

RECEIVED

MAR 12 1984

MINUTES OF THE WESTERN PACIFIC PANEL OF ODP

FEBRUARY 27 AND 28, 1984

BEDFORD HOTEL, SAN FRANCISCO

INTRODUCTIONS

Persons present:

Panel Members:

Audrey Wright	TAMU - ODP Liason
Derk Jongsma	European Science Foundation (Free University, Netherlands)
Brian Taylor	Hawaii Institute of Geophysics
Hans Ulrich Schluter	BGR, Hanover
Claude Rangin	IFP CNRS, France
Michael Audley-Charles	Univesity College, London
Marcus Langseth	Lamont-Doherty Geological Obs.
Hideo Kagami	Ocean Research Institute, Tokyo
James Natland	DSDP, SIO La Jolla, CA
Reinhard Hesse	McGill University, Montreal
Eli Silver (Chair)	Univ. of Calif., Santa Cruz

Visitors:

Jose Honnorez	PCOM
Rick Carlson	TAMU

STATUS OF ODP AND ROLE OF WPP

Discussion by Honnorez:

Panels need both regional and thematic expertise
Want new people and ideas on panels
PCOM will rotate completely every 4 years
Proposals will go through JOIDES office to proper
panels for review

6 regional, 3 thematic, 4 service panels

We need to suggest additional members to panel
Important to include thematic panel members

Ship: Sedco 471

45-52 scientists and technicians
Lab area > twice that of Challenger
Equipped for riser drilling

Start date Jan. 1, 1985

Capable of Maximum drill string 30,000 ft long in
27,000 ft of water

Diameter of drill pipe same as DSDP, so reentry of old
holes is possible

Discussed drilling schedule

May vary by a year depending on Weddell Sea leg
Earliest arrival in W. Pacific: Dec. 1987-Jan. 1988

PCOM will set final priorities and schedules. Regional and thematic panels are not hierarchical.

Riser vs. non-riser drilling

Riser requires much more pre-leg preparation
Each hole takes much longer with riser
Much more expensive - presently unresolved question of covering costs exceeding insurance
Important to plan packages of riser holes, rather than individual targets
Probably no consideration of riser drilling in W. Pac. for the first 4-year circuit

Consider including non-IPOD, third world scientists in science planning long before the drilling leg

Bare rock drilling - being considered by TAMU engineers

Logging and downhole measurement coordinate through LDGO

Discussion of additional panel members

Considered adding thematic panel members
Considered the need for experience in under represented areas.

There was much support for inviting Dave Falvey to be a member of the panel because of his position and interests in western Pacific problems. Rangin pointed out the potential negative reaction of the non-US, Joides countries if non Joides people are made voting members of the panels. We then decided to restrict the discussion to permanent members, and all agreed to the need for a paleoceanographer. Three names were recommended which were agreeable to everyone:

Bob Douglas, Jim Ingle, and Joe Morely

There was a suggestion to bring local area experts such as Philippine and Indonesian geologists, to the meetings when their area is being discussed, but not to recommend panel membership unless their contribution would be substantial overall.

Suggested formation of working groups to incorporate local, non-Joides area experts. However, Taylor insisted that expertise in the southwest Pacific region was greatly under represented on the present panel. Natland pointed out the dearth of petrologists on the panel and suggested improving that by including a member of the lithosphere panel. Decided to concentrate on invited persons for the next panel at the end of this meeting.

SCIENTIFIC DRILLING OBJECTIVES

Discussed under the headings of: Marginal seas, accretionary wedge processes, and arc systems.

MARGINAL SEAS

Japan Sea: Kagami proposal (Submitted written document)

Objectives: Mode of spreading and nature of basement
Incipient thrusting along eastern margin of
the Japan Sea

Hydrothermal circulation in the backarc

Early rift history of the Yamato ridge

Planned studies: Japanese will dredge scarp of proposed
thrust fault this summer

Proposed sites: Japan basin, Yamato Basin, Yamato ridge

Okinawa Trough: Rangin proposal (Submitted written document)

Objectives: Compare subsidence in forearc with opening
of backarc basin to the north. Determine age of trough and nature
of crust. History of marginal basin volcanism.

Planned studies: Japanese will do MCS this summer

South China Sea: Written proposals by Rangin, Schluter, and
Langseth; oral proposal by Taylor

Objectives: Study of a passive continental margin
Rifting during 32-17 Ma period makes this sufficiently old
to be beyond non quantifiable initial stretching and
sufficiently young to exhibit observable differences in
subsidence predicted by different thermal models. Langseth
proposed 4 sites along the northwest margin.

Audley-Charles questioned whether this was truly a passive
margin, because eastern rift segment is not a continent.

Rangin discussed the southern part of the region including
Palawan, dangerous ground, Reed bank. Suggestion that French,
German, and U.S. participants with interests in the region
produce an integrated synthesis for an overall proposal.

Sulu Sea and Celebes Sea (written document by Rangin)

Objectives: Age and origin of inner and outer Sulu
basins and relation to boundary thrusts.

Taylor questioned the importance of determining ages in
justifying a drilling program. Later decision was reached to
integrate the Sulu sea objectives with those of the South China
sea, rather than considering it in isolation.

Age of Celebes basin known on the basis of magnetic
anomalies. No proposal for drilling here.

Banda Sea (Oral presentation by Silver)

Problem: Basin lies within Banda arc which makes a 180° bend around its periphery. If basin is Mesozoic (Bowin et al., 1980) the arc had to wrap around it in the Neogene. If basin formed by Neogene spreading (Hamilton, 1979) it could have deformed while arc was being created. New dredging and swath map data suggests the northern part of the basin (Banda ridges) is a continental borderland rifted off the northern margin of Irian Jaya, possibly in the late Miocene. But the north and south basins have not been sampled and they may be of greater age.

Objectives: To determine the age and origin of the three main segments of the Banda sea: the north and south Banda basins and the Banda ridges.

Future work: Dutch plan seismic reflection and Seabeam study of the Banda sea as part of Snellius II expedition. We urge them to acquire multichannel seismics there as well. Additional SeaMARC swath mapping of the entire Banda ridges segment is very important. Silver and Jongsma will synthesize existing data and produce a proposal for next meeting.

Sunda and Banda forearc: (Written document by Schluter)

Objectives: Jongsma proposed drilling in the Savu basin and the Wetar strait. Audley-Charles strongly supported the latter as a record of uplift of the entire arc and forearc region.

Solomon Sea: (Written document by Audley-Charles)

Objectives: Age and origin of the basin because it may represent the source of the Papuan ophiolite. Taylor pointed out that the Trobriand trench separates the ophiolite from the basin, and thus the comparison is not constrained. Maybe this is a local problem.

Bismark Sea (Oral presentation by Taylor)

Objectives: To study a rapidly spreading backarc basin (130 mm/yr). It has the advantages of shallow water depth and sediment to spud into. Should be compared in its hydrothermal and magmatic processes with the Mariana backarc which spreads slowly. Taylor pointed out that the Bismark is to the Mariana basin as the EPR is to the MAR. Honnorez appreciated the comparison for the rest of the meeting.

Future plans: HIG plans a dredging and SeaMARC study there next year, after which we anticipate a full proposal for drilling.

Woodlark basin (Oral presentation by Taylor)

Objectives: To study a rifted inactive intraoceanic passive margin!?

General Discussion:

Langseth: Important to be careful that ideas and proposals

generated by the panel are not placed ahead of those of outside proposals.

Natland: We are not at the stage to set priorities on the proposals. We should divide what we have into those ready for immediate consideration and those that need additional work.

Honnorez: Define why the Western Pacific should be the next ocean to go into after the Weddell Sea. Then set priorities on objectives, regions, etc.

ADJOURN FOR FEB 27

FEB. 28, 0830.

NEXT MEETING DATE AND PLACE

After much discussion, we passed up the temptation to hold meeting at Noumea, Tokyo, or Honolulu and settled on:

LAMONT-DOHERTY GEOLOGICAL OBSERVATORY

OCTOBER 2 - 5, 1984

MEETING WILL BEGIN AT 0830 ON OCTOBER 2 AND ADJOURN NO SOONER THAN 1700 ON OCTOBER 5.

Continuation of discussions of marginal basins

Andaman Sea (Written proposal by Rangin)

Objectives: To investigate the formation of two separate spreading episodes in order to constrain the model of formation associated with the Himalayan collision by Tapponnier. Specific drilling targets include Mergui rise, Alcock and Jewel seamounts, and Invisible mount.

This region clearly falls within the geographic purview of the Indian Ocean panel, yet it forms an integral part of the scientific objectives of the WPP. We should consider jointly with the Indian ocean panel.

ACCRETIONARY WEDGE PROCESSES

Nankai Trough (Written proposal submitted by Kagami)

Objectives: 1) To determine physical properties of the zone of sediment thickening in front of the frontal thrust, marked by small reverse dipping 60 degrees. 2) Examine properties and detailed structures in the zone of frontal thrusting. 3) To drill into the deeper zone of duplex faults that are probably responsible for the uplift of the wedge. 4) Examine deformation in the forearc basin and outer ridge, associated with historical seismicity.

Discussion: Langseth - Will need in situ pressures, therefore packer experiments. Hard to recover decent samples; need to develop coring techniques for the HPC in semi-

consolidated material. Difficult to penetrate the decollement.
Natland - Need casing. HPC may work.

Taylor - Is biostratigraphy a problem?

Kagami - We now have diatom stratigraphy.

Taylor - How well do they hold up down section?

Kagami - We have only a Plio-Pleistocene section.

Silver - It's more important to ascertain how this wedge augments information from the Barbados, rather than whether or not it is better.

Schluter - Are reflectors really thrusts? Or could they represent changes in physical properties?

Much discussion of safety problems ensued, especially that of penetrating the BSR. Recommend we have member of safety panel attend meeting.

Manilla Trench (Written proposal submitted by Langseth)

Objectives: Mechanics of accretion. Drilling can establish timing and mechanisms of uplift. Variations in surface slope imply changes in material strength. Discussion followed concerning the way in which strength and slope are related.

Silver - Any plans to migrate the data?

Taylor - No more money. Need to generate more if we feel its important.

Rangin - French plan a one month cruise to the Manilla trench in October.

Taylor - There is a great story here on forearc stratigraphy.

- Proposal needs more work before it can be considered.

Natland - We will be faced with setting priorities on all these accretionary prism localities.

Silver - Great!

Discussion followed concerning the relative importance of tectonic vs 'gravity' sliding in producing thrust belts. Decided to restrict discussion to those topics that could be tested by drilling. Audley-Charles suggested the Savu thrust between Sumba and Timor as a test region. He will work on proposal for next meeting.

Japan trench (Written proposal submitted by Kagami)

Objectives: To sample basement of possible Cretaceous age near the trench axis. Evidence for tectonic erosion of the "buzz saw" type seen in seismic profiles, but targets too deep for abilities of the ODP program.

Sunda Strait (Oral proposal by Rangin)

Objectives: Represents an extensional basin in an accretionary forearc, due to the intersection of the Semangko fault and the trench. Krakatau volcano lies in this zone. What is the age of initiation of stretching in the Strait? What is the style of extensional deformation within an accretionary prism?

Future work: French plan Seabeam and single-channel seismics in early 1985. Japanese will work here in late 1985.

ARC SYSTEMS

Overview of Thematic problems associated with western Pacific arc systems by Natland (Oral presentation).

- 1) Early arc or forearc volcanism
- 2) Change from tholeiitic to calc-alkaline volcanism along arcs and through time.
- 3) Composition of arc volcanics away from the high volcanoes.
- 4) Submarine arc hydrothermal activity
- 5) Space-time variations of backarc basalt compositions
- 6) Nature of earliest rifted lavas.
- 7) Hydrothermal differences between backarcs and oceanic settings
- 8) Remelting of interbedded volcanoclastics to generate rhyolites in backarcs.
- 9) Origins of gabbros and metabasalts at Mariana backarc ridge axis.
- 10) What is the nature of the thin crust in the Mariana forearc? How are forearc ophiolites formed?
- 11) What is the history of forearc sedimentation and hydrogeology - transport of fluids within the forearc region.
- 12) Focus on tephras, an accurate monitor of arc magmatic history.

Specific objectives for drilling:

- a) Forearc hydrogeology
- b) Forearc spreading history
- c) Deep reentry hole for downhole geophysical experiments and petrologic research.
- d) Tephrochronology

Bonin Arc System (Oral presentations by Taylor and Kagami)

Objectives: Excellent area to investigate the early rifting of an arc - both the sediment history and the underlying basement composition. Study early backarc magmatism. Deep canyons in the forearc allow holes to be drilled deep into the slope section. Also, good example of a seamount collision with an arc between the Bonin and Marianas.

Future work: HIG will do SeaMARC work there this year, as well as extensive dredging. Japanese also plan to work there later this year.

Ryukyu arc (Written proposal by Rangin; oral by Kagami)

Objectives: Examine the collision of an oceanic plateau with the arc. Adjacent island shows high rate of uplift. What are the controlling factors for vertical movements in the forearc?

New Hebrides (Written proposal by Rangin)

Objectives: Study the collision of the Entrecasteaux ridge with the New Hebrides arc. What is the effect of the collision on magmatism and forearc structure?

Tonga-Kermadec arc (Written proposal by Rangin)

Objectives: Study the progressive collision by the Louisville ridge on the Tonga-Kermadec forearc.

Future work: Seabeam and seismic data by the French in summer, 1985. MCS by USGS in 1984 and by Japanese in late 1984.

Overall, the western Pacific is the best place to study oceanic forearcs.

DISCUSSION OF ADDITIONAL MEMBERS TO WPP AND VISITORS FOR NEXT MEETING

1) Confirmed request for Douglas, Ingle, or Morely in that order as a permanent member in Paleooceanography. Morely was placed last only because of the potential for excessive Lamont representation.

2) Discussed the need for expertise in the Southwest Pacific. Unanimously agreed that Jacques Recy of ORSTOM should be requested to participate as a full member.

3) Because of his broad expertise and knowledge, the committee unanimously recommends that Dave Falvey be invited to attend the October meeting at Lamont. This is not a request for any Australian because we ought to have an Australian. Considering the agenda for the October meeting, Falvey would provide much needed expertise.

4) We agree with Honnorez that participation by members of the thematic panels would be helpful. We recommend that the following people be invited to attend the October meeting at Lamont:

a) Paul Robinson, Lithosphere panel, because of his knowledge of petrology and his expertise in ophiolite drilling.

b) Darrel Cowan or Jeremy Leggett, Tectonics panel, because of their backgrounds and expertise in active margins.

c) E. Suess, Sediments and Ocean History panel, because of his expertise in fluid behavior in active margins.

d) Matt Salisbury or other member of the downhole measurements panel.

For the next meeting, those interested in specific problems and regions will work toward producing unified proposals:

Japan Sea and trench: Kagami, Langseth, Rangin

Nankai Trough: Kagami, Rangin

Okinawa Trough and Ryukyu arc: Kagami, Rangin

Bonin, Mariana arcs: Natland, Taylor, Kagami

South China Sea and Sulu Sea: Taylor, Rangin, Schluter, Langseth

Banda Sea: Silver, Jongsma, (Recy)

Banda arc and forearc: Schluter, Audley-Charles, Silver

Bismark, Woodlark, etc.: Taylor

Southwest Pacific arcs: Natland, Rangin (Recy),

Adjourned at 1700 hours.