

DRAFT MINUTES  
WESTERN PACIFIC REGIONAL PANEL MEETING  
MARCH 2-4, 1987  
OCEAN RESEARCH INSTITUTE  
UNIVERSITY OF TOKYO  
TOKYO JAPAN

Attendance: Taylor (Chair), Gill, Ingle, Rangin, Kudrass, Hyndman, Audley-Charles, Jongsma, Recy, Scott, Natland, Tamaki, Hawkins (LITHP), Saito (SOHP), Suyehiro (SSP), Nakamura (TECP), Taira (PCOM). Absent: Moore, Garrison (ODP)

Taylor called the meeting to order at 9:00 a.m. on 2 March, dispersed some documents, and summarized the meeting agenda - to revise the summaries for the third prospectus, translate the identified programs into legs, prepare a drilling schedule for the western Pacific through 1989, and identify those programs/legs having special engineering requirements.

### 1. REPORTS

PCOM Taira summarized the results of the January PCOM meeting in Honolulu. In the Indian Ocean, the Red Sea program was dropped because of clearance problems, and the Makran program was dropped because the planned site survey was not completed, and there has been no verification that paleontological control will be adequate. The programs in the western Pacific will probably begin in October, 1988, although this could vary by a month either way. PCOM approved, for planning purposes, a western Pacific campaign of the top 9 programs voted on at the last WPAC meeting, to be carried out in 11 legs. The additional 3 programs recommended by WPAC are to continue being developed. PCOM also identified four "core" programs, which seem most likely to be carried out, based on high ratings by WPAC and the thematic panels. These are 1) Bonin I; 2) Nankai Trough; 3) Banda-Sulu-South China Sea; and 4) Japan Sea. Finally, PCOM restricted the number of meetings panels can hold to two per year, except when planning is in its most intensive phases.

ODP (summarized by Taylor and Taira). There will be extensive development of the Navidrigill, which is expected to improve coring and recovery in fractured basalts, <sup>as well as alternating hard-soft sequences</sup> and a new pressure core barrel should be ready in late 1988. An idealized timetable for staffing of legs was presented, beginning with designation of co-chief scientists 12 months prior to sailing. Leg 113 (Weddell Sea) drilling is going well. There will be a scheduled dry-docking of JOIDES Resolution 12/88 or 1/89 (will affect western Pacific schedule). Legs are a nominal 56 days long (port-to-port), with no leg greater than 60 days.

Site Survey Panel (summarized by Suyehiro). The panel covered the Indian Ocean at its last meeting in January. Panel "watchdogs" were assigned to western Pacific programs: 1) Banda-Sulu-SCS Basins - Heinrich Meyer (BGR); 2) Bonin I - Fred Ouennebier (HIG); 3) Lau Basin

- Fred Duennebier (HIG); 4) Vanuatu - Alain Mauffret (France); 5) Japan Sea - Kensaku Tamaki (ORI; Japan); 6) Nankai - Kiyoshi Suyehiro (Japan); 7) Great Barrier Reef - Robert Kidd (UK); 8) Sunda - Birger Larsen (ESF); 9) Bonin II - Fred Duennebier (HIG); 10) Nankai Geotechnical - Kiyoshi Suyehiro (Japan); 11) South China Sea Margin - Steve Lewis (USGS); 12) Zenisu Ridge - Steve Lewis (USGS).

LITHP (Scott). LITHP's highest priorities in the western Pacific are Bonin I, Lau Basin, Bonin II - Marianas, and Japan Sea. In the Lau Basin, LITHP gives highest priority to sites LG2, LG3, and LG6. Second priority is a deep crustal hole in the central Lau Basin (LG1). Lowest priority is Valu Fa (LG4 and LG5). There are too many objectives recommended in the working group's report for a single leg. LITHP strongly endorsed the proposal to drill reference sites east of the Bonin-Mariana arcs.

## 2. MINUTES OF THE DECEMBER MEETING

The minutes of the December, 1986 meeting of WPAC at Stanford were approved with minor changes.

## 3. HISTORY OF WPAC

Taylor has prepared a summary of the history of the Western Pacific Regional Panel for distribution to PCOM and others. The objectives are 1) to present an outline of the development of plans for drilling, in response to proposals and other inputs at various times; 2) to compare rankings of thematic panels with those of WPAC; and 3) to document changes in panel membership. The panel suggested minor changes to the document, and requested that it be submitted to PCOM prior to their next meeting.

## 4. KINOSHITA PRESENTATION

The panel agreed to hear a presentation the following day by Dr. Kinoshita concerning the deployment of special downhole instruments in holes drilled in seismically active regions near Japan. (Dr. Kinoshita was prevented from making the presentation the following day because of illness).

## 5. THIRD PROSPECTUS

The panel discussed the organization of the third prospectus, and agreed that it should begin with a short thematic overview. Hyndman, Natland, Jongsma, and Tamaki were to prepare a draft for review by the end of the meeting. The programs will be listed north to south, beginning with the Japan Sea. There will be a table of contents, and a table giving priorities.

The panel spent the next day and a half going over the summaries provided by members for the prospectus.

#### A. Japan Sea

After raising several questions and making some comments, the panel agreed that the summary was too brief, and that items within it required more justification. Ingle, Rangin, and Scott were to assist Tamaki in modifying the summary. Tamaki noted an alternate site (J-38) to investigate obduction in the NE Japan Sea. Information on this site is to be included in the summary. Natland recommended that J-2A, with 1370 m of sediment, be a mini-reentry target; as should be J-1b with 100 m of basement beneath 700m sediment.

The question about drilling in leased areas (Yamato Rise) was raised. Taira thought there would be no problem, but the panel requests that the Japanese ODP organization provide TAMU with information on sites in leased areas, and the protocol for drill in such areas. obtaining permission to

#### B. Nankai

Two programs were considered in parallel, the hydrogeological program of Taira et al and the geotechnical program of Karig et al. The panel agreed that the objectives were so complementary that we should henceforth consider them to be a single program. Two options were considered: 1) a one-leg program in which a separate geotechnical hole would be sacrificed, but which nevertheless would combine as many ideas/approaches of the two proposals as possible; 2) a program of 1 1/2 legs in which the separate geotechnical hole would be drilled and all downhole programs achieved. The decision of whether to use NKT-1 as a geotechnical site, or a redrilled equivalent to DSDP 583, was postponed pending further consultation with proponents (see also item 12 below). Natland and Taylor pointed out that some basement should be cored at NKT-2 (at least 20 m). Hyndman and Taira were to work together on a joint summary incorporating these modifications.

#### C. Zenisu

NEW MCS profiles collected in November will be used to refine the proposal. Both the summary and the proposal need to emphasize what can be achieved with drilling. S. Scott will assist proponents in revision of the summary.

#### D. Bonins

Taylor summarized both Bonins I and II (apart from reference sites). Minor changes in the summary were recommended by panel members.

#### E. Reference Sites

There was no written summary considered, since it depended on panel recommendations on what to include. Natland emphasized the multi-theme objectives of interest to LITHP, CEPAC, SOHP, and DMP as

well as WPAC, and outlined the reasons for a multi-hole program as follows:

1) it is necessary to obtain a normal pelagic section and uppermost basaltic basement east of the Bonins, to tie into the Bonins drilling transect;

2) it is necessary to obtain a similar section on older crust east of the Marianas to tie into the Legs 59 and 60 transect there;

3) it is necessary to obtain a section of the probably widespread Cretaceous volcanogenic sediments derived from one of the large guyots in the vicinity;

4) it is necessary to drill at least 200 m of basement at one of the above three locations to determine whether the zone of oxidative alteration (rich in K, Rb, etc.) is restricted to the top of basement (as it is at e.g. DSDP 5048, Costa Rica Rift, and DSDP 543, east of Guadaloupe, Lesser Antilles).

5) it is necessary to drill shallow sediments and obtain basement samples atop the guyot next to 3) above.

This program can be accomplished in four holes, rather than the five of the Langmuir/Natland proposal. A new mature proposal providing detailed justification for the four holes is in preparation.

The panel questioned the time it would take to do all this, especially after Taylor noted that thematic programs are assigned by PCOM to regions, to drill within the overall time-frames designated to the regional panels. Thus the time for this would come out of both WPAC and CEPAC allotments, depending on some proportion of the time devoted to thematic objectives pertinent to each. He asked whether it is strictly necessary to achieve the deep basement objective here rather than elsewhere, and thought that factors other than proximity to an island arc would be important in selecting the location of such a site. After discussion, the panel consensus was that, although reference sites are important, a major program of the type proposed should not be undertaken if it undermines other objectives which the panel gives higher priority, and specifically that a deep-penetration basement hole should not be drilled on WPAC time. Two votes were taken, one to consider whether to drill one or two shallow holes, or one deep hole (200 m into basement), the second whether to drill one shallow hole or one deep one. The results are listed below (proponents Natland and Taylor did not vote):

<u>Option-1</u>	<u>No. in Favor</u>
1 deep hole	3
1 shallow hole	5
2 shallow holes	2
<u>Option-2</u>	<u>No. in Favor</u>
1 deep hole	3
1 shallow hole	7

On this basis, the panel reduces by one the number of reference holes it recommended at its last meeting. Natland nevertheless was instructed to prepare a summary outlining objectives for all the

drilling, but summarizing the panel's position. Tamaki recommended moving the position of BON-8 to the east, to a location on magnetic anomaly M-13 and away from a fracture zone identified in recent surveys. This was approved by the panel.

#### F. South China Sea Margins

Ingle summarized ocean history and paleoenvironmental objectives for this region, which complement the tectonic objectives of the current proposal. He emphasized that sedimentation occurred at all water levels under oxic conditions, a situation nearly unique in the oceans. Minor changes were suggested for the summary, and clearer figures requested. The question about drilling in leased areas was raised again for this program. Clearances will have to be worked out.

#### G. Banda-Sulu-South China Sea Basin

The summary is well prepared, although minor changes were suggested. Target SCS-7 can be moved to a location with thinner sediment cover, based on new profiler records; a new number is assigned to the new location - SCS-9. Rangin suggested that another hole be drilled nearby, but was soon dissuaded. There was discussion to drill SCS-1 rather than SCS-9. SCS-1 has thicker sediments, would take a week longer, and might not reach basement (a key objective here). It does have the late-Oligocene history of the basin, which SCS-9 does not. SCS-9, however, is on an agreed-upon magnetic anomaly (6). The panel consensus was to keep the summary as it is. Audley-Charles and Gill were assigned to assist with revising the summary, mainly adding a list of priorities for the drilling.

#### H. Sunda Backthrusting

Audley-Charles said that this program is missing a great opportunity to understand arc-continent collisions by not placing survey lines, then drill sites, nearer Timor, which is exceedingly well studied. Taylor explained that U.S. science-in-support-of-drilling does not fund site surveys, but well formulated scientific programs in regions of interest to the drilling community. The surveys are done for scientific reasons that may not be immediately related to ideal drilling requirements. The pending multi-channel program in the area did not have this particular objective, hence cannot be modified to survey nearer Timor. Rangin noted that the summary should state that the observed backthrusting is not necessarily related to collision. He and Audley-Charles were to make modifications to the summary.

#### I. Great Barrier Reef

Dr. Saito, representing SOHP, was in attendance. There appear to be too many sites, and SOHP is asked to prioritize them. Figures in the summary need work. The panel reinstated Site 2 as a deep hole. Audrey Meyer (ODP-TAMU) will be asked to update drilling time estimates.

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The panel considered a new proposal by Sangster et al on Mississippi-Valley-Type (MVT) deposits in relation to the Great Barrier Reef. Natland asked about the likelihood of getting information on actual ore deposition at the Great Barrier Reef. Scott responded that the actual chance of this was small, but that the Great Barrier Reef is the environment of this type of occurrence, and it is necessary to understand the properties of the precursor environment (fluids, porosity, etc.), before ore mineralization in analogs in the geological record can be understood. Taylor asked whether the objectives of the MVT proposal and the prior one on Great Barrier reef can be accommodated in the same holes. Scott replied yes, to some extent. The panel recommends that SOHP consider the proposal and give WPAC its evaluation. A paragraph on this needs to be added to the summary. Scott and Ingle will do this.

#### J. Vanuatu

The summary is in good order, and no major items were discussed. Minor changes were suggested to the text.

#### K. Lau/Tonga

Taylor recommended that henceforth this should be termed the Lau/Tonga program rather than the Lau Basin program, given that forearc sites are a significant component of the plan. Gill summarized the latest recommendations of the working group based on a developing survey data set (some of it ongoing), then considered the LITHP priorities. LITHP did not list LG-7 among its priorities. LG-1 will be moved to the west when new SeaBeam, 3.5 kHz, and dredging data from a German survey of von Stackelburg's arrive. The working group still recommends re-entry at both LG-1 and Valu-Fa (LG-4), and believes that the computations based on drilling, logging, and transit times will allow us to do this. In any case, the drilling proposed for LG-4 is dependent on still-pending survey results, thus it is premature to decide whether to drill one or two re-entry sites.

Rangin requested a summary cross section, and other comments, primarily about the figures, were raised. Hawkins and Gill are to revise the figures. Hawkins (LITHP liaison) was asked to convey to LITHP that LG-7 needs to be re-instated as a necessary contrast to LG-1 and LG-2.

Gill noted that Dave Scholl and colleagues at USGS favor a second hole on the Tongan forearc, to complement LG-6. The hole they suggest would wash down through sediments (by then already cored at LG-6) to explore the diversity of forearc basement. Taylor noted that there are obvious exposures of basement along the same MCS line that crosses LG-6, and that these could be dredged. On this basis, the panel did not approve drilling of a second hole in the forearc.

The panel priorities are thus LG-2, LG-7, LG-3, and LG-6 (a single site), which should take about half a leg. The remainder of the leg is to be devoted to young crustal drilling, and the decision about whether to drill at LG-1 alone or at both LG-1 and LG-4 depends

on acquisition of site survey information, hence need not be made now. There should be no bare-rock site.

ODP-TAMU is asked to provide tools for enhanced coring capability (faster drilling) in basement (to get the most out of two weeks drilling at each re-entry site, assuming that both are done).

#### 6. DATA BANK

Carl Brenner (LDGO ODP Data Bank) has sent a letter to Taylor requesting proponents to get data into the data bank at Lamont. The Site Survey Panel will shortly begin to look at them. The data submitted need to be adequate to justify each site scientifically and from the perspective of safety. Entire surveys need not be submitted. The next SSP meeting is June 30, thus data have to be submitted no later than April.

Please send contributions to:

Carl Brenner  
ODP Data Bank  
Lamont-Doherty Geological Observatory  
Palisades, NY 10964  
USA

#### 7. PANEL ROTATION

Several non-U.S. rotations appear about to occur, therefore the U.S. contingent should stay on, to provide panel continuity. Thus Taylor has asked Ingle to continue with the panel for at least two more meetings. Ingle consented to this.

#### 8. DEFINING AND SCHEDULING OF LEGS

For the purposes of planning, programs are listed below together with estimates of the time in days needed to accomplish each one, based on computations of Audrey Meyer (see minutes of the December meeting).

<u>Program</u>	<u>Drilling plus Logging</u>	<u>Transit</u>	<u>Total</u>
Banda (1-3)	33	7	40
(1) Sulu (4,5) and (2) S. China Sea basin	(1)27+(2)15	7	49
Bonin I (1,2,5A,5B)	51	4	55
Bonin II (6,7,8)	44	7	51
Lau/Tonga (2,3,4,7,1/4)	53	3	56**
Vanuatu	71	6	77
Japan Sea	71	9	80
Nankai			56**
Nankai Geotech			24
Great Barrier Reef (1-5,9,10,12)			56**
Sunda			56**
S. China Sea Margins			56**
Zenisu			28**

\*\* precise legs or half legs

Preliminary considerations were 1) that the program on the ship's coming out of the Indian Ocean should begin with some portion of the Banda or Sunda drilling; 2) that both of those programs will be too long to combine in a single leg with a final Argo Abyssal Plain program in the Indian Ocean; 3) that some longer programs will have to be divided between two legs; and 4) that neither Nankai nor Bonins I should be drilled during typhoon season (August-September-October).

The Vanuatu program can be broken down scientifically into two leg portions, which can be differently staffed:

1) Sites DEZ 1-5 - 28.2 days coring, 8.9 days logging, 2 days transit, total 39 days, emphasis collision processes;

2) Sites BAT 2 and IAB 1 and 2 - 27 days coring, 6.4 days logging, 4 days transit, total 38 days, emphasis backarc processes.

Similarly, the Japan Sea Program can be divided scientifically into two leg portions, assuming that both J-1b and J-2A are re-entry sites. The first portion then combines J-1b (re-entry), J-1d, J-1e and J-3a and is 54 days long. These sites emphasize basin development and tectonic history. The second portion combines J-2a ((re-entry) and JS-2 and is 30 days long, with its emphasis paleoceanography and metallogeny in a backarc rift.

The strategy adopted in defining the schedule through 1989 was to get the "core" programs suggested by PCOM done early, leaving the greatest flexibility and time for planning the remainder of the drilling. The start date for the drilling is taken to be October 1, 1988, give or take one month. The tentative schedule is presented below.

<u>Months</u>	<u>Port (start)</u>	<u>Program</u>	<u>Days</u>
Oct-Nov 88	Jakarta / Surabaya	Banda or Sunda	(40+5)
Nov-Jan 89	Ujung-Padang	Sunda or Banda	(56+5)
Jan-Mar	Ujung-Padang	Sulu-SCS Basin	(49+5)
Mar	Manila	Drydock & Transit to Japan	
April-May	Yokohama	Bonin I	(55+5)
June-July	Yokohama	Nankai	(56+5)
Aug-Sept	Hakodate	Japan Sea 1	(54+5)
Oct	Niigata	Japan Sea 2	(30+5)
Nov-Dec	Yokohama	Bonin II	(51+5)
Jan 1990	Guam		

The generalized months given above were based on the October 1 start date, and time estimates from the previous table plus 5 port days, given in the Days column (transits were calculated from the ports listed here). The Nankai/Bonin I legs are interchangeable; Bonin I was scheduled first to allow more time to develop geotechnical tools for Nankai.

Note that Japan Sea legs 1 and 2 are explicitly set to be done during typhoon season, and cannot be shifted in this

schedule. The ship must be on the west rather than the east side of Japan at this time (there is much smaller risk of typhoons in the Japan Sea).

In 1990, the ship may proceed east, for some CEPAC drilling, before proceeding south to Great Barrier Reef (Noumea), Vanuatu I (Port Vila), Vanuatu II (Suva) and Lau-Tonga in that order, ending in Samoa.

#### 9. REVISION OF FORWARD TO PROSPECTUS

The panel reviewed the draft of the forward to the prospectus prepared by Hyndman, Natland, Jongsma, and Tamaki. Some panel members felt that too many thematic categories (9) had been listed. An alternative of four categories was suggested: 1) island arcs and forearcs; 2) mountain building/prisms; 3) backarc and marginal basins; and 4) sediments and ocean-history objectives. Taylor will collate all suggestions, and resolve the problem of 4 versus 9 categories.

#### 10. NINE VERSUS ELEVEN LEGS

The number of legs totaled for 9 programs (counting Japan Sea 1 and 2 as 1 1/2, Vanuatu 1 and 2 as 1 1/2, and all others as 1) now equals 11; PCOM asked precisely for this (using total elapsed days, divided by 56, the total is 10.4). In a separate letter to Taylor, however, PCOM Chair Nick Pisiias asked that options of both 9 and 11 legs be planned. This would require a new vote on priorities. Without additional thematic input, and a full program review, and with new survey information coming soon, the panel chose to defer voting on priorities at this meeting. The panel stands by the priorities established at its last meeting, and prefers that if PCOM insists on a program shorter than the 11 legs it requested, that programs be subtracted rather than all constricted into a tighter schedule. The Panel reminds PCOM that there are 12 programs with sound scientific justification, and that their 9-program cut-off (for planning purposes) is arbitrary. Additional presentations at this meeting have strengthened some of the 3 programs that are below this cut-off, and our past-meeting's ranking of them differs very little from some of the programs above the 9-leg cut-off. We urge consideration of the full 12 program campaign for the western Pacific, which we estimate will take 13-14 legs (to include Zenisu, the Nankai Geotechnical leg, South China Sea margins, and more reference sites).

#### 11. ITEMS FOR ENGINEERING DEVELOPMENT

Enhanced coring capabilities in young crust (LG-1; LG-4)	Aug. 1990
Recovery of alternating hard and soft sediments (everywhere)	Oct. 1998 or sooner
Special tools for phys. props.	

pore fluids (Sunda, Nankai and  
Nankai Geotechnical, Great Barrier  
Reef; Vanuatu)

Nov. 1988-  
June 1989

Very deep holes (none >1500 m  
penetration)

no requirement

## 12. POSSIBLE NANKAI-ZENISU-GEOTECHNICAL WORKING GROUP

Taylor suggested that a more integrated plan for the Nankai-Zenisu-Geotechnical drilling could be prepared by a working group. A workshop dealing with some aspects of this has already occurred, and this will be a major aspect of the pending COSOD II conference. The panel predicts the need for such a working group, but defers making a recommendation until after COSOD II and additional site-survey workups are completed.

## 13. LIST OF CRUISES FORTHCOMING IN THE WESTERN PACIFIC

Taylor requested that panel members provide him with a list of cruises that will be taking place anywhere in the western Pacific region in the next year or so. This list is attached as an Appendix.

## 14. NEXT MEETING

The Panel leaves it to PCOM to decide if it should have three meetings this year (based on its recommendation that only two a year be held under normal circumstances). If so, the meetings now planned for June and November will be held. Otherwise, just the November meeting will be held in London, prior to the annual PCOM meeting.

## 15. THANKS TO HOSTS OF THIS MEETING

The panel wished to record its heartfelt thanks to the hosts of this meeting, Kensaru Tamaki and Asahiko Taira for the superlative support and help they and their staff provided, and their generous hospitality. One member noted that he expected never again to be served fish quite so fresh at a panel meeting.

## 16. ADJOURNMENT

Chairman Brian adjourned the meeting precisely at 3:00 p.m. on 4 March, 1987. Several members departed for a field trip to the Izu collision zone which (it can be recorded) was instructive and enjoyed by all.

WPAC CRUISES FUNDED

<u>COUNTRY</u>	<u>SHIP</u>	<u>CO-CHIEF</u>	<u>AREA</u>	<u>TIME (87)</u>	<u>PROGRAM</u>
USA	FRED MOORE	TAYLOR	BONINS	06/14 - 07/08	MCS
		SHIPLEY	NANKAI	07/13 - 07/28	MCS-ESP
		SILVER	SUNDA/BANDA	09/15 - 10/19	MCS/SCS
	ALVIN/AII	HUSSONG	MARIANA DIAPIRS	05/15 - 06/01	DIVES
		TAYLOR	BONIN RIFTS	07/14 - 08/01	DIVES, SEABEAM
FRANCE	JEAN CHARCOT	FOUCHET	LAU (VALU FA)	2 DAYS IN TRANSIT	SEABEAM
		DANIEL	VANUATU	04/11 - 04/27	MCS
	CORIOLIS	RECY	N. FIJI B./VANUATU	08/01 - 09/03	OBS-SCS
GERMANY	SONNE	V. STACKELBERG	LAU	FEB. & MAR.	HYDROTHERMAL
		HINZ	SULU-S. CHINA	APR. - JUL.	MCS & MGG
		DEGENS	CHINA MARGIN	AUG.	M. GEOL.
JAPAN	HAKUHO MARU	KOBAYASHI	OGASAWARA-W. PAC.	07/01 - 08/05	MGG
	TANSEI MARU	TAIRA	NANKAI	07/13 - 07/28	MCS-ESP
	HAKUREI MARU	YUASA	BONIN ARC/RIFTS	APRIL	HYDROTHERMAL
U.K.	DARWIN	MASSON	E. INDONESIA	FEB. - MAR. '88	GLORIA & MGG
		CRONAN*	LAU	MID-88	

\*A decision on this and numerous other proposals for U.K. work in WPAC will be made by NERC on April 8.