Y., July 25-26; we met a third time on Jan.6-7, 1986 at SIO, La Jolla, CA.

2) PANEL MEMBERSHIP

A) In the event that new member countries are not added, we recommended the following people to serve as members of SOHP, filling critical subject areas left vacant as the result of the withdrawal of our ESF and UK colleagues:

1.) R.E. Garrison, UCSC; carbonate and silica diagenesis, sedimentary processes. (alternate: Pierre Biscaye, LDGO: clay mineralogy, sedimentary processes)

2.) John Barron (USGS; diatom biostratigraphy--Pacific paleoceanography) (alternate: R.C. Thunell, Univ. South Carolina; foraminiferal biostrat.-paleoceanography)

B) Assuming that JOIDES panel structure remains the same, we have also recommended formal liaison between SOHP and several regional panels as follows (liaison was lost due to several resignations):

1) P. Meyers to ARP (replaces Sarg)
2) R. Sarg to WPAC (replaces Shackleton)
3) L. Tauxe wants to be replaced on IOP (replace with L. Mayer)

C) M. Arthur has resigned as SOHP Chairperson; SOHP nominates R.E. Garrison for the new Chairperson (with Wolfgang H. Berger and Larry Mayer as alternates).

3) TECHNOLOGICAL DEVELOPMENTS

We continue to recommend as highest priority (approximate order of priority) the following technological improvements and/or acquisition and deployment of equipment already available for ODP:

A) <u>TECHNOLOGY</u>

1. Heave compensation for the APC system (developed and tested on ODP Leg 105).
2. Drastic need for technology to avoid or moderate unstable hole conditions and to improve ability to drill and recover fractured rock; should include mud technology for conditioning holes--necessary for deep penetration and drilling in accretionary prisms, etc.
3. A core-catcher system that would improve recovery in friable formations such as sand (recognizing that drilling in such formations is also a challenge).
4. Improved bits and drilling techniques that would allow better penetration and recovery in sequences characterized by pronounced lithologic contrasts (e.g., chert-chalk sequences that will be encountered frequently in the Pacific program).
5. Improved core liners (shattered or twisted during APC coring; is this quality control problem?)
6. Further improvement and routine availability of pressure core-barrel and <u>in situ</u> pore-water sampler to take advantage of unanticipated geochemical anomalies (gas-hydrates, salinity-alkalinity gradients, etc.).

B) <u>CORE HANDLING AND ARCHIVING</u>

1. Improve color core photography, including routine deployment of continuous strip photography (using Tom Chase system as deployed on DSDP Leg 64).
2. Digital color record acquisition for signal processing and permanent archive.

4) LONG-RANGE PLANS--RISER TARGETS

We were asked to consider our high-priority plans for riser drilling in 1992 or later should the riser system be deployed (assuming 1800m depth limitation); these are:

1. Penetration, dating and characterization of major evaporite sequences, including the upper Miocene of the Mediterranean, the Miocene of the Red Sea and the lower Cretaceous of the South Atlantic--these are important for global geochemical mass balances, paleoclimate, hydrocarbon source bed and other considerations.
2. Penetration and recovery of gas hydrates and other gassy sediments such as in the Sea of Japan, Black Sea, Sea of Okhotsk and Cariaco Trench.
3. Penetration of continental slope structures and sequences, such as in the Niger Delta, the Gulf of Mexico, and offshore Northwest Africa.