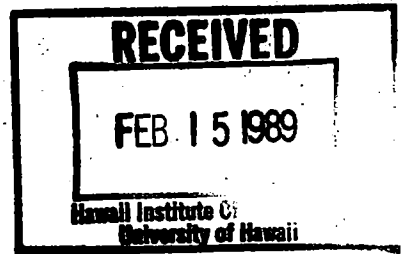


MEETING OF JOIDES DOWNHOLE MEASUREMENTS PANEL

Hawaii Institute of Geophysics
University of Hawaii
Honolulu

16 - 18 January 1989



89-071

EXECUTIVE SUMMARY

1. This meeting was scheduled over three days in an attempt to bring the Panel's business programme up to date, following the dedication of much of the previous DMP meeting to the Nankai issue.
2. In response to the successful French deployment of the NADIA wireline re-entry system, DMP reiterates its encouragement for the development of scientific programmes that use re-entry technology. These initiatives provide exciting new possibilities for downhole measurements. Panel strongly supports the French proposals to use the NADIA re-entry system in ODP and DSDP holes. There are no scientific reasons why these holes should not be made available.
3. Modified guidelines for the monitoring of third party tools have been drafted in response to PCOM request.
[DMP Recommendation 89/1]
4. The drillstring packer is regarded as a mature tool which is appropriate for transfer from University of Miami to ODP/TAMU.
5. Of those tools currently under development, the slimhole formation microscanner has been land tested and is still scheduled for initial deployment during Leg 126. The Canadian lateral stress tool is reportedly on schedule: this is programmed for the Nankai leg. The wireline packer has encountered motor problems: TAM, Inc., are estimating that an improved motor will be available by April with an evens chance that the wireline packer will be ready for Leg 126. The geoprops probe is temporarily on hold because TAM, Inc., do not have the resources to handle two tool developments at the same time.
6. In view of development delays within TAM, Inc., the Nankai Leg be deferred two months to improve the chances of both the wireline packer and the geoprops probe being operational and adequately tested.
[DMP Recommendation 89/2]
7. During the Nankai Leg Site NKT2 should be drilled first to maximise the chances of an adequately studied hole. Two additional days should be added to the abridged programme of downhole measurements to allow time for the deployment of the side entry sub. The programme of downhole measurements at NKT2 should not be curtailed solely in order to allow time for the drilling of NKT1.
[DMP Recommendation 89/3]

8. Panel re-affirms its support for the geoelectrical experiment at Site J1b, Leg 128, which is entirely in accord with the Panel philosophy of integrating data at different scales of measurement. The streamlining of the experiment to 1.5 days allows Leg 128 to be shortened by one day, thereby resolving the scheduling problem with this leg.

9. Modified logging programmes have been recommended for:

Leg 130; BON 8, MAR 4 [DMP Recommendation 89/4]

Leg 131; all holes [DMP Recommendation 89/5]

Leg 133; DEZ 2, DEZ 4 [DMP Recommendation 89/6]

In addition, Panel urged a re-think of the importance of fluid sampling to the scientific objectives of Leg 132; if perceived to be important, the wireline packer should be scheduled for deployment.

10. Panel recommended reciprocal guest arrangements between DMP and detailed planning groups. [DMP Recommendation 89/7]

11. Panel sought to fill their liaison slot to SMP with any one of four nominees (Carson, Gieskes, Karig, Wilkens) according to the topics scheduled for discussion. PCOM is invited to select an official liaison who can delegate to the other three, if appropriate.

12. A workshop on Shipboard Logging Practices, to which all former JOIDES logging scientists are to be invited, is scheduled for 13-14 April 1989 in Washington DC. Co-convenors are Worthington and Wilkens.

13. In view of the moves towards slimhole drilling in hot environments, Panel recommended that a proposal be formulated for a workshop to investigate the implications for logging. Target date is July-September 1989. Co-convenors to be Worthington and Lysne. [DMP Recommendation 89/8]

14. Next DMP meetings are scheduled for:

22-23 May 1989	Scripps	(Gieskes)
11-12 September 1989	FRG	(Villinger)

Paul F Worthington
31 January 1989

MEETING OF JOIDES DOWNHOLE MEASUREMENTS PANEL

Hawaii Institute of Geophysics
University of Hawaii
Honolulu

16 - 18 January 1989

MINUTES

Present

Chairman: P F Worthington (UK)

Members: B Carson (USA)
J Gieskes (USA)
E Howell (USA)
D Karig (USA)
P Lysne (USA)
R Wilkens (USA)
N Balling (ESF)
R Hyndman (Canada/Australia)
H Kinoshita (Japan)
J-P Pozzi (France)
H Villinger (FRG)

Liaisons: K Becker (LITHP)
X Golovchenko (LDGO)
R Moberly (PCOM)
L d'Ozouville (JOIDES)

Guests: G Henderson (Schlumberger)
M Hutchinson (Conoco)
B Taylor (WPAC) *

Apologies: C Sondergeld (USA)
R Morin (USA)
M Langseth (PCOM)
A Sutherland (NSF)

* present for agenda items 14 - 15 only

1. Welcome and Introductory Remarks

The meeting was called to order at 8.30 am. The Chairman welcomed DMP Members, Liaisons and Guests, especially those attending for the first time as members (Gieskes, Lysne, Balling) and guests (Henderson, Hutchinson).

Review of Agenda and Revisions

Additional agenda items were proposed in respect of:

(i) Nomination of liaison to Shipboard Measurements Panel
[WORTHINGTON]
- AGENDA ITEM 20

(ii) Workshop on high-temperature slimhole tools [LYSNE]
- AGENDA ITEM 21

(iii) Third party tools : drill-string straddle packer:
conversion from University of Miami to ODP [BECKER]
- AGENDA ITEM 22

Date and format of next meetings will be discussed as
AGENDA ITEM 23.

With these modifications, the pre-circulated agenda was adopted as a working document for the meeting.

2. Minutes of Previous DMP Meeting LDGO. 6 - 7 October 1988

Modification:

p16, final paragraph

First sentence to read

"The Chairman thanked Members, Liaisons and Guests for their contribution to the meeting, the Lamont-Doherty Geological Observatory for their kind hospitality, and Dr R N Anderson for his gracious hosting."

With this modification the minutes were adopted: the Chairman signed the master copy for ODP records.

3. Chairman's Annual Review

For the benefit of new Panel members, and as a refresher to established members, the Chairman reviewed the role of DMP within ODP in terms of the Panel's advisory role, reporting relationships and liaison with the primary contractors.

The Chairman then presented a review of DMP's current status as outlined at the recent PCOM meeting.

The Panel has a complement of 15. Three DMP meetings were held during 1988, Miami (January), College Station (June) and Palisades (October). Three meetings are planned for 1989, Honolulu (January), Scripps (May) and FRG (September).

Recently circulated minutes of another JOIDES committee contained the view that if you have continuous core recovery you don't need logs. In rebuttal of this view, it was reiterated that logs provide in-situ characterization, sample volumes that are two orders of magnitude greater than core samples, allow a natural grossing up of parameters, and permit measurements that cannot be undertaken easily in the laboratory (eg Stoneley waves).

Of the 22 DMP recommendations forwarded to PCOM over the twelve-month period Nov 1987 - Oct 1988, only one has not been accepted (Nankai Working Group).

DMP has identified the following thematic thrusts which it wishes to support (Panel operates 70% in service mode and 30% in thematic mode):

- composition and structure of crust
- hydrogeological phenomena
- lithospheric stress on a global scale
- sediment cyclicity
- monitoring of modern geological processes

These themes will determine the input of non-standard downhole measurements in future ODP programmes.

A major stand has been taken by DMP on the integration of data measured at different scales. Two new areas of data acquisition are Measurement-while-drilling and Interwell (tomography) measurements. These will be pursued in 1989.

The scientific value of logging continues to be promoted. The "white paper" originally planned for COSOD II report, but greatly curtailed by page limitations, has been accepted for publication by the journal Basin Research. Logging schools and workshops continue to be favourably received. A paper on the scientific benefits of logging has been presented by DMP Chairman as part of an AGU Union Session. Efforts need to be continued to inform Co-chiefs of the objectives of logging programmes. Post cruise access to logging data and interpretation facilities is being enhanced.

The major new initiative during 1989 will be directed at improving log data quality. Important elements of this initiative are:

- monitoring of third party tools
- tool maintenance by Schlumberger
- logging through pipe
- request for a one-off meeting of JOIDES logging scientists and contractors (April 1989)
- continue to improve tool calibration

Two causes for concern were exposed. The first relates to the Diamond Coring System which is currently designed for a 4-inch hole. The adoption of this technique with this hole diameter would preclude the following logging tools:

- full waveform sonic *
- VSP
- wireline packer
- lithodensity tool *
- borehole gravimeter
- magnetometer
- induction tool *
- formation microscanner **
- thermal/epithermal neutron porosity *

Tools marked (*) form part of the standard logging suite. The microscanner (**) is intended to become a standard tool.

The potential loss of such a bank of information would seriously detract from the downhole measurements effort.

The second cause for concern is the deferral by BCOM of the acquisition of the digital borehole televiewer(s) to FY 92. The existing (analogue) televiewers cannot support the downhole-measurement programme until 1992. The digital BHTV is the next tool in line for purchase (no purchases are scheduled for FY 90 and FY 91). The WPAC programme which is about to commence is largely tectonics-driven. To support this drive effectively we need to advance the acquisition date for new BHTVs. A possibility might be to open discussions with a potential supplier, WBK of Bochum, FRG.

In summary, 1987 saw a hard sell of logging capability to counter prejudice; 1988 has concentrated on promulgating the scientific benefits of logging; 1989 is to be strongly directed at improving data quality, an effort which is likely to continue well into 1990.

4. PCOM Report

Moberly reported on the PCOM meeting held at the University of Miami during the period 28 November - 2 December 1988. PCOM responses to DMP Recommendations 88/16 - 88/21 were as follows:

<u>Rec. No.</u>	<u>Description</u>	<u>PCOM Response</u>
88/16	Leg 126: withdraw IP; test Geoprops.	Accepted
88/17	Leg 129: expand logging programme to 31.3 days	Not accepted

88/18	Leg 129: schedule two separate legs for Nankai	Not accepted: but a second leg may be scheduled if first leg is successful
88/19	Leg 129: abridged logging programme of 20.7 days	Accepted, with scope for limited extension of logging programme
88/20	Log quality workshop involving former JOIDES logging scientists	Endorsed
88/21	This DMP meeting: date and venue	Accepted

In addition, PCOM responded to the DMP concerns about the status of borehole televiewers in ODP. DMP had concurred that the acquisition of the digital BHTV should be advanced from the currently scheduled date of FY92. PCOM urged that the acquisition of two digital BHTV tools be advanced. This matter is to be referred to the next BCOM meeting. A point to note is that WBK of Bochum, FRG, a digital BHTV developer, is reportedly changing its policy to leasing tools rather than selling them.

5. Liaison Reports

(i) Lithosphere Panel

Becker reported that LITHP has not met since last DMP meeting. However, PCOM has made some decisions on LITHP matters.

- (a) Geochemical reference sites : two sites in old crust, we will need to examine the logging requirements for effective characterization.
- (b) Third engineering leg should include cleaning out 504B plus visit to EPR to set guidebases and test the feasibility of drilling through crust there. This focusses the question of high temperature logging. Current scheduling for third engineering leg is end 1990.
- (c) Drilling on sedimented ridges: EPR working group will continue as a sedimented ridges detailed planning group. This again emphasizes the need to address high-temperature logging problems.

(ii) TEDCOM

The Chairman reported on aspects of the TEDCOM meeting held in FRG on 28 September 1988. The principal thrust is towards the development of the Diamond Coring System (DCS) which, with holes of 4-inches diameter, would impact adversely on the logging

activities of ODP. The testing of DCS is seen by ODP/TAMU as the principal objective of the Engineering Leg 124E. If adopted subsequently, the DCS would preclude many of the currently deployed logging tools (see Annexure II to Minutes of DMP meeting on 9-10 June 1988).

Unfortunately, there is still a view in TEDCOM that scientific logging can be effectively undertaken in four-inch holes with existing equipment. Further, one TEDCOM member went on record as saying that there was "no point in logging holes that had been continuously cored". These views, which are contrary to established thinking, will be corrected at the next TEDCOM meeting at College Station on 27-28 April 1989. [ACTION : WORTHINGTON]

(iii) NSF

No report.

(iv) KTB

Villinger reported that the pilot hole, which has been drilled over the past 16 months, has now reached a depth of 3.5 km. The first meeting of the Borehole Research Group at which interpretations will be presented is scheduled for next week.

6. National Reports

(i) Canada/Australia

Hyndman reported that a new consortium has been formed with Australia. A logging school is scheduled for Montreal in May 1989. Canada is a strong proponent of sedimented ridge crest drilling with its high temperature implications.

(ii) France

Pozzi outlined two proposals. The first is to quantify by in-situ measurement the mechanism of heat transfer associated with hydrothermal activity as a function of the age of the crust. This would involve re-entry of holes 395A, 333A, 417. Decision by IFREMER to use NADIA system is expected in April. Thereafter, endorsement to use ODP holes will be sought through DMP. This programme is planned for 1990. Two of these holes contain junk which will restrict depth rather than preclude the experiment.

Second proposal is to install a seismometer in an ODP hole using re-entry by submersible. A three-week test is proposed at site 396B. 396B was re-entered down to 300m in July 1988. Decision expected April/July 1989.

Pozzi showed the Panel a video of the recent successful deployment of the NADIA wireline re-entry system at hole 396B.

DMP Consensus

Panel encourages the development of scientific programmes for the use of re-entry technology. These initiatives provide exciting new possibilities for downhole measurements. Panel strongly supports the French proposals to utilize the NADIA re-entry system in ODP and DSDP holes. There are no scientific reasons why these holes should not be made available.

(iii) UK

The Chairman reported that a two-day logging school is scheduled for September 1989. This will be the second ODP school to be held in the UK. The work at the University of Nottingham on the interpretation of geochemical logs from hole 504B is continuing and certain aspects are approaching the publication stage.

(iv) Japan

Kinoshita reviewed the three experiments being undertaken in 1989. These are:

- (a) Nankai Trough temperature experiment
- (b) Oblique electrical resistivity experiment (see Item 14 (ii))
- (c) Ocean-bottom seismometer deployment in the Japan Sea

A new submersible has been built with diving capability to 6500m.

(v) FRG

A meeting of the FRG National ODP Committee is scheduled for 8-10 March 1989.

7. Monitoring of Third Party Tools

(i) Guidelines

PCOM have sought clarification of certain points in the Panel's initial draft on suggested procedures for monitoring third party tools, i.e. those tools being developed or provided by organisations outside the ODP contractor framework.

DMP Recommendation 89/1

"The following guidelines be adopted for the monitoring of third party tools.

There are two types of third party tools:

Development Tools (instruments under development);
Mature Tools (established tools).

A For a tool to be considered an ODP Development Tool, and thereby scheduled for deployment, several criteria should be satisfied.

- (a) There must be an identified principal investigator.
- (b) LDGO (for wireline tools) or TAMU (for all others) should formulate a development plan in conjunction with the principal investigator, and then inform DMP of this plan.
- (c) The development plan should:
 - indicate the acceptance, desirability, financial and technical feasibility, and the usefulness of the measurements;
 - identify development milestones;
 - make provision for initial testing on land;
 - satisfy safety considerations;
 - specify shipboard requirements such as the data processing necessary to make the information accessible on board ship, any special facilities (emphasising areas where the tool is not compatible with existing hardware/software), and appropriate technical support;
 - contain a statement of intent that the tool would be available for post-development deployment in ODP.

If DMP endorse the development plan, and subject to PCOM approval, the Panel will appoint a coordinator to monitor on behalf of the Panel the tool's progress through the development plan. The Panel monitor will receive reports from the Principal Investigator on request and will present these to DMP. DMP will review progress at regular intervals and will evaluate tool performance after each deployment. Day-to-day monitoring will be the responsibility of TAMU and LDGO. A tool cannot be regarded as an ODP Development Tool, and therefore cannot be scheduled for future legs, if it has not undergone the above procedure. All tools that are currently scheduled must have a development plan formulated as soon as possible. Once a tool has been accepted by DMP as a Development Tool, the Principal Investigator will be required to co-sign the development plan with TAMU or LDGO as appropriate as a visible accedence to the provisions of the plan. A Development Tool cannot be deployed on an ODP leg unless TAMU/LDGO and DMP are fully satisfied that the terms of the development plan have been fully met.

B For an ODP Development Tool to undergo the transition to an ODP Mature Tool, i.e. an established tool operated by TAMU or LDGO, there must be DMP endorsement. This endorsement will be given after Panel review of a proposal prepared by TAMU and/or LDGO and submitted to DMP. This proposal must satisfy DMP on the following counts:

- cost of routine operations including shipboard data processing
- requirements for routine operations/processing
- availability of spare components
- facilities for maintenance
- existence of an operating/maintenance manual
- safety considerations
- long-term usefulness of data
- established track record both in land tests and shipboard deployment.

Where several Development Tools are competing for the same Mature Tool slot, DMP will require the appropriate contractor to evaluate all the tools and submit their multiple-tool evaluations to DMP for Panel consideration.

C Where an established third party tool is loaned for use in ODP, this tool will have to satisfy the criteria in paragraph B in order to be accepted as the technical equivalent of an ODP Mature Tool. Tools which do not satisfy these criteria cannot be programmed for future ODP legs.

D Last-minute requests to include on unproven third party tool within an ODP leg will not be accepted."

(ii) Current third party tools

The logging contractor is asked to prepare an updated list of third party tools before the next Panel meeting,

[ACTION : LDGO LIAISON]

8. Monitor Reports

(i) Wireline Packer

Howell reported that the packer part of the system now works on the basis of laboratory tests, i.e. expands 3.5 to 10 inches and reverts to just under 4 inches. Unfortunately it took about one hour to inflate the packers. Motors are deemed inadequate. Improved motor is being sought by TAM with Amoco assistance. Measurements (Eh, pH, specific ions, etc.,) all check out. Next field test, with an oversize motor, is scheduled for February. If this works, a 3.5 inch improved motor should reportedly be available by April. With this optimistic schedule, the wireline packer might be ready for Leg 126.

(ii) Geoprops Probe

Karig reported that prototype boards were all in the computer by December. Sensors have largely been tested satisfactorily. Delays are occurring because of TAM's inability to dedicate resources to wireline packer as well as geoprops probe. TAM is provisionally scheduled to recommence work on the geoprops probe in February. Geoprops probe will not now be ready for testing during Leg 126. TAM have not yet offered a bid for the final phase of geoprops probe development. There is no absolute guarantee that the 150 000 budgeted will be sufficient.

(iii) Lateral Stress Tool (LAST)

Hyndman reported that as far as he is aware, the LAST development is on schedule.

(iv) Slimhole FMS

Golovchenko reported that the slimhole FMS was field tested back-to-back with standard FMS in the KTB hole. Results compared well. FMS is still scheduled for initial deployment during Leg 126. Software will be in place during Leg 125 (permits allowing).

9. Logging Contractor's Report

Golovchenko reported on logging operations since the last DMP meeting.

Leg 123

Hole 765D - Argo Abyssal Plain

Three standard Schlumberger runs, BHTV, VSP. Packer experiment failed. BHTV revealed east-west breakouts.

Hole 766A - Exmouth Plateau

Three standard Schlumberger runs.

Leg 124

Hole 767B - Celebes Sea

Seismic stratigraphy and geochemistry

(lithoporosity and BHTV proposed (DMP October 1988 Minutes) but not run)

Hole 768C - Sulu Sea

Seismic stratigraphy and geochemistry. Tool sticking problems were encountered.

Hole 770C - Sulu Sea

Three standard Schlumberger runs, BHTV. This comprised the first logging in crust formed by back-arc spreading.

The current engineering Leg (124E) has a site dedicated to logging. A hole will be drilled for 1.5 days with no coring and tests will be made of the wireline heave compensator, the new Schlumberger tool combinations, and the side entry sub (SES). Design changes are planned for the SES to reduce the set-up time.

LDGO have recruited a sediment geochemist to relate XRF data from core to the elemental yields predicted by the Geochemical Logging Tool. The GLT is run without a boron sleeve (which reduces the borehole effect) and core can be used to calibrate the potentially degraded log signal. Tool slimming is being evaluated.

10. Logging Subcontractor's Report

Henderson (Manager, Houston Offshore District, Schlumberger) gave an overview of log data acquisition.

(i) Organisation

Schlumberger's Houston Offshore District is subcontracted by LDGO, the ODP logging contractor. The Houston Offshore District is geographically close to ODP/TAMU and to various Schlumberger supporting services.

(ii) Shipboard Tools

Schlumberger tools currently on board ship are:

DIT-E (2 tools), SDT (1), LSS (2), LDT-C (1), HLDT-C (1), TCC-B (2), GPIT (1), NGT/AECT (3), CNT-G (2), GST-A (2), WST (2), HRT (2), DLL (2), MCD (2)

A tool nomenclature is appended as Annexure I.

The equipment is located immediately behind the stacks: this is regarded as the best possible shipboard location. Tools are stored horizontally. They are subject to continuous vibration.

Certain tools have had to be modified for ODP use, e.g. the LDT (but no departure from oil-industry usage for the recently introduced HLDT), RFT and FMS. Degradation of data due to non-standard use can be expected through the absence of a boron sleeve on the GST and through the eccentricing of sonic tools which can induce cycle skipping.

Fishing equipment needs to be upgraded. However, this would alleviate the insurance problem only if the track record of lost tools was improved.

(iii) Standard Tool Combinations

The three standard strings in use hitherto are:

- (1) DIT-E/SDT/NGT/MCD/TCC
- (2) GST/AACT/NGT/CNT-G/GPIT/TCC
- (3) LDT-C/CNT-G/NGT/TCC

The three proposed tool strings incorporating the slimhole FMS are:

- (1) DIT-E/LSS/HLDT/CNT-G/NGT/TCC
- (2) GST/AACT/NGT/CNT-G/GPIT/TCC
- (3) FMS/NGT/TCC

The reversion to the long-spaced sonic log (LSS) reflects the fact that the sonic digital tool (SDT) does not ship very well and has proved unreliable. The mechanical caliper device (MCD) has had difficulties in re-entering the drill pipe.

(iv) Tool Maintenance

There are three levels of maintenance in routine Schlumberger operations.

- (1) Basic maintenance before and after tool deployment:
 - clean, grease, ensure good seals
 - ensure good status of failure-prone subassemblies (e.g. insulation/continuity of wiring, fluid levels in units, CSU check)
 - exercise the equipment in a simulated operation.
- (2) Periodic maintenance which extends the basic procedures to include more subassemblies and involves the master calibration of tools.
- (3) Q - check: in-depth maintenance. This is the most difficult to provide for ODP.

There are occasions when, due to the remote location from the Houston base, tools are not maintained to Gulf Coast standards. (There is no support base in Japan so throughout the WPAC programme technical support would continue to come from Houston.) These departures do not result in tools being run when they shouldn't be, nor do they result in an inordinate number of failures.

Up to Leg 124 Schlumberger had provided 405 services involving 85 trips in hole, with 18 lost rig time failures (LTF), giving 22.5 services per LTF. This compares with a figure of 31 services/LTF in the Houston Offshore District as a whole.

The following is a breakdown of equipment failures up to Leg 124:

GST	6
Cable/Head	3
Swivel head adaptor	2
AMS	2
Sonic cartridge	2
Software	2
DIT-E	1

The design of the GST will not permit any improvement in this performance. The swivel-head adaptor and AMS problems have been eliminated, as has one software problem. This brings the projected performance to 31 services/LTF which is comparable to industry. Problems are anticipated with the slimhole FMS for there will only be two tools available on board ship: LDGO generally regards three tools as the minimum necessary to guarantee continuous availability.

(v) Calibration

Standard tool calibrations are effected at the primary (1), secondary (2) and field (3) levels. Examples are:

DIT-E	-	(1) controlled loop in zero conductivity environment
		(2) test loop in air
		(3) automatic calibration
LSS	-	(1) customer acceptance test well
		(2) sonic test tube
		(3) drillpipe
CNT-G	-	(1) limestone blocks
		(2) 18 porosity-unit calibration tanks
		(3) jig
LDT	-	(1) limestone blocks
		(2) aluminium block
		(3) internal source

Calibration is effected primarily in sedimentary rocks: there is a need for controlled calibration in igneous rocks. In particular, we need to investigate the pedigree of the transformation from limestone to basalts. To date, very little hard-rock calibration of logging tools has been made.

(iv) Data Accuracy and Precision

Accuracy is the degree of comparison to a known value: precision is the repeatability of log response. The following values were quoted for the ideal case of thick beds, water-filled rocks and borehole, 8-inch diameter well, and no borehole rugosity.

		Accuracy	Precision
DIT-E		2%	2%
CNT-G	0 p.u.	0.33 p.u.	similar (to accuracy)
	15 p.u.	1 p.u.	"
	30 p.u.	2 p.u.	"
NGT	K	0.5% conc	"
	U	1 ppm	"
	Th	2 ppm	"
LDT*		0.001 g cm ⁻³	0.01 g cm ⁻³
SDT		-	3%
LSS		-	5%
GST		varied, function of element type	

* LDT precision quoted for density range 1.4 - 3.0 g cm⁻³ only.

All raw data can be read by LDGO through the Schlumberger Work Station. Data should be fully archived so that future generations can re-interpret in the light of advancing knowledge. The question was raised about tool details: should these be archived so that tool differences might be taken into account over a period of time? Schlumberger does not release tool drawings but the possibility of some alternative form of information release could be pursued.

(vii) Cable Communication System

In its present form this provides for a high data rate with high reliability, it is compatible with all tools and is controllable by the Cyber Service Unit (CSU), and allows more flexibility in tool combinations.

The transmission characteristics of the cable are deemed satisfactory: earlier concerns about the physical integrity of the cable have now been resolved. However, Schlumberger do have some misgivings concerning the cable itself. The Rochester cable is not one that is used in Schlumberger who now make their own. A key problem is that neither LDGO nor Schlumberger have influence over the pulling of the cable: TAMU would never pull over half the breakage strength. We need weak (quick-break) joints to reduce

the risk of a cable break leaving much cable in the hole. Schlumberger have had weak joints (up to 10 000 lb) built specially: these allow operations at up to 80% of this weight. Schlumberger consider that the use of the SES is detrimental to the cable and can weaken it. A spare cable is carried on board ship but there are no facilities for changing this during a leg. Cable change has to be undertaken in port. A high temperature cable will need to be put on board ship for future legs.

11. Disc Storage of Core Barrel Data

Agenda Item deferred to next DMP meeting.

12. Workshop on Shipboard Logging Practices

The Chairman reported that this workshop had been recommended by DMP (Rec. No. 88/20) and was subsequently endorsed by PCOM. JOI have now agreed to support such a workshop through their USSAC arm. The principal thrust is to evaluate the impact of shipboard logging practices on log data quality by identifying problematic areas and recommending ways in which these might be improved. It is intended that participants will be all the previous JOIDES logging scientists plus representatives from Schlumberger (a logging engineer with ODP experience), SEDCO (a coring technician), TAMU (an operations superintendent) and LDGO (a logging scientist). JOI-USSAC have agreed to cover the attendance costs of US scientists in the expectation that attendees from international partners will be funded by their respective agencies. JOI have also offered the services of their staff in making travel arrangements.

Co-convenors of this workshop are Worthington and Wilkens. Dates have been fixed as 13-14 April 1989. Location is to be Washington DC with the precise venue determined by the JOI office. A letter of invitation is to be drafted and sent to all former JOIDES logging scientists and other invitees before mid-February. This letter will solicit input to the draft agenda which will be circulated to attendees before the workshop.

[ACTION : WORTHINGTON, WILKENS]

13. Role of DMP Thematic Thrusts in Planning

Agenda Item deferred to next DMP meeting.

14. WPAC Legs 125 - 129

(i) Programme Overview

Golovchenko reviewed the logging programme which, allowing for enforced departure due to development delays, is essentially as previously recommended.

Leg 125 - Bonin/Mariana

BON 6 site is now an alternative to BON 6A and 6B which are shallower.

<u>Site</u>	<u>Depth of hole</u>	<u>Logs</u>
MAR 3A	700 m	Standard suite BHTV
MAR 3B	700 m	Standard suite
BON 6A	750 m (600 sediments + 150 basement)	Standard suite BHTV Drillstring packer Magnetometer/Susceptibility
BON 6B	550 m (400 sediments + 150 basement)	As for BON 6A
BON 7	500 m	Standard suite

N.B. Wireline packer not available.
FMS to be introduced on Leg 126.
Drillstring packer has no fluid sampling capability.

BON 6A to have re-entry facility if time allows.

Leg 126 - Bonin

Four holes, all to be logged with standard suite which now includes FMS in this and subsequent legs.

BON 1 is re-sited away from local high-temperature anomalies so there are no special high temperature logging requirements.

There is an evens chance that the wireline packer will be available for this leg. If so, this will be deployed in BON 1 and BON 2. Zero-offset VSP using WST in BON 1 and BON 2. Magnetometer/susceptibility log in BON 2.

If time, return to BON 6A (if re-entry installed) for FMS and VSP.

N.B. Induced polarization will not be run due to absence of a suitable tool.
Geoprops Probe will not be ready for testing on this leg.

BON 2 to have a re-entry cone if drilling conditions allow.

Leg 127 - Japan Sea I

<u>Site</u>	<u>Downhole Measurements</u>
J1b	Standard suite BHTV Magnetometer/susceptibility Packer/hydrofracture VSP
J1d	Standard suite
J1e	Standard suite BHTV Magnetometer/susceptibility
J3a	Standard suite BHTV Magnetometer/susceptibility Packer/hydrofracture

N.B. Tools for VSP have not been identified beyond Leg 126.

Leg 128 - Japan Sea II

<u>Site</u>	<u>Downhole Measurements</u>
J1b	Geoelectrical, oblique seismic, seismometer
J2a	Standard suite Wireline packer VSP
JS2	Standard suite

N.B. VSP and wireline packer are not in WPAC programme. Wireline packer proposed because fluids are important at J2a. VSP tool not yet identified. At J2a wireline packer is a higher priority than VSP if a good sonic log is obtained; otherwise the priorities should be reversed. Geoelectrical experiment is the subject of detailed discussion under Item 14 (ii).

Leg 129 - Nankai

The Geoprops Probe is unlikely to be ready for this leg, as scheduled. This is because of delays in TAM, Inc., whose limited resources are tied up in resolving the problems with the wireline packer. The geoprops probe cannot be handled until the wireline packer is perfected. The Chairman queried the wisdom of committing two tool developments to an organisation that could not deliver. TAM, Inc., had ironically been selected to develop the

geoprops probe because of their experience with the wireline packer which, at the time, had seemed satisfactory. In the light of this bottleneck it is appropriate to propose delaying the Nankai Leg. There are no weather constraints. Moberly observed that a two-month delay to Leg 129 would not create any logistical problems. Thus far, the only staffing for Leg 129 is at the co-chief level.

DMP Recommendation 89/2

"In view of development delays within TAM, Inc., the Nankai Leg be deferred two months to improve the chances of both the wireline packer and the geoprops probe being operational and adequately tested."

Panel discussed the implications of PCOM's decision to adopt an abridged logging programme for Leg 129. It was considered that the objectives of the study are highly compromised by shortfalls in the allotted time. Panel noted that the substitution of NKT 10 for NKT 2 would reduce the pressure of time but would compromise the downhole temperature experiment which the Panel has previously supported. Moberly commented that PCOM would require evidence of technical success in Leg 129 before committing to a second Nankai leg. Panel observed that a curtailed scientific programme in Leg 129 reduces the chances of achieving sufficient successes to justify a second Nankai leg, the latter being even more desirable because of the abridged programme in the first Nankai leg. Four hours' discussion failed to identify a way out of this "Catch 22" situation. The following recommendation was formulated to reduce the risk of Leg 129 producing data from two inadequately studied sites as opposed to one site studied more completely. This recommendation is in accord with DMP philosophy.

DMP Recommendation 89/3

"During Leg 129 Site NKT 2 should be drilled first to maximise the chances of an adequately studied hole. Two additional days should be added to the abridged programme of downhole measurements to allow time for deployment of the side entry sub. The programme of downhole measurements at NKT 2 should not be curtailed solely in order to allow time for the drilling of NKT 1."

The abridged logging programme for Leg 129 which DMP recommended with reluctance (Rec. 88/19), and which PCOM subsequently adopted, is re-stated as follows.

A NKT-2 Pilot Hole to about 400 m

Days

0.5	8 LAST, 4 WSTP @ 30 m, 2 geoprops
1.3	standard logging (includes FMS)
<u>0.3</u>	multichannel sonic (shear source)

2.1

NKT-2 (XCB then rotary to 1300 m, with re-entry cone and casing)

Days

2.3 18 geoprops
1.0 trip to release bit and insert rotatable packer
1.6 standard logging (includes FMS)
0.4 hole conditioning
0.4 BHTV
0.4 multichannel sonic (shear source)
1.0 4 packer
1.4 4 wireline packer plus fluid tests
0.4 hole conditioning
1.2 VSP
1.0 trip to change to straddle packer
1.0 4 packer
2.0 deploy temperature string
2.0 SES deployment
16.1

NKT-1 (XCB to 900 m)

Days

1.8 8 LAST, 4 WSTP, 12 geoprops (or 6 wireline packer)
1.8 standard logging (includes FMS)
0.4 BHTV
0.5 multichannel sonic (shear source)
4.5

In concluding the Nankai discussion, the Chairman noted that ten hours of DMP time had been spent on this issue. This was equivalent to the time that would have been spent in a dedicated workshop, had PCOM permitted it. The Panel's business programme was consequently behind schedule. It was hoped that future requests for specialized workshops on difficult issues would be considered favourably, for their refusal ties up the entire Panel for significant periods rather than allowing these matters to be debated in a more specialized advisory forum.

(ii) Oblique Resistivity Experiment, Leg 128, Site J1b

Becker reported that a problem has arisen with this proposal which DMP has strongly supported and which forms part of the programme of downhole measurements at site J1b. The problem is two-fold:

- (a) TECP did not support the experiment;
- (b) the time dedication (2.5 days) was queried by PCOM in view of the need to reduce this leg or an adjoining leg by one day.

The aim is to investigate the electrical conductivity of the subsurface with a view to ascertaining the degree of crustal heterogeneity as a basis for explaining observed anomalies of heat flow, etc. It is proposed to measure the vertical electrical field in the hole as a ship-drawn current source circles the hole.

This experiment is claimed to provide information on subsurface conductivity to a depth of about 10 km. The experiment will be conducted with a near-hole magnetometer in place to provide a second independent estimate of conductivity within the sedimentary succession, to a depth of about 1 km. The proposers have streamlined the experiment to reduce the time to 1.5 days.

DMP Consensus

Panel re-affirms its support for the geoelectrical experiment at site J1b which is entirely in accord with the Panel philosophy of integrating data at different scales of measurement. The streamlining of the experiment to 1.5 days allows Leg 128 to be shortened by one day, thereby resolving the scheduling problem with this leg.

1590 WPAC Legs 130 et seq.

Taylor and Golovchenko reported on the current scheduling and logging programmes. Some of these legs have been the subject of earlier DMP logging recommendations.

Leg 130 - Geochemical Reference Sites

Two sites are in contention:

- BON 8 (500 m sediments + 200 m basement)
- MAR 4 (500 m sediments + 100 m basement)

Provision has been made for 12 days of logging. BON 8 is a re-entry site. If re-entry is needed at MAR 4, four days will be subtracted from the time allocated for logging.

Panel considered that BON 8, which is a lithosphere reference hole, should be a priority for downhole measurements. In accordance with the Panel philosophy of studying fewer holes thoroughly rather than many inadequately, the logging effort on Leg 130 should be directed primarily at BON 8 which should be drilled first. MAR 4 should be logged using the standard suite with as much relevant non-standard logging as time permits.

DMP Recommendation 89/4

"BON 8 to be a full reference site with the following logging programme:

- Standard suite (including FMS)
- Packer/wireline packer
- Hydrofracturing
- BHTV (before and after hydrofrac.)
- Magnetometer/susceptibility
- Dual laterolog
- VSP

Attempt the same logging programme at MAR 4 with the order of priority as listed above.

BON 8 to include provision for the testing of the geoprops probe if not previously tested at sea. (This implies that the Navidrill is on board ship)"

Leg 131 Ontong - Java Plateau

Originally a CEPAC objective, this has now been placed under WPAC. Four holes are scheduled in sediments with an average depth of 500 m; at least one additional hole to basement where sediment thickness is estimated at 1000-1400 m. High-resolution stratigraphy is a major requirement.

DMP Recommendation 89/5

"Logging during Leg 131 to be restricted to the standard logging suite (including FMS) with BHTV and shear wave sonic being run additionally in the deep hole. The shear wave sonic should initially be deployed in one of the shallower holes for testing purposes."

Leg 132 N.E. Australia Margin

Objective of leg is ocean history. Standard logging only at sites NEA 1-5, 9A, 10A, 11. Sites NEA 13, 14 are of low priority. Sites NEA 6, 8 will not be logged. The wireline packer has been dropped because fluid sampling for mineralization is not seen as a high priority by WPAC.

DMP Consensus

The importance of fluid sampling to the scientific objectives of Leg 132 should be re-assessed; if perceived to be important, the wireline packer should be scheduled for deployment.

Leg 133 Vanuatu

This is now a one-leg programme. The six proposed sites include two reference sites (DEZ 1 and 5), two fore-arc sites (DEZ 2 and 4) and two inter-arc sites to investigate arc polarity reversal (AB 1 and 2). This leg has serious time constraints. Standard logging (including FMS) is scheduled for all holes. The original Panel recommendations included BHTV and wireline packer at DEZ 2 and 4. The function of the BHTV can be largely assumed by the FMS for this leg. Wireline packer was dropped because of time constraints.

DMP Recommendation 89/6

"In view of the importance of pore pressure to deformation style in the fore-arc region, pore pressure studies should be undertaken in DEZ 2 or DEZ 4. Reduce the logging time on AB 1 and/or AB 2 if necessary."

Scientific targets encompass rifting, back-arc spreading and volcanism. Logging programme unchanged from earlier DMP recommendation. In addition to standard logging (including FMS) at loggable sites, BHTV, wireline packer and magnetometer/susceptibility logs are scheduled.

16. CEPAC

Agenda Item deferred to next DMP meeting.

The desirability was expressed of reciprocal guest arrangements between DMP and the CEPAC Detailed Planning Group. Next CEPAC meeting is in Honolulu in April 1989. Roy Wilkens to attend on behalf of DMP.

[ACTION : WILKENS]

Invitation to CEPAC DPG to send a representative to next DMP meeting to be issued by Chairman, subject to PCOM approval of DMP Recommendation 89/7 below.

[ACTION : WORTHINGTON]

DMP Recommendation 89/7

"Reciprocal guest arrangements between DMP and detailed planning groups be established."

17. Scientific Value of Logging

This is an ongoing item. the following updates were provided.

(i) Post cruise data access

LDGO Liaison has previously announced the availability of a 30 000 national licence for Terralog. The current situation needs to be clarified in terms of (a) each member country and (b) the USA specifically.

[ACTION : LDGO LIAISON]

(ii) Keynote paper

As reported under Item 3, this paper is in press with the journal Basin Research. It is to be paired with the COSOD II paper on logging practice and issued in reprint form to the scientific community by LDGO.

[ACTION : WORTHINGTON, LDGO LIAISON]

(iii) Logging Schools

Golovchenko reported on the US schools held on 29 October 1988 in Denver (30 attendees) and on 4 December 1988 in San Francisco (80 attendees). Feedback from attendees was generally favourable. Logging schools are scheduled for 13 May 1989 in Montreal, Canada, 8 July 1989 in Washington D.C., and 7-8 September 1989 in London, England.

(iv) Keynote presentation

As reported under Item 3 an invited paper on "Scientific benefits of downhole measurements in the Ocean Drilling Program" was presented by the Chairman at the fall AGU Union Session on the results of ODP to date. AGU scheduled this session in parallel with about 24 regular sessions, some held in different buildings. As a result of this competing schedule, attendance was disappointing; of the 50 or so attendees, many were already active in ODP. It would be worth considering a similar venture in the future, but under the auspices of an organisation that is prepared to offer a higher-profile slot than is achievable with multi-parallel sessions. The venture was nevertheless worthwhile.

(v) JGR thematic volume

This initiative, based on an AGU poster session on logging in the lithosphere, is going ahead.

(vi) LDGO performance evaluation II

Golovchenko reported that one of the key observations, the need to educate further Co-chiefs, is being implemented through short logging presentations at pre-cruise meetings and logging seminars on board ship.

18. Proposals

(1) 309 F

Zero offset VSP at BON 1 and BON 2; Leg 126

This proposal has already been incorporated into the Leg 126 programme, without DMP input. As such, there was little point in discussing it further.

(ii) 315 F

A global network of permanent ocean-floor broad-band seismometers: a test site north of Oahu, Hawaiian Islands.

This proposal is in accord with the long-term thematic policy of DMP. As such, Panel fully endorses it.

(iii) General

The Chairman commented on the dearth of proposals received over the past few months. D'Ozouville reported that this trend was unfortunately evident throughout ODP.

19. Geochemical Workshop

The Chairman reported that suggested dates and venue are 6-8 November, 1989 at Lamont-Doherty Geological Observatory. These await confirmation. This is not exclusively a logging workshop but it is expected that a significant proportion of time will be dedicated to geochemical logging. One of the co-convenors, Dr M Kastner, has asked for DMP support in preparing the logging input. The DMP members with designated responsibility for this effort are Worthington and Howell. [ACTION : WORTHINGTON, HOWELL]

20. Nomination of Liaison to Shipboard Measurements Panel

Panel nominated four liaisons to SMP so that the load might be shared and so that the DMP representative might be matched to the primary SMP topics at any given time. The four nominees are Carson, Gieskes, Karig, Wilkens. SMP Chairman is asked to circulate meeting agendas well in advance so that the most appropriate person might attend. Panel seeks input from JOIDES on how this arrangement might best be worked in practice. A possible avenue is for PCOM to select an official liaison from DMP to SMP who can delegate to the other three as appropriate.

21. Workshop on High-temperature Slimhole Tools

Lysne reviewed the logging implications of slimhole coring which purports to be inexpensive, provide continuous core recovery, and result in a stable hole. There are few pedigree logging tools for slimhole application. Further, engineering difficulties can be expected in high-temperature instrumentation. These issues affect not just ODP but other deep drilling programmes.

DMP Recommendation 89/8

"A proposal be formulated for a workshop to investigate the implications of slimhole coring on scientific drilling and logging programmes, especially in hot environments. Target date is July-September 1989. Co-convenors to be Worthington and Lysne. KTB of FRG to be invited to participate."

22. Drillstring Straddle Packer

Becker reported that the drillstring straddle packer is a third party tool operated by the University of Miami. It is now in routine use in ODP. It is therefore appropriate to transfer the responsibility for the tool to ODP/TAMU. Before this can be done, NSF require JOIDES approval because a transfer of funds is involved from an NSF grant to ODP/TAMU co-mingled funds. DMP is therefore asked to endorse.

The Chairman commented that DMP is in the process of advising PCOM on procedures for the transfer of third party tools into ODP

(Agenda Item 7). These procedures, which are not yet in place, are intended to prevent the dumping of poorly-functioning tools on ODP/TAMU and LDGO. There must also be guarantees from ODP/TAMU and LDGO that the tools will be adequately maintained after transfer. If these procedures had already been approved and adopted, they would have to be followed. At present, the Panel notes that both ODP/TAMU and the University of Miami are in agreement that this proven tool be transferred into ODP.

DMP Consensus

The drillstring packer is regarded as a mature tool which is appropriate for transfer from the University of Miami to ODP/TAMU.

23. Date and Format of Next Meetings

The next DMP meeting is scheduled for May 1989, after the next PCOM meeting. Panel requested the Chairman to select dates that dovetail with the AGU. [ACTION : WORTHINGTON]

[It turns out that the spring AGU meeting coincides with the PCOM meeting in early May, as such, DMP cannot meet around AGU and still receive appropriate feedback from PCOM. The next DMP meeting is therefore scheduled for 22-23 May 1989. Venue to be Scripps Institution of Oceanography, La Jolla, California. Gieskes to host.]

The September DMP meeting is scheduled for 11-12 September 1989. Venue is FRG, precise details to be decided prior to next DMP. Villinger to host.

The FRG meeting is to be followed by a joint ODP/KTB workshop on 13-15 September 1989. Agenda for workshop to be decided prior to next DMP. Chairman to visit FRG if possible to discuss details.

[ACTION : WORTHINGTON, VILLINGER]

Close of Meeting

The Chairman thanked Members, Liaisons and Guests for their contribution to the meeting, the Hawaii Institute of Geophysics for their kind hospitality, and Dr Roy Wilkens for his gracious hosting and especially for organising the field trip to the Big Island to take place after this meeting. The meeting closed at 12.17 pm on Wednesday, 18 January 1989.

Paul F Worthington
31 January 1989

LOGGING TOOL NOMENCLATURE

AACT	aluminium activation clay tool
AMS	auxiliary measurement sonde
BHTV	borehole televiwer
CNT-G	compensated neutron tool (thermal and epithermal detectors)
DIT-E	dual induction phasor tool
DLL	dual laterolog
FMS	formation microscanner
GPIT	general purpose inclinometer tool
GST-A	induced gamma spectral tool
HLDT-C	lithodensity tool (hostile environment, slimhole)
HRT	high resolution temperature sonde
LDT-C	lithodensity tool
LSS	long spacing sonic tool
MCD	mechanical caliper device
NGT	natural gamma spectral tool
RFT	repeat formation tester
SDT	sonic digital tool
TCC-B	telemetry communication cartridge
WST	well seismic tool