

Minutes
Lithosphere Panel Meeting
February 22 to February 25, 1995
College Station, Texas

1.a. Participants

Host: Jay Miller

Chair: Sherm Bloomer

Attending:	S. Bloomer	P. Castillo	J. Tarduno
	K. Gillis	J. Girardeau	R. Rihm
	B. Murton	D. Wilson	A. Sheehan
	J. Ludden	R. Zierenberg	Y. Kristoffersen
	A. Fisher	M. Coffin	

Liaisons: J. Miller (ODP-TAMU) J. Lin (TECP)
J. Natland (PCOM)

Absent: S. Arai P. Herzig D. Caress

1.b. Meeting Summary:

Wednesday, February 22: The panel convened at 10 AM and spent the day reviewing cores from various legs of interest. The morning review was of cores from offset-section drilling sites including 735B, Hess Deep, and 504B. The early afternoon was spent looking at cores from various Pacific legs including Atolls and Guyots, Site 801C, Tonga-Lau Basin, Mariana forearc, Sumisu Rift, and Ontong-Java Plateau. The panel finished the day with an examination of cores from Sedimented Ridges I.

Thursday, February 23: The panel met at 9 AM and spent the morning hearing reports from other ODP panels, liaisons to various national and international scientific organizations, and summaries of recently completed legs. After lunch the Panel spent considerable time reviewing the decision not to schedule the basement drilling leg in the Caribbean. Bloomer and Natland presented a review of their perspectives of the discussion at the December PCOM meeting and then the panel discussed the reasons for and the consequences of the decision. Mike Coffin gave a synopsis of our global strategy for drilling LIPs and the panel outlined some elements of the current proposals in front of us that address LIP objectives. Recommendations to PCOM from this discussion are outlined elsewhere. The rest of the day was devoted to reviewing new proposals and letters-of-intent.

Friday, February 24: The meeting convened at 8:30. The morning and early afternoon were spent reviewing proposals. At 2 PM, Tom Pettigrew of ODP-TAMU and several members of the Engineering Staff (D. Reubelhuber, M. Stahl, and B. Rhinehart) joined us and gave a review of the current operations in engineering, and the state of several projects of interest to LITHP including offset-section drilling and DCS. The remainder of the day (to 1930) was spent reviewing the remaining new proposals and letters-of-intent.

Saturday, February 25: The Panel convened at 0830 and heard brief reviews of proposals of interest to us which are in the system but for which new versions had not been reviewed at this meeting. We reviewed our list of active proposals and choose to rank 23 proposals or letters-of-intent. The rankings are listed elsewhere in the minutes. The remainder of the meeting was spent reviewing the draft long-range plan, reviewing our recommendations and comments to PCOM, discussing membership issues, and planning our next two meetings. The meeting adjourned about 2 PM.

2. Recommendations and Comments for PCOM

The first three recommendations and comments derive from the panel's discussion about the decision not to schedule the Caribbean basement drilling leg:

Issue #1: Proposal review and scheduling--Recommendation. LITHP is concerned with the interface between the thematic panel review process and subsequent reviews by PCOM. Communication between the two review processes could be improved if information on proposals

receiving high thematic panel ranking was forwarded to PCOM members earlier in the review process. **LITHP recommends to PCOM that they explore ways to get complete copies of highly ranked proposal to PCOM watchdogs and panel liaisons earlier in the process, certainly before the Fall meetings at which the prospectus rankings are produced.**

Issue #2: Proposal review and proponents--Recommendation. A high panel ranking is not insurance that any given proposal will eventually be drilled. PCOM can and should retain the option of not scheduling a highly ranked proposal when they feel they have adequate reason. PCOM should, however, recognize that such decisions can leave a strong negative impression in the scientific community with the proponents and their colleagues. **LITHP recommends to PCOM that every effort be made in the review process to insure that such decisions will not have to be made. In the event that they are, LITHP recommends that the reasons for that decision be clearly communicated, in writing, to the proponents by the relevant thematic panel chair and an appropriate member of PCOM.**

Issue #3: LIP Strategy--Information. The panel has prepared a synopsis of our strategy and goals in drilling large igneous provinces with a summary of how current proposals in the system fit into that strategy. The panel believes that large igneous provinces have not been studied in a systematic way with the drillship. LIPs are a target to which a significant amount of lithospheric drilling effort should go in the next few years.

Issue #4: Engineering projects--Recommendation. Representatives of the engineering staff spent considerable time with the panel briefing us on the current structure of the Department and on the status of various projects. The panel was impressed, again, with the dedication, innovation, and enthusiasm of everyone in engineering. There is no doubt that we would not have had most of our scientific successes without their hard work. However, in discussing the presentation, the panel became concerned that the engineering department had far more projects in front of it than we could reasonably expect them to complete. Just for LITHP, these include offset drilling legs and associated hardware, core orientation devices, and diamond coring. We are concerned that there are not enough staff in the Department working directly on hardware development to accomplish everything we are asking for. LITHP would rather be asked to prioritize our engineering needs than to create unreasonable demands on engineering development at ODP-TAMU. **LITHP recommends to PCOM that they ask JOI to ask ODP-TAMU for a review of the manpower and time projections for current engineering projects, and for an evaluation of whether or not the engineering group is understaffed for that volume of work. If appropriate, LITHP recommends to PCOM that a prioritization of engineering development needs be established, based on ODP-TAMU's response.**

Issue #5. Proposal deadlines and guidelines--Recommendation. LITHP recommends to PCOM that the winter proposal deadline date be moved to December 15th and that proposal guidelines be developed addressing, among other things, format, length, the inclusion of an abstract and location map in all versions and addenda, and specific responses to panel recommendations.

Issue #6: Budget priorities and scientific support--Recommendation: LITHP appreciates the budget difficulties facing the program and supports most of the difficult recommendations made by PCOM for accommodating a budget shortfall. The panel is also impressed with the innovative approaches recommended by the publications subcommittee. However, **LITHP recommends to PCOM that they reconsider their recommendation for the possible elimination of 2 FTE of shipboard technical support.** The panel supports the position of PANCH that the most important activity of the program is the acquisition and archiving of core and data at sea. It is the opinion of the panel that the program is already staffed at a minimum in sea-going personnel. Any further cuts will damage efforts to provide consistent, high quality data and core acquisition and curation at sea. We recommend that any such cuts first come from other support activities in the program.

Issue #7. The Draft Long Range Plan--Comment: Most of the members of the panel only saw the draft LRP at the beginning of our meeting. It was discussed for approximately an hour on the last day of the meeting. The panel did not feel that they had digested the document enough to provide specific recommendations for changing the document. This reluctance stemmed in part from the fact that most of the panel found the document fundamentally unsatisfying. Members of the panel were asked to provide comments, advice, and recommendations to the JOIDES office, prior to the meeting of the LRP subcommittee in March. The following statement was forwarded to the PCOM chair immediately after the LITHP meeting, to indicate the degree of the panel's concern about the draft they saw in February:

The strengths of the Ocean Drilling Program have been its flexibility, inclusiveness, scientific and technical innovation, and pursuit of the solution to basic earth science problems. As such, it has made important contributions to our understanding of the solid earth and its interactions with the oceans and the atmosphere. The present draft of the long-range plan does not adequately include any of our present strengths and does not represent an appropriate vision for the future of scientific ocean drilling. It needs to be completely revised and restructured. ODP has been a model of international scientific cooperation and scientific production. While we appreciate the work of the subcommittee to provide a vision for the future of the program, we disagree fundamentally with the vision as expressed in this draft LRP.

3. Global Rankings

The Panel reviewed the list of active proposals in the system and elected to rank 23 proposals. 4 of these proposals address problems concerning large igneous provinces, 5 of them are focused on processes at convergent margins, 7 of them concern the structure, alteration, or evolution of oceanic crust, 2 focus on mantle dynamics, 1 has important hydrothermal objectives, and 4 are focused on understanding the mechanics of rifting in different environments.

Panel members voted for their top 15 proposals of the 23. They assigned 15 points to their highest proposal, 1 to their lowest. Proponents of proposals, or members with stated conflicts-of-interest, could not vote for the proposals on which they were involved--those panel members assigned votes from 15 to 1 plus the number of proposals they could not vote for. Scores were then normalized to the number of members who could vote for that proposal.

Total number of voting members: 14 (2 members absent)

LITHP Spring 1995 Global Rankings:

Rank	Number	Short title	# of Panel Voting	Average Score	Std. Dev.	Watchdog
1*	300	Return to Site 735B	14	13.5	2.95	Bloomer
2*	411	Caribbean basement drilling	14	11.21	3.83	Bloomer
3	448	Ontong-Java Plateau--LIP drilling	14	10.93	3.43	Castillo
4*	457	Kerguelan Plateau--LIP drilling	13	10.23	2.42	Fitton
5	426	Antarctic-Australian Discordance	14	9.43	4.93	Wilson
6*	435	Izu/Mariana mass balance experiment ¹	14	7.43	4.05	Fisher
7	451	Tonga forearc drilling	13	7.38	3.40	Fitton
8	420	Evolution of the oceanic crust ²	12	7.17	4.61	Fisher
9	435	Nicaragua mass balance experiment	14	6.71	4.38	Zierenberg
10	442	Northern Mariana Trough rifting	13	6.15	4.26	Gillis
11	376	Vema offset-section drilling ³	14	5.79	4.04	Gillis
12*	438,469	Deep, dipping reflectors in ocean crust ⁴	14	4.50	5.50	
13	470/LOI47	Red Sea drilling ⁵	11	4.27	2.57	
14	431	Western Pacific Seismic Network	14	3.64	4.80	Sheehan
15	425	15°20'N offset section drilling	14	3.57	4.31	Rihm
16	LOI-44	Japan Trench Observatory	14	2.29	4.03	Sheehan
16	468	Carbonate caps on transverse ridges	14	2.29	3.38	
17*	447	Woodlark Basin rifting	14	2.14	3.90	
18*	LOI-51	Deep drilling near 504B	14	1.64	2.92	
19*	461	Iberia transect--NARM drilling	14	1.29	2.81	
20	463	Drilling on Shatsky Rise	14	0.86	1.51	
21	453	Bransfield Strait drilling	14	0.50	1.40	
22	466	Australian lower plate drilling	14	0.07	0.27	

*all or part of the program could be ready to drill in FY 97

¹ Includes a return to 801C as part of a convergent margin mass balance experiment.

² An experiment as outlined in the original 420 proposal for two sets of paired sites along a flow line--the siting of those experiments needst obe carefully considered after recent communications suggesting that the experiment might be moved to the Costa Rica Rift.

³The Vema ranking is for the leg of offset-section drilling of lower crust as outlined in proposal 376R2

⁴Deep drilling as suggested in 438 and 469 to study the origin of reflecting interfaces within oceanic crust.

⁵A program of scientific ocean drilling to address diverse objectives in the Red Sea as outlined in LOI-47 and 470.

Notes on other programs of interest:

LITHP is still excited about LOI 17, the Internal Anatomy of Volcanoes, as it may offer a chance to examine the origin of felsic volcanic hosted massive sulfide deposits, one of the Panel's highest priority objectives for the next phase of the program. However, there is not yet enough site-specific information to determine if the Woodlark and Manus Basin sites are indeed appropriate analogs for such deposits nor to evaluate specific sites. A full proposal will be needed soon if this project is to move forward.

LITHP still strongly endorses the proposal to CORK hole 395A (proposal 424) which would require 3-4 days of ship time. This is clearly important science, but because it constitutes less-than-a-leg there is no way to consider it on a footing with proposals for full legs of drilling. LITHP urges PCOM to keep this project in mind, particularly if the ship moves back into the North Atlantic after its work in the eastern Pacific.

4. Proposal Reviews and Comments on Letters-of-Intent

The Panel provides only comments, not categorical rankings, for letters-of-intent.

Hydrothermal Processes (both for information only)

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	SR-Add
PROPOSAL TITLE	Sed Ridges II: CORKs
PROPOSANTS	Franklin and Zierenberg
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS

Since this leg has been scheduled, the panel merely heard a brief presentation on the experiment. We trust a detailed plan for the experiment will be worked out after ongoing site survey and scheduling work is finished.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	440-Add2
PROPOSAL TITLE	E. Juan de Fuca CORKS
PROPOSANTS	Davis et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS

Since this leg has been scheduled, the panel merely heard a brief presentation on the experiment. We trust a detailed plan for the experiment will be worked out after ongoing site survey and scheduling work is finished.

Large Igneous Provinces

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	415-Add3
PROPOSAL TITLE	Site survey for Carib. OHP
PROPONENTS	Sigurdsson et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS
This addendum was assumed to be for information only, since the leg has been scheduled.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	448-Add
PROPOSAL TITLE	Ontong Java Plateau
PROPONENTS	Kroenke et al.
CONTACT	Pat Castillo
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1	x	A2		A3		A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2	x	B1.3	
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2	x	C3		C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
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E5		E6		E7		E8	x
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site survey data needs work

F. RECOMMENDED ACTION

F1		F2	x	F3		F4	
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COMMENTS

This addendum addresses LITHP's questions directly as well as providing a summary of new bathymetry data collected by IFREMER for SOPAC. Most importantly, the one-leg program is now focused on plateau sampling sites. The majority view of LITHP, however, is that some elements of the second leg are not central to the question of understanding the origin of OJP. It is unlikely that these will come to be viewed as of high priority given the difficulties of answering the first-order questions on a feature as large as OJP. The large seamounts are puzzling, but they are not part of the central issue. There are continued concerns that the objectives of the proposed diatreme drilling may not be drillable science. The diatremes are fascinating features, but it is unclear what can be learned that is different from what is already known from exposures on Malaita. Even with detailed survey data, it is unclear that the center of the feature can be recovered (as opposed to disturbed sediments). A revised second leg that addresses our primary objectives would be better received. Time estimates for deepening Site 807C appear to be overly optimistic (i.e. based on Leg 152); a more accurate guide might be the actual drilling at 807C or at least some other deep Pacific site that penetrated flows emplaced in a submarine environment. The proponents should proceed with efforts to obtain site survey data.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	457-Rev
PROPOSAL TITLE	Kerguelan Plateau and Broken Ridge
PROPOSANTS	Frey et al.
CONTACT	Godfrey Fitton
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1	x	A2		A3		A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1	x	B1.2		B1.3	
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3	?	C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
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E5		E6		E7		E8	
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proposal is reasonably complete

F. RECOMMENDED ACTION

F1		F2	x	F3		F4	
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COMMENTS

The main objectives of the proposal are clearly formulated to address the general questions and problems regarding crustal/upper mantle processes related to LIP emplacement and their relationship to deeper mantle (i.e., plume) and plate tectonic processes and dynamics; these questions and problems are of primary interest to LITHP. It also includes objectives to study the possible effects of the plateau emplacement on paleoclimate, paleoceanography, and paleoenvironment; these objectives potentially could generate interest to OHP and SGPP.

LITHP appreciates the efforts made by the proponents to answer some of the earlier comments. However, although LITHP is very enthusiastic in this version of the proposal, general improvements and stronger emphasis on some areas are still needed. As written, the proposal fails to emphasize how offset drilling will clearly help the project, e.g., how will it constrain the break-up of the Kerguelen Plateau and Broken Ridge during the Eocene. Another question raised concerns the geochemical variability of the Kerguelen plume - the proponents have to discuss the claim by other scientists that this variability may be due to the temporal evolution of the Kerguelen plume source. Moreover, the proponents also have to make a stronger case why the plume source - continental lithosphere interaction in the southern Kerguelen Plateau will be more educational than in a similar interaction in the S.E. Greenland margin where the tectonic setting is relatively better constrained. A more detailed plate reconstruction model has to be included. Finally, LITHP is concerned that the current number of proposed drilling sites and remoteness of the study area definitely require more than two drilling legs. Obviously, some of the concerns will be cleared once drilling time estimates have been calculated, the new (R. Schlich's) data have been reduced, specific drilling sites - particularly KP18 - have been located/documentated, and planned additional survey work have been accomplished. These new data are expected in the revised version of the proposal. Moreover, proponents must be prepared to prioritize the drill sites and to reduce the number of sites by dredging promising targets.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	463
PROPOSAL TITLE	Shatsky Rise
PROPOSANTS	Sager et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2		A3		A4	x	A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2	x	B1.3	
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B2 LOCATION	B2.1	?	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3	x	C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1		D2		D3	?	D4		D5	
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because of concerns about penetration and recovery

E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
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E5		E6		E7		E8	x
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Site survey work needs to be digested and discussed

F. RECOMMENDED ACTION

F1		F2		F3	x	F4	
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COMMENTS
<p>Because Shatsky Rise has not been linked to any Cenozoic hotspot, major questions of the mantle plume head-tail remain unaddressed by the proposed drilling. Furthermore, magmatic-volume changes of the order calculated for Shatsky Rise characterize plume tails solely, e.g. the Hawaiian-Emperor chain, Mascarene Plateau, and the Greenland-Iceland-Faeroe Ridge. Although results from Shatsky Rise could contribute to our understanding of the formation of oceanic rises and plateaus, many LITHP members felt that a major dredging effort (beyond the limited dredging during the site survey cruise) should be mounted first. There was much discussion concerning the sedimentary sequence. Although the presence of sediment-free areas on the rise is in some ways an advantage, the recovery of sediments is important for understanding the plateau subsidence. Given the suggested paleoposition of the rise and previous scientific drilling results, cherts might be expected to overlie all of the rise. Therefore, whether these can be penetrated and recovered without DCS remains a major question.</p> <p>In summary, LITHP felt that the proponents should analyze both the geophysical data and dredge samples acquired during the site survey fully, and then evaluate whether many of the questions posed by Shatsky Rise, without DCS, might be better addressed by further investigations with standard oceanographic vessels. Given the volume of highly ranked proposals before LITHP it is unlikely that this proposal will rise high enough in the rankings to be drilled.</p>

Oceanic Crustal Structure and Composition

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	LOI 43
PROPOSAL TITLE	Drilling Rodriguez Triple Junction
PROPOSANTS	Tamaki and Fujimoto
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS
<p>The Lithosphere panel recognizes the importance of understanding the evolution of this triple junction. The exposures of deep crust and the presence of diverse magma compositions (notably very high Na_{8wt%} in some basalts) make the region especially important. This region represents a natural laboratory in the Indian ocean in which several other countries are currently working - we suggest the proponents contact the following groups who are working in the region (UK, IOS, Lindsay Parsons; France, Strasbourg, Roland Schlich; Germany, Berlin, Peter Halbach) - note there was a Sonne cruise in the region last year that located hydrothermal deposits.</p> <p>The Rodriguez triple junction could become a high priority for drilling in the next several years. However, before a mature drilling programme can be evaluated, intense dredging, imaging, submersible and other studies are required and these data should be synthesised. We note the proponents include sites which require bare-rock diamond coring which is not within the capabilities of the drillship at present.</p>

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	LOI 51
PROPOSAL TITLE	Deep drilling near Site 504B
PROPOSANTS	Pezard et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS

The panel recognizes the important contributions of studies at Site 504B and appreciates that the hole was never planned to be the deep site that it became. The approach outlined here shows that the proponents have thought about the problems inherent in deep drilling and have outlined the beginning of a viable plan. The planned drilling will clearly need a thorough engineering evaluation of the feasibility and the time required.

While the panel is still supportive of this kind of drilling, there were some questions about the specific scientific justifications for drilling this deep hole here. If the principal strategy is to drill a single hole through the crust to characterize it, is this where we should invest the time, or should we do it somewhere where we might also answer some questions about dipping reflectors in the crust or the alteration of the ocean crust. In this regard, the proponents might consider talking to proponents for other deep drilling projects like 438 Reflecting interfaces in the crust from John Mutter or 469 Dipping reflections in the crust by Stagg and Symonds. If the goal is to develop a cross-hole laboratory, more justification needs to be made for the specific setting and hole spacing for those experiments. We will do better understanding lateral heterogeneity by going to study a place like Iceland? Are there better places to site a pair of holes to do this kind of work (here the proponents might talk to Mike Purdy et al. proponents for 420 Evolution of the ocean crust)? Is this piece of crust well enough characterized to do the experiment here?

The bottom line is that the panel views deep drilling as important and is supportive of this kind of approach. However, if we are going to invest in a multi-leg effort to do this, particularly with cross-hole laboratories, we are probably only going to do it once in the foreseeable future, and we should review our options for locating the deep site to make it as useful as possible for addressing a range of scientific problems.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	300-Rev-Add
PROPOSAL TITLE	Return to Site 735B
PROPOSANTS	Natland and Dick
CONTACT	Bloomer
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1	x	A2		A3		A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1	x	B1.2		B1.3	
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2	x	C3		C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
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E5		E6		E7		E8	
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F. RECOMMENDED ACTION

F1		F2	x	F3		F4	
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COMMENTS

The Panel continues to view this proposal as its top global priority. The first leg, to deepen the borehole at Site 735B, is clearly ready to be scheduled. Planning for the second leg still needs some additional site survey work. The new seismic data available over the transverse ridge at Site 735B provides an important missing piece of the regional database.

The panel wishes to emphasize to the proponents that they view downhole experiments as an essential part of the first leg as well as of the second leg. The borehole measurements are an absolutely critical part of the effort to characterize the lower crust. Time estimates for the first leg should include time for standard logs, as well as for FMS. It may be worth considering time for other experiments as well. There is no doubt that this hole will be a unique asset for studying the lower oceanic crust.

The Panel would like to see a more detailed presentation and discussion of the constraints which the new seismic data and the existing gravity data place on the local and regional crustal structure. We realize the proponents do not have the seismic data, but we strongly encourage them to develop close ties the geophysicists working on the data. In fact, the Panel suggests the inclusion of a structural geologist or geophysicist (or both) as a proponent(s) on the proposal. The structural aspects of the proposal are under-developed; a great deal of important structural information came from the first work on Site 735B. The same should be true of subsequent work at and around the site.

The next version of the proposal should present some of the geophysical data that might help differentiate some of the models shown in this version, should include a more complete discussion of the tectonic and structural goals of the drilling, and present a revised strategy for the second leg of drilling based on the new geophysical work.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	468
PROPOSAL TITLE	Vertical tectonics of transform ridges
PROPOSANTS	Bonatti et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2	x	A3		A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2	x	B1.3	
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3		C4	x
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because of difficulty in dating and recovery

D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
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E5		E6		E7		E8	
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F. RECOMMENDED ACTION

F1		F2		F3		F4	x
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might support aspects of the proposal

COMMENTS
<p>This proposal presents a very interesting strategy to study one of the most puzzling features in the ocean basins, the large transverse ridges along some fracture zones. Those particular such ridges which are capped by carbonates offer a unique opportunity to constrain the mechanisms creating these ridges. The Panel recommends that the Vema transverse ridge site be included in this proposal hereafter, rather than in the 376-Vema fracture zone proposal which includes lower crustal offset drilling. The Panel does, however, continue to view the Vema fracture zone as a promising place for offset-drilling, if we can solve the technical problems with that drilling.</p> <p>This proposal is principally of interest to Tectonics Panel. LITHP does view this as a promising project, but will not be the principal supporter of the drilling. The Panel did have some comments for the proponents to consider:</p> <p>Dating shallow water carbonates precisely can be very difficult. Can these materials be dated precisely enough to afford the necessary time control to constrain the models presented? There may be little additional stratigraphic control from the magnetics because of the proximity to the equator.</p> <p>Recovery in these kinds of carbonates, particularly their upper portions, can be very low. Can the problem be solved if recovery proves to be on the order of 10%?</p> <p>It would be useful if there was more discussion about how drilling might be expected to resolve the various hypotheses presented for the origin of the transverse ridges. How might the uplift/subsidence histories of the ridges be different in each case and how much depth and time resolution will be needed to differentiate those histories in the drill core?</p> <p>The Panel wondered if there was any chance that the dipping reflectors seen at ROM-2C might actually be subaerial basalt flows. Was there any evidence of such flows in the dredge samples? The question came up because of recent work on the Mendocino Ridge by Duncan et al. which has raised the possibility that the ridge is in part a volcanic construction.</p>

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	469
PROPOSAL TITLE	Dipping reflectors within ocean crust
PROponents	Stagg and Symonds
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2	x	A3		A4		A5	
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B. SCIENTIFIC MERIT

B1	B1.1		B1.2	x	B1.3	
OBJECTIVES						

B2	B2.1	x	B2.2	
LOCATION				

C. SCIENTIFIC FEASIBILITY

C1		C2	?	C3		C4	
----	--	----	---	----	--	----	--

D. PRELIMINARY TECHNICAL FEASIBILITY

D1		D2		D3	?	D4		D5	
----	--	----	--	----	---	----	--	----	--

at limits of current capability of drillship

E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
----	--	----	--	----	--	----	--

E5		E6		E7		E8	
----	--	----	--	----	--	----	--

F. RECOMMENDED ACTION

F1		F2		F3		F4	x
----	--	----	--	----	--	----	---

but the panel is interested in aspects of the proposal

COMMENTS	
<p>In terms of direct interests to LITHP this proposal is not of high priority, but aspects of the proposal could be of interest. In particular a detailed study of the hydrology of the crust between the three drill sites given the excellent quality seismic data would be important. Thus the proponents could develop objectives in terms of ageing and alteration of crust. This is interesting in that Site 765 is altered but preserves fresh glass samples. The fault could be the site of significant fluid discharge and the drillholes could be used for hole-hole hydrological studies.</p> <p>A stress study was completed in Sites 765 and the proponents could discuss the implications of these data relative to their results.</p> <p>Concern was expressed that the fault to be drilled may be a reverse fault and not a detachment fault associated with extension: or has at least been reactivate as a reverse fault. The proponents should address this important problem.</p> <p>Comparison with surface roughness at sites 801/802 (leg 129) may help in evaluating the transition to basement - 765 may be located on a window of basement and the lower-sed - basement section may be different at the sites proposed.</p>	

Rifting generally: rifted margins, young ocean basins, rift to drift transitions

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	LOI 47
PROPOSAL TITLE	Scientific drilling in the Red Sea
PROPOSANTS	Ludden et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS	
<p>LITHP welcomes this letter of intent for a multidisciplinary drilling program in the Red Sea. The LOI identified several high priority objectives of the panel, including the evolution of magmatism during the early stages of continental rifting, mechanisms of continental rifting, and brine-dominated hydrothermal systems. Additional interesting objectives include the influence of the Afar hotspot on the axial magmatism. The panel expressed concern about how the evaporite cover in the rift would impact the interpretation of the regional crustal structure and the goals related to continental rifting. Panel members understood that the Atlantis II hydrothermal system was an interesting end-member but would like the proponents to justify drilling this uncommon environment. Finally, the question was asked why the mantle exposures be should be drilled when it is possible to sample this on Zagabab Island. We look forward to a proposal and encourage the proponents to address these issues.</p>	

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	442-Rev
PROPOSAL TITLE	Rift initiation, northern Mariana Trough
PROPOSANTS	Stern et al.
CONTACT	Kathy Gillis
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1	x	A2		A3		A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2	x	B1.3	
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2	x	C3	x	C4	
----	--	----	---	----	---	----	--

D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	x
----	--	----	--	----	--	----	---

E5		E6		E7		E8	x
----	--	----	--	----	--	----	---

needs exposition of hypothesis testing with drill string

F. RECOMMENDED ACTION

F1		F2		F3	x	F4	
----	--	----	--	----	---	----	--

COMMENTS

LITHP appreciates the response to previous comments but still has several concerns that need to be addressed before the proposal can be a high priority. The panel would like to see a discussion of the potential resolution of describing volcanism via its sedimentary record. Issues of time, space and composition should all be addressed. The panel also has several concerns about the site locations. For one, the E, C, and perhaps B sites may be so young that they only record a brief history, inadequate for answering some of the proposed questions. The single off-axis appears inadequate for answering some of the propagation hypothesis. The panel agrees that drilling is the best way to test the hypothesis, but feels that the alternative end-member of a decreasing spreading rate has not been adequately considered. Determining the age at one or two off-axis sites will probably still allow both hypotheses to remain viable. Several aspects of the proposal presentation could also use attention. Further discussion of the petrologic background would make the proposal easier to follow. it is not clear why the crust from 21-22oN is judged to be different in character from the Leg 60 transect. The "amagmatic deeps" at 20oN and 18o30'N are probably better viewed as tectonic exposures related to geometric offsets of the ridge axis, rather than as a fundamental part of a rift-to-spreading progression. A minority of the panel considered the lower crustal exposures a worthwhile target.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	447-Rev
PROPOSAL TITLE	Woodlark Basin-continental extension
PROPONENTS	Taylor et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2		A3	x	A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2	x	B1.3	
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2	x	C3		C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1		D2	x	D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
----	--	----	--	----	--	----	--

E5		E6		E7		E8	
----	--	----	--	----	--	----	--

F. RECOMMENDED ACTION

F1		F2		F3		F4	x
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COMMENTS

LITHP is interested in the possibility of testing the role of low angle detachment faults in the formation of rifted continental margins. However, LITHP will not lead support for this proposal, as it is primarily relevant to TECP's objectives. LITHP members appreciate the proponents providing true-scale cross sections of two rifting models and information on P-T paths of onshore metamorphic core complexes. The proposal would be improved if further rationale for bare-rock drilling of Moresby Seamount were provided. Drilling results at site ACE-1 appear to be critical for subsequently-drilled holes during the leg; if high and medium grade metamorphic rocks similar to those of land core complexes are recovered there, will the core complex interpretation of Moresby Seamount be still valid? What would then be the proponents' strategy for continuation of the leg? Submersible studies in the drilling area, specifically on Moresby Seamount, would help place drilling data into a wider geological perspective, and may actually make bare-rock drilling at this site less critical. This could help, as drill time estimates are not provided by the proponents, but are likely to exceed one leg in the present form of the proposal, given the long basement penetration proposed at most sites and the time-consuming instrumentation programs at several sites. Technical feasibility of the instrumentation plans presumably need to be assessed. Proposal is of relatively low priority for LITHP, and unlikely to become of higher priority.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	461-Add
PROPOSAL TITLE	Iberia rift-to-drift
PROPOSANTS	Whitmarsh et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2		A3		A4	x	A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2	x	B1.3	
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3		C4	x
----	--	----	--	----	--	----	---

D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
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E5		E6		E7		E8	
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F. RECOMMENDED ACTION

F1		F2		F3		F4	x
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COMMENTS

The proposal aims at narrowing the uncertainties in characterizing the nature of the continent-ocean crustal transition still remaining after Leg 149 drilling. LITHP reiterate its interest in sampling the oldest oceanic crust at Site IAP-3C seaward of the peridotite ridge, but considers other aspects of the proposal not high priority. The Panel remains unconvinced by the case made for returning to this margin, based on the available results from Leg 149.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	466
PROPOSAL TITLE	Great Aus. Bight--lower plate cont. margin
PROPOSANTS	Stagg and Wilcox
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2		A3		A4	x	A5	
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B. SCIENTIFIC MERIT

B1	B1.1		B1.2	x	B1.3	
OBJECTIVES						

B2	B2.1	x	B2.2	
LOCATION				

C. SCIENTIFIC FEASIBILITY

C1		C2		C3		C4	x
----	--	----	--	----	--	----	---

D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
----	---	----	--	----	--	----	--	----	--

E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
----	--	----	--	----	--	----	--

E5		E6		E7		E8	
----	--	----	--	----	--	----	--

F. RECOMMENDED ACTION

F1		F2		F3		F4	x
----	--	----	--	----	--	----	---

COMMENTS

The rheological behaviour of the lithosphere during rifting is of interest to LITHP. The Panel is however, concerned about the limitations in the strategy for documentation of a case for a lower plater margin when all the sites are centered along the proposed continent-ocean boundary. In view of the experience from the Iberia-I margin drilling, LITHP feels it is highly desirable to be able to access conjugate margins when the principal objective is testing models of continental rifting.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	470
PROPOSAL TITLE	Ocean Drilling in the AII Deep Red Sea
PROPOSANTS	Sichler et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2		A3		A4	x	A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2		B1.3	x
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3	x	C4	
----	--	----	--	----	---	----	--

D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
----	---	----	--	----	--	----	--	----	--

E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
----	--	----	--	----	--	----	--

E5		E6		E7		E8	x
----	--	----	--	----	--	----	---

discussion of existng work in the Red Sea and clarification of objectives

F. RECOMMENDED ACTION

F1		F2		F3		F4	x
----	--	----	--	----	--	----	---

COMMENTS

LITH P is supportive of the development of multidisciplinary drilling programs for the Red Sea in order to address problems related to continental rifting and the evolution of hydrothermal systems. The drilling program outlined in this proposal at the Atlantis II rift basin, however, is considered immature and lacking in focus. The proposal would benefit from a complete discussion of the current state of knowledge of Red Sea geology. Further justification that the basalt encountered at Site 226 is the basaltic basement and that it is laterally continuous is needed and the distribution of evaporites in the Atlantis II deep needs to be discussed. We suggest that there are other relationships between magnetism and ridge processes that could explored and we encourage the proponents to consider the recent literature on this topic. We also recommend that the proponents contact the proponents involved LOI 47 (Dr. John Ludden, CNRS, Nancy).

Convergent margins

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	LOI 41
PROPOSAL TITLE	Costa Rica stress/strain observatory
PROPOSANTS	Brown and Silver
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS

This Letter of Intent proposes to develop new technology for elucidating stress/strain relationships within tectonically-active environments. The new instrumentation is to be field tested at the Costa Rica margin. The new instrumentation comprises an instrumented, drill-in casing string that can be emplaced in the seafloor with a single pipe trip. This contrasts with present CORK deployments (that do not include stress/strain instrumentation) that take several to many pipe trips. The technology seems most directly applicable to accretionary prisms, although the approach could provide some interesting results at sedimented ridges as well. The proposed experiment would probably be of greatest thematic interest to TECP and SGPP, and should be carefully reviewed for feasibility by DMP, TEDCOM, and TAMU engineering staff.

Perhaps the greatest uncertainty in the proposed experiment is in the development of the "third-party" tool. It is unclear whether ODP/TAMU engineering staff consider the proposed design and operations feasible, and whether the project could be made a high-enough priority given present limitations on staff and funding for development at TAMU. It should also be noted that the deployment of an SSOS seems to combine difficult aspects of other operations within a notoriously difficult environment (i.e., CORK *meets* GeoProps *meets* a critically-tapered wedge at failure). Finally, the Costa Rica program is already overcommitted in terms of drilling objectives and available time, so either some intended operations on the present program would need to be abandoned to make time for this experiment, or an additional leg/mini-leg would need to be scheduled. Balancing these concerns, however, are the following realizations: 1) full CORK deployments are expensive, time consuming, and difficult, and the proposed development could open the door to many additional interesting experiments; 2) the proposed measurements are not possible within the present CORK design; and 3) technological innovation is an important component of ODP.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	LOI 48
PROPOSAL TITLE	Physical properties across convergent margins
PROPOSANTS	Moore et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS

The LWD approach could be an important component of an attempt to compile mass-balance information for a margin, as high quality logs are possible over thick sections that may otherwise be difficult or impossible to log due to hole instability. However, LWD technology is expensive. The four days of Leg 156 operations cost about \$170k, and required a dedicated port stop to unload the tools following their use at the start of the leg. The proponents of this LOI propose to obtain LWD tools for an entire leg (or mini-leg) and collect data at several active margins where coring has already occurred. The scientific goals are to obtain information on porosity-velocity relationships (extending the usefulness of seismic data), elucidating modes of crustal thickening, and determining the nature of physical properties variations associated with faults and other fluid conduits. These scientific goals are of primary interest to TECP and SGPP, but of secondary interest to LITHP as well. Of greater interest is the possibility of improving mass-balance estimates, but the utility of the LWD suite (that presently does not include geochemical or sonic logs) for inversion to estimate lithology is questionable.

The panel also considered a request from a Leg 170 proponent that LWD tools be made available for the Costa Rica margin cruise. While we appreciate the potential benefits of LWD measurements during this leg, we are concerned that time spent with LWD operations (and associated transit and port times) might come out of coring or other operations that are of greater importance to LITHP objectives. We are also concerned with the effects of the additional costs on other developments/operations for this and other legs.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	355-Rev5
PROPOSAL TITLE	Peruvian margin-gas hydrates, tectonic erosion
PROPOSANTS	von Huene et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2		A3		A4		A5	x
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2		B1.3	
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B2 LOCATION	B2.1		B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3		C4	
----	--	----	--	----	--	----	--

D. PRELIMINARY TECHNICAL FEASIBILITY

D1		D2		D3		D4		D5	
----	--	----	--	----	--	----	--	----	--

E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
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E5		E6		E7		E8	
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F. RECOMMENDED ACTION

F1		F2		F3		F4	
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COMMENTS

After review the panel decided this proposal was not relevant to our mandate.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	435-Add2
PROPOSAL TITLE	Mass balances-Izu-Mariana
PROPOSANTS	Plank et al.
CONTACT	Sherm Bloomer
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1	x	A2		A3		A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1	x	B1.2		B1.3	
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B2 LOCATION	B2.1	x?	B2.2	
----------------	------	----	------	--

concerns about complexity of crust in the region--the Cretaceous overprint

C. SCIENTIFIC FEASIBILITY

C1		C2		C3	x	C4	
----	--	----	--	----	---	----	--

D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
----	---	----	--	----	--	----	--	----	--

E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
----	--	----	--	----	--	----	--

E5		E6		E7		E8	
----	--	----	--	----	--	----	--

F. RECOMMENDED ACTION

F1		F2	x	F3		F4	
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needs information more than revision

COMMENTS

The panel greatly appreciates the proponents clear and direct responses to our last set of comments. The proponents have clarified most of our questions about the proposed work and have made some valuable changes in the drilling strategy. The panel is very supportive of this project, as evidenced by its place in our global rankings. There remain among the panel some questions of a basic scientific nature, which the proponents might want to consider in preparing the next version for rankings.

It was pointed out that parts of the crust in this region of the Pacific are very heterogeneous. There is a tremendous amount of Cretaceous volcanism, presumably overprinted on older crust. The question was raised of whether are not there was a way to address this on a regional basis. Say we deepen 801C successfully and get a good characterization of Jurassic crust. Can we then make a representative mass balance for the mixed Cretaceous-Jurassic crust in the region? I.e. do we have enough chemical, seismic, or structural data about the Cretaceous material to be able to mass balance the inputs? Is the work on Leg 129 enough to help with much of this problem?

The panel recommended that the proponents illustrate the mass balance that can be done now. The phrase "show your work" crept into the discussion since it was late and the group was giddy. They felt that it would help to "sell" the program if the approach was illustrated for say K. In the mass balance equation, what can we write down now for the Marianas, for Izu? What's missing? How close is the balance now and what is the missing volume of material? I realize part of this is there now in words, but it may be more striking if an example were worked through, perhaps in an appendix or a figure.

The panel recommends emphasizing more the value of deepening 801C in terms of understanding alteration and aging processes in the oceanic crust. It was pointed out that, to our knowledge, there are no holes anywhere in fast spread crust to any significant depth at all. This is an opportunity to sample something for which we have no record at all.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	455-Rev
PROPOSAL TITLE	Deformation, fluids in Nankai Prism
PROPOSANTS	Moore et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2		A3		A4		A5	x
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2		B1.3	
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B2 LOCATION	B2.1		B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3		C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1		D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
----	--	----	--	----	--	----	--

E5		E6		E7		E8	
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F. RECOMMENDED ACTION

F1		F2		F3		F4	
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COMMENTS

The close tie between physical and fluid properties and structural development in the accretionary prism at the Nankai Trough is a strength of this proposal, however, this proposal is not primarily focused on high priority LITHP objectives. Recovery of uppermost oceanic crust anticipated in two of the proposed holes could prove of interest to LITHP, but will not be sufficient to provide strong panel support from this panel.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	451-Rev2
PROPOSAL TITLE	Tonga forearc
PROPOSANTS	MacLeod et al.
CONTACT	Godfrey Fitton
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1	x	A2		A3		A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2	x	B1.3	
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B2 LOCATION	B2.1	x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2	x	C3		C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1	x	D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
----	--	----	--	----	--	----	--

E5		E6		E7		E8	
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F. RECOMMENDED ACTION

F1		F2	x	F3		F4	
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COMMENTS

This proposal is a substantial improvement on the previous version, proposal 451-Rev. It now has well presented figures, supporting processed MCS data. Most of the objectives are highly relevant to LITHP objectives. However, many problems remain outstanding, specifically with the logical structure of the arguments presented, the relationships between the objectives, aims and methodology, and with the diversity of hypotheses. Considerable concern is found with the fact that most of the specific questions raised about the scientific methodology by the fall 1994 LITHP remain unanswered. Additionally, supportive geochemical data needs to be presented to demonstrate whether the geochemical hypotheses can be tested. These questions must be addressed before the proposal can progress substantially in its ranking.

Specific questions that need to be addressed:

1. Which aspects of the ophiolite model are they hoping to test? Compositional data alone is insufficient to test the hypothesis that the Tonga Forearc was formed by suprasubduction zone spreading. The structural data needed can not be obtained by 100m basement holes.
2. Site TF7 is in effect an attempt at offset drilling in to the lower crustal section. The hypothesis is that the boninite crustal rocks represent a continuous crustal section. Is 200m of basement penetration sufficient to test this hypothesis?
3. How will they quantify the volume and duration of emplacement of forearc volcanics with only 100m basement holes?
4. The process of refluxing upper-plate into the subduction zone is of interest to LITHP, but how can sedimentary record for the uplift/subsidence history of the forearc be used to quantify the amount of tectonic erosion of the over-riding plate, as claimed?
5. How can other processes that may be driving vertical tectonics in the forearc be deconvolved from the possible effects of the Louisville Ridge?
6. What additional hypothesis is to be tested regarding the unzipping of the Lau back arc basin, given the evidence already published by MacLeod et al. based on Leg 135 results?
7. There is no supporting methodology to address the objective to determine the fluxes of hydrothermal fluids in the forearc, as claimed. Although this is an important objective of LITHP, this aspect of the proposed work is poorly thought out and needs a clear methodology explaining what is to be measured, the aims and techniques to be used.
8. The aim to use volcanoclastic sediments to track volcanic histories is problematic. How can the provenance of volcanoclastics be determined to ensure that the stratigraphic record preserves a temporal history rather than a geographic variation? How can volcanoclastics from different arc volcanoes and erosion from exposures be deconvolved?
9. Concerning the objective to test the hypothesis of decreasing lithospheric thickness effects on decompression melting beneath the actively rifted arc: How can the changing effects of mantle sources and secular variations in slab components be separated from the effects of decreasing lithospheric thickness.
10. Concerns similar to 9. above with respect to the identification of changing mantle sources in the Lau Arc Volcanics, especially with regard to the Dovorkin model for slab induced suction of Samoan mantle southwards. How can the various components be deconvolved: show geochemical data that unequivocally separate the various components.

Concluding remarks:

The proposal needs to focus on a smaller number of fully justified, testable hypotheses, explaining clearly what those objectives are, how they are to be addressed, what information is needed to address the hypotheses and what methodologies are to be employed to test the hypotheses. There should then be a clear and concise explanation how each site will be used to test each of those hypotheses. Geochemical data is must be presented to support the petrogenetic hypotheses. LITHP is generally supportive of the proposal and look forward to seeing the concerns raised here answered.

Other: collisions, observatories and OSN

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	LOI 40
PROPOSAL TITLE	Drilling in the Banda Sea, Indonesia
PROPOSANTS	Silver and Snyder
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS

LITHP sees nothing in this letter to indicate that the project will become a priority for this panel.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	LOI 44
PROPOSAL TITLE	Japan trench downhole observatory
PROPOSANTS	Kanazawa et al.
CONTACT	Anne Sheehan
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS

LITHP has an interest in the general concept of oceanic seafloor seismic stations and multidisciplinary observatories as proposed by ION. However, it is unlikely that LITHP will rank highly a proposal to drill holes for the purpose of establishing borehole seismic stations until it is firmly established that borehole installations are superior to seafloor installations. In particular, we would like to see OSN1 Pilot studies or their equivalent completed before committing to drilling additional boreholes for seismic stations.

We would like to see more detail on many aspects of this letter of intent. We would be happy to review a full proposal, with the understanding that we are unlikely to support drilling until the seafloor versus borehole seismometer issue is satisfactorily addressed.

We find the multidisciplinary observatory aspect of this proposal very interesting. However, much more detail is needed on the operation, availability, and reliability of the various tools proposed, how they work, advantages and disadvantages, potential problems, and how the data will be analyzed. We would like to see a diagram of how all of the various tools will fit in the borehole, where the data will be recorded, and where power will be supplied. For example, it is unclear to us how the geodetic measurements will be made and how the effect of thermal variations on the velocity of signals from the acoustic transponder will be corrected for. We would also like clarification of why existing boreholes are inadequate to meet the outlined objectives.

If a full proposal is written, site survey data is needed, and drilling time estimates must be given. Any special needs, such as casing the borehole or equipping it with a reentry cone, must be specified.

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	431-Add2
PROPOSAL TITLE	Western Pacific seismic network
PROPOSANTS	Suyehiro et al.
CONTACT	Anne Sheehan
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1	x	A2		A3		A4		A5	
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2	x	B1.3	
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B2 LOCATION	B2.1		x	B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3	x	C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1		D2		D3	x	D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2	x	E3	x	E4	x
----	--	----	---	----	---	----	---

E5		E6	x	E7		E8	
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F. RECOMMENDED ACTION

F1		F2		F3	x	F4	
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COMMENTS

LITHP has an interest in the general concept of oceanic seafloor seismic stations and multidisciplinary observatories as proposed by ION. However, it remains unlikely that LITHP will rank highly a proposal to drill holes solely for the purpose of establishing borehole seismic stations until it is firmly established that borehole installations are superior to seafloor installations. The issue of borehole versus seafloor data quality was addressed in our review of 431-Add and we do not feel that it was satisfactorily addressed in 431-Add2. We feel that it is premature to drill new holes for seismometers until OSN1 Pilot studies or their equivalent take place and the data are analyzed.

LITHP still feels that it is important for the proponents to link the borehole seismic stations with other scientific justifications for the drilling. The proponents attempt to do this by discussing the usefulness of basement sampling at these sites. However, this is not a substitute for bringing in additional proponents specifically interested in additional objectives.

In general, the proposal is incomplete and lacking in sufficient detail to fully evaluate it. Site survey information needs to be provided. In the original proposal reviewed in the spring of 1993 it was indicated that site survey cruises were "planned" but LITHP has yet to see any of this data in the addenda to 431. Drilling time estimates need to be given, including exact depth requirements and any special needs such as casing, reentry cone, etc..

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	471
PROPOSAL TITLE	Taiwan arc-continent collision
PROPOSANTS	Lundberg et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

A. THEMATIC RELEVANCE

A1		A2		A3		A4		A5	x
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B. SCIENTIFIC MERIT

B1 OBJECTIVES	B1.1		B1.2		B1.3	
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B2 LOCATION	B2.1		B2.2	
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C. SCIENTIFIC FEASIBILITY

C1		C2		C3		C4	
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D. PRELIMINARY TECHNICAL FEASIBILITY

D1		D2		D3		D4		D5	
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E. PROPOSAL COMPLETENESS

E1		E2		E3		E4	
----	--	----	--	----	--	----	--

E5		E6		E7		E8	
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F. RECOMMENDED ACTION

F1		F2		F3		F4	
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COMMENTS	
<p>This proposal presents a new project to study the structural evolution of an incipient arc-continent collision in the south of Taiwan island. Taiwan is the collision site between the Luzon volcanic arc and the passive continental margin of the Chinese sea. This collision is migrating to the south very rapidly so that it is possible to study the beginning of the collision in the sea domain south of Taiwan. At that place, they have got a number of seismic data so that they have a good idea of the structure of the incipient collision. Cross-sections show that the tertiary passive continental margin of China is to the west passing beneath the fore-deep sediments that are accreted beneath the sediments of the accretionary prism. All these series are affected by a net of east-vergent thrusts. To the east, these series are in tectonic contact with the fore-arc sediments and overlying volcanic rocks of the Luzon arc. The exact nature of this tectonic contact, which represents the main suture between the arc and the continent, is unclear (backthrust, normal fault or strike-slip fault), and is addressed by this proposal. The main objectives indeed are : 1. to determine the nature (geometry, kinematics, age, state of stress) of this fault system, 2. to determine the evolution of sedimentation during collision and hence to infer the uplift history of the accretionary prism, 3. to determine the geothermal framework of the collisional zone and, last, 4. to precise the kinematics of the Philippine plate in the recent times.</p> <p>To realise that program, seven sites are proposed for drilling, four as first priority totalizing 3100m of sediments and three as second priority totalizing 2500m sediments and 150m of (probable) volcanic basement of the Luzon arc. All sites are located on the basis of good seismic data.</p> <p>Comments.</p> <p>This proposal is clearly presented and has very nice tectonic and sedimentary objectives which unfortunately are not relevant with LITH panel but that should interest TEC and SGP panels. Two main criticisms can be done : 1. more seismic data are needed to improve the proposal and 2: two legs will be probably necessary to drill the seven sites (5100m total deep) proposed in the proposal.</p>	

ODP PROPOSAL EVALUATION THEMATIC PANEL: LITHP

PROPOSAL NUMBER	LOI 46
PROPOSAL TITLE	Antarctic glacial history
PROPOSANTS	Kristoffersen et al.
CONTACT	
DATE REVIEWED	FEBRUARY 22-25, 1995

COMMENTS	
LITHP is always interested in obtaining samples to characterize Jurassic oceanic crust. Several issues should be addressed by the proponents in a proposal, including the possibility that the basement highs proposed to be drilled are peridotite ridges, and the relationships of the basement to Explora Wedge, the Ferrar flood basalts, and the Karoo flood basalts.	

The following proposals and letters of intent were not considered within the mandate of the Lithosphere Panel and were not reviewed:

LOI 42	High res. paleocean., Scott Plateau	Opdyke and Bird
LOI 45	LWD-APC across N. Amer. margin	Pirmez et al.
LOI 49	Prograding sed. in Wilkes Land	Cooper et al.
LOI 50	Antarctic glacial history	Barrett and Cooper
LOI 52	Antarctic Prydz Bay	AGS
452-Rev	Antarctic Glacial History	Barker et al.
404-Rev	W. N. Atlantic Sediment Drifts	Keigwin
412-Add4	Bahamas Transect	Eberli et al.
441-Add1	Southwest pacific Gateway	Carter et al.
354-Add4	Benguela Current	Berger et al.
348-Add3	Atlantic margin safety survey	Austin et al.
367-Rev2	Cenozoic cool-water carbonates	Feary et al.
467	West. Med sea level changes	Droz et al.
465	Southeast Pacific Paleo. Depth	Mix et al.
464	Southern ocean transect-Atlantic	Gersonde et al.
462	Blake Plateau and nose	Norris

5. Future Meeting Dates

The Panel agreed to hold their Fall, 1995 meeting on October 9-10-11 in either Japan (after consultation with Shoji Arai, who could not attend the College Station meeting) or in Cyprus, to be hosted by Kathy Gillis.

The Spring, 1996 meeting will be held in Corvallis, Oregon on February 26-27-28 and will be hosted by Sherm Bloomer. The Panel proposed making that a joint meeting with TECP and will consult with the TECP chair about that possibility.

6. Current Liaisons

The following are the liaisons from LITHP to other Panels and programs. Some of these liaisons are currently vacant, because of the large number of personnel changes on the panel recently. New liaisons will be appointed at the Fall meeting.

<u>Panel:</u>	Liaison
OHP	vacant
SGPP	R. Zierenberg
TECP	D. Wilson/K. Gillis
DMP	M. Coffin/A. Fisher
TEDCOM	vacant
 <u>Program:</u>	
InterRidge	R. Rihm/P. Castillo
IAVCEI	M. Coffin
ION/OSN	A. Sheehan

7. Panel Membership issues

There will be a number of changes in LITHP membership over the next two meetings:

Affiliation	Current member			New member	
	Name	Speciality	Last meeting	Name	Specialty
U.S.	J. Tarduno	paleomag, plate motions	Spring 95	J. Guy/R. van der Voo	paleomag
U.S.	K. Gillis	hydrothermal systems	Spring 95	J. Slack/R. Koski	economic geology
U.S.	M. Coffin	LIPS, marine geophysics	Fall 95	TBA	
U.S.	D. Wilson	plate motions, MOR dynamics	Fall 95	TBA	
U.S.	R. Zierenberg	economic geology, stable isotopes	Fall 95	TBA	
Germany	P. Herzig	economic geology, geochemistry	Spring 95	R. Rihm	geophysics, reflection, refraction
ESF	Y. Kristoffersen	reflection, refraction	Spring 95	D. Weiss	geochemsitry, petrology
Canada	J. Ludden	petrology, geochemistry	Spring 95	K. Gillis	hydrothermal systems

The panel needed to nominate replacements for Kathy Gillis and John Tarduno as U.S. representatives.

The panel's first choice to replace John Tarduno is Jeff Guy. We realize this requires having two LITHP representatives from one institution (SIO) but we feel that the circumstances here are special. What has made John a particularly valuable panel member is his expertise with rock magnetism as well as with magnetostratigraphy. In order to provide comprehensive reviews of issues involving magnetization of the lithosphere, a panel member with a classical background in paleomagnetism, including direct experience with current issues in rock magnetism, would be most desirable for LITHP. These are not new criteria; instead LITHP has consistently sought this expertise. Because studies in paleomagnetism are commonly applied in both sediments and hard rocks, paleomagnetists have also served well as liaisons with OHP. To communicate best with OHP, shipboard experience in constructing magnetostratigraphies is also highly desirable. There are very few people around with this diverse expertise and the panel believes that Jeff Guy is the best choice. Because of the specialized nature of this seat on the panel, we ask PCOM to approve the choice of Jeff Guy, even though we already have one representative of SIO (P. Castillo) on the panel.

The panel recommends John Slack, an economic geologist with the USGS at Reston, as a replacement for Kathy Gillis. An alternate choice is Randy Koski with the USGS in Menlo Park. The panel believes that it is important to keep a link to the economic geology community, as well as to a non-university part of the U.S.

8. Reports at the Meeting:

Reports from JOIDES Panels:

PCOM
DRILLOPTS
PANCH
SGPP
TECP
TEDCOM
OHP, DMP

J. Natland
S. Bloomer
S. Bloomer
R. Zierenberg
D. Wilson, J. Lin
Y. Kristoffersen
No meetings since last LITHP meeting

Reports on Sciences Initiatives:	ION	R. Rihm
	RIDGE	J. Naltand, J. Lin
	IRIS-OSN	A. Sheehan
	IAVCEI	M. Coffin
	GEOMAG Polarity	J. Tarduno
	OBLISP	R. Zierenberg, A. Fisher
Reports on Recent Legs:	Leg 159	J. Miller
	Leg 158	J. Miller

9. Other Business

The Panel would like to thank Jay Miller for hosting the meeting and for introducing many of the panel to the joys of Texas barbecue. Special thanks go to the staff of the Gulf Coast Repository for their help in leading the panel on a field trip through cores dear to our hearts. The panel particularly appreciates the time that Tom Pettigrew and other members of the Engineering Department spent with the panel. Tom and his colleagues have made many of our most ambitious scientific goals a reality. We hope that we can continue to develop regular communication with the Engineering Department and look forward to many more successful innovations.

The panel will have a number of changes in membership over the next two meetings and wishes to thank those people who are rotating off the panel after this meeting. Peter Herzig's expertise in hydrothermal systems will be missed; we're sorry Peter couldn't join us for his last meeting with the panel. Yngve Kristoffersen has provided careful comment and criticism on problems in seismic interpretation and has been a very effective liaison to TEDCOM. Yngve still holds the medal for most remarkable dinner at a LITHP meeting (no offense Jay!). John Ludden has always given us thoughtful comment on matters petrologic, geochemical, and gastronomic. The panel wishes him well in his new position in France. Finally, we would like to offer a special thank you to John Tarduno. John has not only been an excellent panel member, but he has served as a remarkably effective liaison to OHP and has always been willing to step in and help the panel with difficult problems. His work with OHP and various Caribbean proponents helped produce a program which the panel still believes is one of its top global priorities. John's help and hard work have been invaluable.

Appendix 1: JOIDES Lithosphere Panel

Oceanic Plateaus Position Paper

Large igneous provinces (LIPs), voluminous crustal emplacements of predominantly mafic extrusive and intrusive rock, represent a fundamental mode of mantle circulation that is commonly distinct from that which characterizes plate tectonics and sea floor spreading. LIPs are observed not only on Earth, but also on the Moon, Venus, and Mars. They include oceanic plateaus, submarine ridges, seamount groups, and ocean basin flood basalts, as well as volcanic passive margins and continental flood basalts. These intense episodes of igneous activity episodically alter the flux of solids, particulates, volatiles, and heat from the lithosphere to the hydrosphere and atmosphere, possibly altering their physical, chemical, and biological characteristics. Below we address scientific problems and drilling strategies for oceanic plateaus.

Scientific Problems

The major objective of oceanic plateau studies is to describe and understand upper crustal to upper mantle igneous and deformational processes related to LIP emplacement, how they relate to deeper mantle processes and dynamics, how these processes relate to plate tectonic processes, and how emplacements of LIPs relate to major events of global change. Age control is a fundamental prerequisite for addressing most of these issues associated with oceanic plateaus; ocean drilling samples offer opportunities to solve problems involving:

- **Mantle behavior.** Decompressional melting of mantle material, whether initiated by plumes originating at boundary layers within the earth, by lithospheric plate separation, or from extraterrestrial impacts, is required to produce LIPs. Parental magmas in these various models originate at different mantle depths and follow different time-temperature paths; thus petrological and geochemical studies of drill core samples and estimates of magma production rates will constrain the causes of anomalous melting. Emplacement environments for LIPs range from purely extensional (e.g., Iceland) to intraplate (e.g., Hawaii), and provide clues to their origin, but the original tectonic settings for many LIPs (including the two giants, Ontong Java and Kerguelen-Broken Ridge oceanic plateaus) remain uncertain.
- **Lithospheric effects.** Various models for the origin of LIPs predict different lithospheric uplift resulting from thermal and dynamic mantle upwelling, different amounts of crustal thinning, and different subsidence histories. Deep LIP basement (500-1000 m) and sedimentary equivalent (moat) samples, in conjunction with high-quality geophysical data, can constrain (i) overall timing of deformation, and (ii) relative timing of elastic response from which strain rate, effective elastic thickness of the lithosphere, flexural rigidity, relative importance of lithospheric reheating, and possible lateral flow of material at deeper levels can be determined.
- **Timing of the entire LIP emplacement process.** Models for LIP emplacement predict various durations of magmatism and associated lithospheric deformation. Drilling can provide a vertical stratigraphic record in both the volcanic succession and in syn-constructive sediment which constrains absolute and relative ages of uplift, magmatism, and subsidence during LIP emplacement and evolution. Reference holes on older normal oceanic crust will provide evidence for nature of the initial stages of volcanism. Accurate dating of LIPs, in particular their extrusive components, will provide input for correlations and for analysis of causal relationships among large-scale magmatism, changes in the Earth's magnetic field, true polar wander, and hydrospheric-atmospheric physical, chemical, and biological changes.
- **Magma character, dimensions, and eruption parameters.** Drilling can provide information for characterizing the petrology, geochemistry, and volumes of magmatism. Understanding of the duration, rate and episodicity of volcanism, and eruption style and environment can only be furthered by drilling. Full sampling of the sequence of volcanism by drilling a LIP and its sedimentary equivalents will provide critical information on the petrological and geochemical evolution of magmatism during emplacement, and by inference constrain the thermal and compositional evolution of the underlying mantle. Igneous basement samples can provide information on asthenosphere-lithosphere interactions. Complementary studies of continental flood basalts and submarine LIPs will enhance understanding of both.
- **Flux of mass and heat from the lithosphere into the hydrosphere, atmosphere, and biosphere.** Intense pulses of igneous activity associated with LIP emplacement affect the physical, chemical, and isotopic character of the oceans and atmosphere to an undetermined extent, with possibly significant effects on the biosphere. Tentative correlations of the pulses with changes in biota, paleoclimate, paleoceanography, paleoenvironment, paleogeography, and sea level

require further analysis, to which drill core samples will be a key component, to examine for causal mechanisms. The relative temporal and spatial importances of off-axis hydrothermal circulation and ridge-crest hydrothermal activity need to be established. The thermal and permeability structure of old oceanic and transitional crust invaded by LIP heat sources likely differs from mid-ocean ridges. Therefore the products and consequences of hydrothermal activity in this setting may differ significantly. Oceanic crust underlying LIPs may be fundamentally altered by this hydrothermal activity and might contribute to the flux of seawater-derived components back into the mantle at subduction zones.

Drilling Strategies

Oceanic plateau drilling strategies, detailed in the accompanying table for individual plateaus, address the initiation, emplacement, and post-emplacement phases of their evolution, and the role of these provinces in crustal evolution and global change. Drilling of oceanic plateaus is still in an exploratory phase, and the diversity of plateaus globally suggests that all questions cannot be answered by drilling one or two such features. The two giant oceanic plateaus, Ontong Java and Kerguelen-Broken Ridge, are clear priorities for study because of their large size and potential to impact the physical and chemical characteristics of the Earth. Intermediate-sized oceanic plateaus, whether in relatively pristine (e.g., Wallaby, Manihiki, Hess, Shatsky) or tectonized (e.g., Caribbean) settings, are also of high priority because of their potential global impact. Our initial oceanic plateau drilling strategies focus on determining chronologies and geochemistries of plateau emplacements so that relationships to major events of global change can be examined.

Plateau crust is commonly buried under as much as 1.5 km of sediment; hence, drilling is in most cases the only method of recovering samples of basement rock. Paleontological evidence from the sediment deposited on the plateaus will provide important constraints on the age of these features and their long-term subsidence history. Plateau drilling may be complemented by holes on older oceanic crust away from the LIP; recovered sediment may provide important temporal brackets for igneous activity.

The principal drilling strategy for oceanic plateaus is based on transect sampling, supplemented by holes of opportunity. A drilling transect would normally consist of a series of holes sampling key igneous, sedimentary, and metamorphic rock units, tied to reference holes in normal oceanic crust. Moderately deep (500-1000 m) basement penetration should be achieved to establish the uppermost igneous stratigraphy. Wherever possible, advantageous exposure of deeper crustal sections via tectonic processes (e.g., Kerguelen, Broken Ridge, Manihiki, Caribbean) should be exploited. All drill holes should be continued at least 150 m into the igneous basement to constrain its age, petrology, and geochemistry, and to sample geomagnetic field behavior.

LITHP Oceanic Plateau Drilling Summary

	Type	Size	Age	#Legs	Goals	Characteristics	Drilling Strategy
Kerguelen-Broken Ridge	Giant Plateau	~2.3 x 10 ⁶ km ²	110-115/85	2	age and composition array; deep hole by drilling or offset	continental contamination; original setting among Antarctica, India, and Australia	Longitudinal, latitudinal, and offset transects together with reference holes in the adjacent oceanic crust. At a minimum, this would involve one site per 100,000 km ² (i.e. Iceland-size), with at least one site having basement penetration of about 1 km, to test for composition and age variations. The longitudinal transect would be drilled normal to magnetic lineations on the adjacent oceanic crust. Offset holes, drilled where rifts expose rocks from deeper crustal levels would allow construction of a composite igneous stratigraphy for the upper crust, and would help constrain the emplacement duration of volcanism.
Ontong Java	Giant Plateau	~1.9 x 10 ⁶ km ²	122/90	2	age and composition array; deepen 807C (now 149 m)	original tectonics? Malaita and Santa Isabel are uplifted plateau sections; models exist for links to Louisville	same as for Kerguelen-Broken Ridge
Caribbean	Intermediate-size Plateau	medium	88	1	age & compositional progression; deep hole by drilling	original setting unknown; models link to Galapagos; tectonized, exposed edges; only hi-Mg rocks of any <i>in situ</i> oceanic plateau	Longitudinal and latitudinal transects together with reference holes in the adjacent oceanic crust. Minimal areal coverage should be the same as for the giant oceanic plateaus, resulting in about 5 sites, not including reference holes. Uplift and subsidence history could be addressed by drilling the oldest reef-capped volcanoes.
Shatsky	Intermediate-size Plateau	medium-small	149?-138?	1	age & compositional progression	end of tail? where is active hotspot?	same as for Caribbean