

**Performance Evaluation
for the
Ocean Drilling Program**

Report of the
JOI Performance Evaluation Committee
and
Response of Subcontractors, JOIDES and JOI

September, 1986

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1. Foreward

The initial terms of reference for the performance evaluation were proposed in the JOI proposal to NSF of July 1983. These were put in final form at the JOI Board of Governors meeting in Miami, March 1985. The introduction to the terms of reference state:

"During the life of the Ocean Drilling Program, it is essential that JOI as the prime contractor have a method for periodically evaluating the performance of its subcontractors. In its proposal to the National Science Foundation in July 1983, the Corporation set forth its intention to conduct a performance evaluation of Texas A&M University, the science operator, Lamont-Doherty Geological Observatory, the subcontractor for logging services, and other subcontractors and program activities on a biannual basis. This process is slated to begin in the fall of 1985.

The President of JOI, after consultation with the JOIDES Executive and Planning Committees and other appropriate individuals, has appointed the evaluation panel and chosen its chairman."

This report summarizes the work of the JOI Performance Evaluation Committee and the response of the subcontractors for the Ocean Drilling Program. This was the first such review for the program, and as a consequence, it served a dual purpose of both providing a comprehensive review and establishing guidelines and recommendations for future reviews.

The report as presented here consists of three major parts: the full report of the committee (which includes the detailed terms of reference), the specific recommendations and responses, and suggestions for future reviews. A detailed chronology of the overall activity is appended.

In brief, the Committee's report praised the program and the performance of the subcontractors, noting the need to move from a start-up phase to a fully operational phase. The detailed recommendations and subcontractor response are provided in Section 3. Many of the specific recommendations have been already addressed in the FY 1987 Program Plan.

From inception to completion, this first review took somewhat longer than we had anticipated. In summary, the first request for nominations to the Committee was sent out in January 1985, and the JOIDES comments on the Evaluation Committee's recommendations were received in September 1986. A large part of the delay was imbedded in the committee selection process and in obtaining agreement on meeting dates and a time to visit the ship in port. We were very aware of the need to get the right people, but it was not easy to find a time when the entire group could meet.

Once the group did meet, however, they carried out their work expeditiously. The first meeting was at the end of October 1985 and the final committee report was received at JOI in early March 1986. Since then, time has been spent in collecting formal responses from the subcontractors and JOIDES and preparation of this summary document. Our suggestions for future reviews focuses on the need to speed up the whole process.

We were very pleased with the membership of the review group. It was essential for us to find experts who were familiar with the program but not currently formally involved in any substantive way, and we needed a broad spectrum of expertise. We were fortunate to have Dr. William Hay, former President of JOI, now Director of the Museum at the University of Colorado, agree to serve as Chairman of the group. His long-time involvement with drilling programs assured a competent review. We were also fortunate to have Dr. Joe Creager and Dr. Jean Francheteau as representative past members of the Planning Committee, Dr. Myron Horn from Cities Service to cover logging, and Dr. John Maxwell from the University of Texas and Dr. Karl Hinz, both long-time participants in various drilling activities. None of these are substantively involved in directing ODP, but several serve on panels of the PCOM.

The terms of reference call for substantive involvement of JOIDES in the nomination of Committee members; I am pleased to report that Drs. Creager, Maxwell, and Horn were recommended by JOIDES, and that Dr. Francheteau substituted for Dr. Aubouin, who had, on the recommendation of JOIDES, agreed to serve, but whose schedule would not permit meeting with the group. Membership nominees were also discussed with JOI, NSF and outside experts.

The procedure was the following: the PEC met in plenary session three times in late 1985 to collect information to prepare the report. The report was received in March 1986 from the PEC, but there was too little time for review and response by the subcontractors before the April 1986 EXCOM meeting. To ensure that the issues raised by the PEC were noted early, a draft copy was circulated to the EXCOM then.

After the meeting, formal responses were solicited from each of the subcontractors on the part of the report addressed specifically to that subcontractor. This final document includes the PEC report, subcontractor responses, general comments, and recommendations for future reviews (see section 4).

Staff support was provided by Anthony E.S. Mayer. Mr. Mayer did a superb job of collecting, recording, and collating committee minutes and in assisting Dr. Hay in preparing the draft committee reports. We owe him, and the Committee, a debt of gratitude.

We note that this is not the only review of program and management activities of ODP and JOI. TAMU has held a meeting and solicited comments from co-chief scientists on the operation of the program, and NSF is now carrying out a management review of three of its academic consortia, one of which is JOI. Note that the issue of a full review of the entire ODP program, including JOI, is discussed in Section 4. We feel that on-going reviews such as these lead to a healthy and efficient program.

D. James Baker
President
Joint Oceanographic
Institutions Incorporated

2. PEC REPORT

REPORT

OF THE

JOI

PERFORMANCE EVALUATION COMMITTEE

INTRODUCTION; MEMBERSHIP; TERMS OF REFERENCE; and ACTIVITIES

1. Introduction

It had been recognized that during the life of the Ocean Drilling Program, it was essential that JOI as the prime contractor should have a method for periodically evaluating the performance of its subcontractors. In its proposal to the National Science Foundation in July 1983, the Corporation set forth its intention to conduct a performance evaluation of Texas A&M University, the Science Operator, Lamont-Doherty Geological Observatory, the subcontractor for logging services, and other subcontractors and program activities on a biannual basis. This process was scheduled to begin in the fall of 1985.

The President of JOI, after consultation with the JOIDES Executive and Planning Committees and other appropriate individuals, appointed the Performance Evaluation Committee and chose its chairman.

2. Membership

Dr. William Hay, Chairman
Dr. Joe S. Creager
Dr. Jean Francheteau
Dr. Karl Hinz
Dr. Myron Horn
Dr. John C. Maxwell (only available for College Station visit)
A.E.S. Mayer, Executive Secretary

3. Terms of Reference

- 3.1 Committee Operation - JOI laid down the following arrangements for the operation of the Committee: "The Committee will be briefed by the Chairman of the Board and other officers of JOI in advance of the beginning of the performance evaluation. Following the evaluation, the Committee will debrief officers and then Corporate members of JOI within the general guidelines provided by the Terms of Reference. The Committee will first develop and then transmit in writing to the subcontractors being evaluated the scope and procedures of the evaluation, together with any questionnaires or questions to be answered. The same information will be transmitted to the President of JOI. The Committee will conduct its evaluation at the principal headquarters sites of the subcontractors and will visit the drillship during its St. John's, Newfoundland port call in the later part of October 1985."

The Committee will interview co-chief scientists and/or members of the scientific party as appropriate of Legs 101 through 105, which will have been completed at the time of the performance evaluation, as well as members of JOIDES committees and panels.

After the completion of the evaluation, the chairman of the Committee will discuss the Committee's findings with the President of JOI and the senior official of the subcontractors and/or the subcontractors' staff, as is mutually agreed.

Within one month of the evaluation, the chairman of the Committee will submit a draft of the evaluation report to the President of JOI. The President of JOI or his representative will discuss with and transmit the report to the subcontractors and will ask for written comments, including plans for any action required. After receiving the subcontractors' comments and plans, JOI will discuss the report with and transmit a copy of it to the Chairman of the EXCOM and PCOM and to the National Science Foundation.

The ultimate objective is to achieve a reliable and effective evaluation system that will best serve the scientific community, NSF and JOI. Committee members are encouraged to suggest to the President of JOI ways in which the process can be made more effective."

The Committee adhered to this operational plan.

- 3.2 Scope of the Evaluation - JOI stipulated that the evaluation should include an examination of the following program management elements:
 - 3.2.1 Achievement of scientific objectives - The report of the Conference on Scientific Ocean Drilling, November 1981, established the blueprint for ten years of scientific ocean drilling. It was the document upon which a peer review was conducted and program approval awarded by the National Science Board. It was recognized that at the time of the evaluation, only five of an anticipated sixty or more legs had been completed. Nevertheless, sufficient plans were in place which enabled the Committee to make some general observations with regard to the initial direction of the program and its consistency with COSOD objectives.
 - 3.2.2 Program plan management and adherence - Each year, the principal subcontractors, TAMU and L-DGO, provide JOI with a program plan for the following year which is based upon the scientific directions of JOIDES. Since two program plan years, FY 84 and 85, had been completed at the time of the evaluation and a program plan for FY 86 initiated, the Committee was asked to assess the subcontractors' success in meeting the plans' objectives.
 - 3.2.3 Budget preparation and adherence - Detailed subcontractor budgets, prepared as part of the development of annual program plans were available. The Committee was asked to review the budget preparation process, the budgets themselves, and the subcontractors' performance.
 - 3.2.4 Personnel policies and management - The success of a major program undertaking rests to a major degree upon management's ability to attract and hold capable individuals and to elicit a consistent,

highly motivated attitude toward program execution. The Committee was asked to take a retrospective look at staffing, making a judgment on the subcontractors' success in developing the appropriate cadre and establishing an esprit de corps.

- 3.2.5 Engineering maintenance, development, application - The maintenance standards established by the subcontractors for all shipboard equipment, either directly or indirectly under their control, have a major bearing on the quality of scientific results achieved. The development of enhanced technical capability to obtain information heretofore beyond the capabilities of GLOMAR CHALLENGER, and the application of those developments to the service of science are essential ingredients of the COSOD report. The Committee was asked to assess these aspects of the program engineering effort and make judgments regarding engineering staff adequacy, organization and performance during the initial phases of the program.
- 3.2.6 Attention to environmental conditions - The field portion of the Ocean Drilling Program is an inherently dangerous undertaking in which lack of adequate preparation or carelessness in execution can have serious environmental consequences. The Committee was asked to assess the standard operating procedures for adequacy and assess subcontractors' adherence to these procedures and if possible make a judgment of contractor performance in the face of unforeseen developments.
- 3.2.7 Safety - Operations on board a drillship are inherently dangerous to personnel. The Committee was asked to attempt to review the safety procedures, adherence, and personnel training as well as the statistical measure of success in providing a safe environment.
- 3.2.8 Overall management effectiveness and efficiency - The Committee was asked to attempt to make a judgment of each of the subcontractor's success in this category in terms of the cost consciousness of personnel, the management of subcontracts, the timeliness of reports internal to the subcontractor, as well as to the prime contractor, the dissemination of public information about the program and the general orderliness with which the business affairs of the subcontractor are being carried out.
- 3.2.9 Relationships with JOIDES, JOI, NSF - Each of these bodies is an integral part of the total program management structure. The Committee was asked to assess the interrelationships with special attention to the fidelity of communications, working relationships and any perceptions that suggest remedial attention might be required.
- 3.2.10 Morale - The Committee was asked to make a judgment in each subcontractor organization as to morale, confidence in the future and the general outlook of individuals associated with the program.

4. Financial Review and Audit

Concurrently with the performance evaluation, a financial audit is being conducted at TAMU by an independent public accounting firm. The general scope of work for the audit is attached as Appendix 4. This was of assistance in identifying possible areas of overlap between the performance evaluation and the financial audit, thus limiting the scope of the Committee's activity where there might otherwise be doubt. There is no concurrent audit at L-DGO, unless of course DCAA elects to conduct an audit.

The Committee did not feel required to investigate the more financially oriented subject areas that are set out in Appendix 4. At some future time the elements of that work statement will be examined by an appropriate audit authority.

4. Activities

- 4.1 The Performance Evaluation Committee met at L-DGO on 24/25 October 1985. It received an initial briefing from the President of JOI and then proceeded to interview the Borehole Research Group, Schlumberger representatives, and M. Zoback (Stanford University), a consultant to the logging program. On 25 October, the Committee visited the East Coast Core Repository and the ODP Site Survey Databank as well as holding discussions with the PCOM and EXCOM Chairmen and meeting with the Director of L-DGO.

- 4.2 On 26 October, the Committee travelled to St. John's, Newfoundland and visited the JOIDES RESOLUTION (SEDCO/BP 471) on 27 October. During this visit, the Committee met one of the Masters (Cpt. E. Oonk) and SEDCO Drilling Managers (D. Steere) as well as ODP personnel including the engineers sailing on Leg 106.

On 27/28 October, the Committee met a co-chief scientist from Leg 102, the Leg 105 co-chief scientists, and held a plenary session.

- 4.3 The Committee visited TAMU College Station on 6-8 November 1985. This meeting involved seeing most ODP staff as well as the Leg 101 co-chief scientists and the Dean of the College of Geosciences, TAMU. A final plenary session was also held.

- 4.4 The Chairman and Professor Creager made an informal visit to JOI Inc. Offices, on behalf of the Committee, on 20 December 1985.

5. Acknowledgements

We wish to thank the Director of L-DGO and the staff of the various ODP groups at L-DGO for their hospitality and cooperation. We also wish to express our appreciation of the cooperation and hospitality shown by ODP/TAMU staff both at St. John's and at College Station.

We also wish to thank the others who met the Committee and were prepared to talk frankly to the Committee.

FINDINGS AND CONCLUSIONS

1. General

- 1.1 Firstly, we wish to congratulate JOI and all its subcontractors on the speed and efficiency in which the Ocean Drilling Program has moved from a proposal to an operational reality. This has depended on the enthusiasm and skill of the personnel involved in the Program and especially those at Texas A&M University, the Science Operator.
- 1.2 The Science Operator has mounted a major effort in order to procure a drillship, convert it to its scientific purpose, design and equip the laboratories and recruit staff to support it and the Program in general in a very short period of time. We consider this to have been a highly successful operation. The Program, although now into its sixth leg, is still "shaking-down" which is only to be expected in view of the speed with which the start up has been accomplished.
- 1.3 However, it is appropriate to note that the Program is now moving from its start-up phase into a steady-state operation which will require different approaches to ensure its success. This is particularly true of the Science Operator who needs to maintain enthusiasm and commitment without becoming possessive. The ODP is a multi-national and multi-disciplinary scientific effort which must be responsive to the overall geoscience community.
- 1.4 Our detailed comments should be viewed as constructive suggestions to ensure that the Program remains on course and successful and should not be viewed as criticisms of the considerable achievements which have been made already in launching the ODP.

2. Science Operator

2.1 General Management, Organisation and Administration

- 2.1.1 We inquired, in some detail, into the management and administrative structure of the Science Operator and the relationship of the ODP function with its host institution, Texas A&M University. It is clear that TAMU sees ODP as one of its major programs and is contributing large-scale support including the provision of a new headquarters building and core repository as well as providing the temporary facilities at virtually no cost to the Program.
- 2.1.2 The arrangement whereby the administration of ODP is carried out in-house is clearly beneficial in providing flexibility in the procurement and administrative procedures which are necessary in a project of this complexity. The current arrangements between TAMU, the Texas A&M Research Foundation (TAMRF) and ODP work well. Normal indirect costs, which could amount to roughly \$4m p.a. are not levied on the ODP operation. Instead there is a \$200k administrative fee and the administrative support to ODP is a direct charge to the Program. We looked at this arrangement in

detail and are convinced that there are no "hidden" overhead charges. ODP clearly benefits from its close relationship with TAMU and TAMRF. At the same time TAMU benefits in being able to have some 10 graduate students employed as part-time assistants to ODP.

- 2.1.3 The overall staff structure seems complex but reflects the tasks of the Science Operator. It appears to be a large increase over the staffing levels used by DSDP although it should be noted that DSDP contracted out many tasks currently undertaken by the Science Operator and that there is an increased level of sophistication in ODP, especially in computing services, both of which are used to justify the overall staffing level suggested for the Science Operator. We were somewhat uneasy about the proposed overall high staffing level which was based on optimistic budget assumptions, including an assumption of a larger number of member countries than was the case in FY 85. We consider that there could well be staff increases in engineering which is understaffed and in marine technicians, but this would have to be at the expense of other areas of the operations, including Science Operations and Science Services especially publications.
- 2.1.4 The administration of the Science Operator is carried out by a team of highly skilled individuals who are responsive to the demands of the other groups within the organisation. We commend the Administration Newsletter and other activities which fully involve the administrators as part of the overall team.
- 2.1.5 We heard some criticism that reports, budget proposals, etc. are often late in submission to the prime contractor (JOI). However, we would expect that this will improve as ODP approaches a steady state operation. The next Performance Evaluation should pay attention to this matter.
- 2.1.6 Although recognising that the budget process is necessarily complex we found that it was difficult to relate the Science Operator cost centers to particular scientific activities. We accept that this is often difficult to do but it is necessary when scientific priorities are being considered in the budget preparation. We consider that the Science Operator must also be realistic in determining budgets. It creates considerable difficulty to include all the requests from JOIDES in a single budget which exceeds the target figures set down by NSF and JOI. Activities (e.g. engineering development to improve drilling technology; publications; computer and database developments) need to be clearly identified and costed alongside fixed costs (base budget) so that the community can advise on priority tasks which can be accomplished within the given budget limitations. The Science Operator must be prepared to accept these priorities and adjust accordingly, even to the extent of staff reductions in low priority areas should this be necessary. The Science Operator should also present the budget in such a way that the base budget activities are clearly examinable and justified. In addition, the budget

needs to be given at different target levels, especially for FY 87 when the international membership position is still uncertain.

- 2.1.7 Procurement of equipment for ODP is a politically sensitive issue. It is important that the procurement exercise is conducted in all the partner nations as well as in the U.S.A. and that sufficient time is given for possible bidders to respond.
- 2.1.8 A relative minor problem is that the Science Operator experiences difficulty in presenting information in a concise form that focuses the issues. Reports to JOI could be trimmed and made more informative and effective. The Evaluation Committee found itself deluged with printed information.

2.2 Science Operations

- 2.2.1 Science operations is one of the most visible parts of ODP/TAMU and the section with which most of the scientific community has the greatest contact.
- 2.2.2 The section is staffed by a multi-national team of young scientists who are bound to benefit from the links which are being established with the Geosciences Faculty in TAMU. This link should ideally enable the Science Operator to attract and retain a high calibre of staff scientist.
- 2.2.3 * The role of the staff scientist in relation to the co-chief scientists needs clarification. We heard some comments that the staff scientist has functioned practically as a third co-chief scientist. The staff scientist should be an assistant to the co-chiefs, representing the Science Operator and ensuring that the latter's responsibilities are carried out on any particular leg. For instance, the preparation of the draft science prospectus is a responsibility of the co-chiefs and not the staff scientist. Similar, daily shipboard science reports should be made in consultation with co-chief scientists. Responsibility for press releases and the preliminary reports (including the Nature and Geotimes articles) rests clearly with the co-chief scientists with assistance from the staff scientist. Overall coordination of the activities of the shipboard scientific party and the technicians rests with the co-chief scientists.
- 2.2.4 There appears to be a need for greater interaction between the staff scientists and the marine technicians, many of whom are almost as well qualified as the staff scientists. A closer link will be mutually beneficial, especially in terms of any research which may be undertaken by the staff scientists in terms of their faculty role. The marine technicians could also be involved in assistance to computer services, especially in software development.
- 2.2.5 In terms of this research, it has to be stressed (and we return to this point elsewhere) that the scientists in the subcontractors organisation are in a privileged position regarding access to ODP

data. Any research undertaken by the staff scientists should clearly not abuse this privilege. We have no evidence that this is the case, but we do urge caution with regard to this issue.

- 2.2.6 The policy with regard to the publication of papers for the Part B of Proceedings of ODP seems unnecessarily restrictive if it excludes the marine technicians from authorship. Should a member of the shipboard science party wish to co-author a paper with a marine technician, it is to the benefit of the Program as a whole that this should take place.
- 2.2.7 The role of the staff scientist has been expanded and systematized compared with that in DSDP which is an improvement although it demands more time, especially pre-cruise. However, we do not consider that this should necessarily mean an expanded interval between sea-going. The present sea-going frequency of once per 20-24 months seems somewhat infrequent. With a frequency of sea-going of about once per 12-15 months, which seems reasonable, the level of staffing in Science Operations could be reduced.
- 2.2.8 Staff scientists have been assigned liaison functions with JOIDES Panels. We have reservations whether this is necessary for all panels. Such liaison can be very useful if the staff scientist is supplying operational information needed for planning. It is also very useful for the Science Operator, in planning for the future, to be made aware of panels' "thinking."

2.3 Engineering and Drilling Operations

- 2.3.1 Engineering development was a key element in DSDP and is even more so in ODP. The rapid design and fabrication of the bare rock guidebase is an example of the responsiveness of the ODP engineering program to the needs of the scientific community.
- 2.3.2 Although the engineering development group is small, it has succeeded by the judicious use of outside consultants and contractors. We encourage this method of working, noting that it demands that close contact be maintained with the extra-mural subcontractors. It may well be that future developments justify increased staffing in this group.
- 2.3.3 We commend the approach taken by the Science Operator in convening workshops to discuss engineering and drilling priorities and to respond to likely future scientific needs. The JOIDES TEDCOM should be a main avenue of contact both with JOIDES and the engineering community, and it is very important that this Committee be re-activated as soon as possible. We encourage it to develop a link to engineering similar to that of the DMP to the Wireline Services Contractor.
- 2.3.4 We concur with the view that the engineering group should continue to improve and develop drilling capability utilising the experience of staff in both its engineering and operations sections. The major future developments would appear to be drilling, coring and

logging in hot hydrothermal areas and research to alleviate hole instability and bridging, and improvements in core recovery. It is likely that increased resources (consultancies or staff) will need to be devoted to these programs.

- 2.3.5 The operations section continues to work extremely well and inspires the confidence of the scientific party. It is dependent on the experience of the shipboard operations superintendents. We note that most of the development engineers have had some experience in this capacity. In the long term, it may be desirable to invite outside expertise from industry to supplement that already in-house.

2.4 Science Services

- 2.4.1 Included in this group are a number of important activities viz. computer services, publications, curation and databases and we address our comments to each section.

2.4.2 Computer services:

- 2.4.2.1 The initial purchase of four VAX 11/750 machines (with two onshore) and 99 DEC/PRO 350 machines seems somewhat excessive given that the onshore machines were not twinned. We doubt the necessity for having the two onshore machines, especially as there will be access to the university machines in the near future. Having committed this purchase it is, however, important that the onshore machines are efficiently and fully utilised.

- 2.4.2.2 The size of the computer services group within the Science Operator structure reflects the increased emphasis given in the new program to computerisation both in data capture and manipulation and in documentation. Given that this was an initial requirement of the Program, we consider that the Science Operator has responded correctly.

- 2.4.2.3 For the most part, the computer services group has used off-the-shelf software as much as possible. We commend this policy rather than that of developing software ab initio. However, we do have some concerns. Firstly, as the shore-based VAX 11/750 machines are not twinned and software is required to be on both plus the shipboard computer, software packages are acquired in multiples of three which is expensive. Further, we are concerned that some packages which were purchased are expensive when cheaper and equally suitable alternatives exist (e.g. SURFACE II from the Kansas Geological Survey could have been used in place of DI 3000). We recommend that, within the computer services budget, priority should be given to twinning the VAX 11/750 machines using VAX Cluster. This would create savings in software acquisition costs. Secondly, manipulative software will be needed by the shipboard scientists and others from the community to continue to utilise the data which have been acquired. Currently, the off-the-shelf purchase policy means that a scientist in the community (particularly in the non-U.S. partner countries) has to

purchase duplicates of the machines and software used by the Science Operator. We consider that some effort must be devoted to software development in order to provide community scientists with the necessary manipulative software packages.

2.4.2.4 Better integration of logging and other data is needed; there must be planning for how to accomplish this both at sea and on shore.

2.4.3 Publications:

2.4.3.1 We have noted the JOIDES publications policy regarding the results of ODP in Parts A and B of the ODP Proceedings. We have also noted the comments of the PCOM Publications Review Subcommittee and EXCOM on this matter.

2.4.3.2 We regard publications as being of the highest priority. Having established a program of this magnitude it would be tragic not to publish results from the program in a timely way. It is important that there are no delays in publication whether these be Part A or Part B. It appears that the proposed staffing for the publications group is unduly large when compared with DSDP. Whether it is more cost-effective to have the entire publications group in-house or partially contracted out depends on estimates from publishing houses and we understand that this information is now being obtained. Overall, it would be in keeping with the philosophy of engineering and computer services to "buy-in" expertise as required. However, the outcome is dependent on cost. It should be noted that, even if the publishing house option is feasible, there will still be a need for some publications staff within the Science Operator to monitor the contractor's performance.

2.4.3.3 It should be made clear to the members of the shipboard scientific party that they have an obligation to contribute to both Part A and Part B in a timely manner. The inclusion of prime logging data is necessary in Part A to use it for petrophysics studies (para. 4.3).

2.4.4 Curation and core repositories:

2.4.4.1 This section is based on discussions at College Station and a visit to the East Coast Core Repository (ECR) at L-DGO.

2.4.4.2 The ECR was well managed, procedures for the protection and sampling of cores were being followed rigorously and the staff were dedicated and enthusiastic although carrying out very routine tasks. The facility was efficiently organized and there is room for a modular expansion should this be necessary.

2.4.4.3 Facilities at L-DGO are good as the repository is below ground and protected. L-DGO is cooperative in every way although the facility comes under the direction of TAMU which also employs the staff.

2.4.4.4 Examination of the archive halves of cores, particularly the older material, showed that cores are drying out and fracturing and that

this is destroying the sedimentary structures. This material would probably be significantly damaged should the repository be relocated -- a proposal which we do not recommend from either a curatorial or financial viewpoint. There is a need for the Science Operator to commission a professional study of the long-term curation and utilisation of core material in order to develop procedures for its further protection.

- 2.4.4.5 The Committee gave some consideration to the problem of archive survival through a disaster and noted that archival and working halves and returned samples were all housed under one roof. Again, it is recommended that a study be undertaken to determine how best to protect the cores and ensure survival of at least some material through a disaster at any one location.
- 2.4.4.6 We also considered the future policy for the location of cores; the present policy has new Atlantic and Antarctic cores housed at L-DGO while all other new core material will go to the new repository at TAMU. There are a number of factors to be considered: a) curation of all new material under one roof would not necessarily create staff savings as the L-DGO repository would still need to be staffed and maintained; b) the likelihood of degradation of existing material during a physical transfer; c) the danger of a major disaster if all material is located under one roof; d) the importance of geographical location in as much as the vast majority of sample requests are dealt with through the mail.
- 2.4.4.7 Ideally, all core material from DSDP and ODP should be housed under one roof or, at least, that all ODP cores should be together. The first suggestion is not practical given that core repositories exist at Scripps Institution of Oceanography (SIO) and at L-DGO and any transfer would be prohibitively expensive. However, the present plan will split Pacific and Indian Ocean material between DSDP cores at SIO and ODP cores at the Gulf Coast Repository (GCR) and will divide ODP core material between Atlantic cores at ECR alongside the existing DSDP archive and the remaining material which will be housed at College Station. We recognise that the GCR has been planned with a 10 year life to take all Pacific and Indian ODP cores with Atlantic and Antarctic cores continuing to be housed at L-DGO which has sufficient space. Any transfer of the West Coast Repository to the GCR would reduce the lifetime of the latter to 5 years before expansion is necessary. Taking into account the practicalities and expense involved, we recommend that the present policy for core storage should be continued, recognizing that there will be a geographical split of Indian Ocean and Pacific Ocean material.
- 2.4.4.8 In terms of sampling policy, we note that this has been agreed by JOIDES both for post-cruise sampling and for on-board sampling. Some co-chiefs felt that the latter was somewhat restrictive. Extensive sampling for destructive tests was usually not allowed unless additional core material was obtained. We would support a review of the guidelines for on-board sampling urging a flexible

and pragmatic approach from both the viewpoint of proper curation and the shipboard scientific party.

2.5 Technical and Logistics Support

- 2.5.1 This area of the Science Operator organisation contains two rather distinct tasks, one being technical support on board JOIDES RESOLUTION and the other being logistic support including packaging, receiving, dealing with ship's agents, customs clearances, etc. This latter task is being carried out efficiently and we have no further comments.
- 2.5.2 Technical support consists of what might be called "traditional" marine technicians and specialist technicians assigned to the new laboratory instrumentation on the RESOLUTION. The former tend to be in supervisory and laboratory officer roles. The latter consist of a group of highly motivated and trained junior scientists acting in a technical capacity and it is to be expected that many will continue their careers as research scientists.
- 2.5.3 It should be recognised that the marine technicians are professionals, take a pride in their work, and are the first line in ensuring that data from the RESOLUTION's laboratories are of high quality. The marine technicians have prime responsibility for the quality of data produced. In order to ensure the quality of data we advocate that some of the technicians must have specific laboratory instrumental responsibilities and should operate under the guidance of acknowledged outside experts as has happened with organic and inorganic geochemical measurements. The Science Operator should ensure that these outside advisors maintain an oversight of the data produced. In addition, there should be routine measurements of standard reference samples to maintain high quality of data (See para. 3.7). We consider that it is important that this work is recognised by producing technical memoranda on new procedures and by publishing the analyst's name with each published analysis. The latter is normal procedure and identifies the analysts with reliability of data.
- 2.5.4 The marine technicians have a rota of one leg at sea followed by one leg on-shore including compensatory time off. Although sea pay is important to the technicians, prolonged service on this basis is likely to be deleterious and additional recruitment to reduce the frequency of sea-going should be considered.
- 2.5.5 The Committee lends its support to whatever means are necessary to retain the high-calibre technical staff and to assure that the technical staff are able to continue to produce reliable results while coping with frequent sea-going duty.

- 2.5.6 We would encourage greater interaction between the marine technicians and the staff scientists while on-shore. We consider this to be mutually beneficial and to be encouraged. Furthermore, it is important that the marine technicians have clearly defined and useful tasks to perform on-shore. Although we encourage greater interaction with Science Operations we do not advocate any change in the management structure in this regard. However, we consider that the rigid "class boundaries" between technicians and staff scientists should be abandoned. Should greater interaction be realised, then the role of graduate students vis-a-vis the relations between the technicians and the staff scientists should be re-examined.

2.6 Public Relations

- 2.6.1 Public relations is important in ensuring that the Ocean Drilling Program is seen, particularly by the public and by politicians, as the successful project which it is. However, it is a multi-national Program in which the scientific community at large takes the leading role in the scientific planning of the project and makes the Program possible. It is important that due attention is paid to this. This Committee made some suggestions as to the wording of press releases which covers this point.
- 2.6.2 The matter of flags flown on JOIDES RESOLUTION portcalls, although a trivial point, is nevertheless a sensitive issue. We suggest that the Science Operator and SEDCO follow nautical tradition and fly the JOIDES "swallowtail" at the masthead rather than give emphasis to both TAMU and SEDCO.
- 2.6.3 We realise that it is important to the staff of the Science Operator at TAMU that they have a pride in their work and receive due acknowledgement. Nevertheless, a fine line has to be drawn between this and an over-emphasis on ODP as being a TAMU project. We urge this to be taken into consideration at all times in the matter of public relations.
- 2.6.4 The naming of the ship has created some confusion. We understand the views of the owners that their company names be included in the title as was Global Marine Inc. in DSDP. The present informal name and the official name are rather clumsy. It is doubtful, however, whether anything can be done at this stage, other than accepting the official name (SEDCO/BP 471) along with JOIDES RESOLUTION in all communications and publications.

2.7 Miscellaneous

- 2.7.1 Two important issues are considered here which do not fall naturally into the above sections.
- 2.7.2 Ship clearances:
- 2.7.2.1 This is a complex and time-consuming issue and one which requires approaches for cruise clearances well in advance of drilling. It

can also affect cruise staffing dependent on the coastal states' requirements. There may be a case for assigning a staff member full-time to ensure that clearances are obtained in good time and to troubleshoot any problems.

2.7.3 Shore-based laboratory:

2.7.3.1 The concept of a shore-based laboratory was included in the initial proposal accepted by NSF. It is costly and has been deferred as there are higher priorities. However, it was raised several times during discussion at TAMU as being the facility which would be used by staff scientists and marine technicians as well as visiting scientists.

2.7.3.2 We do not believe that the shore-based laboratory should be included in future plans for a number of reasons. Firstly, it is a cost at a time when the Program is under-funded. Secondly, it might provide an undue advantage to TAMU staff to conduct research on ODP material over and above their support to the shipboard party. Thirdly, it is unlikely that shipboard scientists would ask for samples to be analysed at College Station with the results mailed to them. Most scientists will wish to analyse samples themselves at their own laboratory. Finally, it would be costly for visiting scientists to work at College Station for the likely length of time necessary to obtain meaningful results. This is especially true of scientists from the non-U.S. partner nations. Any samples not analysed on board on one leg can always be analysed at the start of the following leg or in port. Consequently, we recommend that the plan for a shore-based laboratory should be re-examined with a view to omitting it from future plans.

2.8 Conclusion

2.8.1 The Science Operator should be recognised and commended for the effort and dedication involved in establishing the ODP in an operational mode in such a short time. This recognition should include all the staff involved.

2.8.2 We were impressed with the enthusiasm and calibre of the staff at all levels. The Science Operator need not be defensive about the achievements so far and which we are confident will continue.

2.8.3 It should be recognised that the Program is still in a "shake-down" mode and that the evolution of the Program will remove many of the concerns and criticisms expressed above.

2.8.4 The Science Operator should be prepared to develop budget and staffing plans in accordance with priorities established by the scientific community and should adjust his plans accordingly.

2.8.5 Detailed recommendations are made regarding the future development of the Science Operator and these should be included in future policy.

- 2.8.6 The Science Operator should recognise the need to vary the present managerial approach to ensure continued success as the Program progresses to a steady state operation.

3. JOIDES RESOLUTION - Facilities

- 3.1 We toured the ship at the end of Leg 105 when it was to be expected that not all the systems had been brought to their optimum operational capacity. Nevertheless, we were very impressed by the speed and thoroughness of the ship's conversion from drillship to science laboratory. Reports indicated that the ship has already proved itself in extremely difficult conditions.
- 3.2 The ship is extremely well-maintained by SEDCO. Evidence from the Science Operator and co-chief scientists indicated that there is good collaboration between SEDCO and the science operation. Both factors augur well for the future of the Program.
- 3.3 However, it is obvious that the ship was not custom-built for its present role and that there are some difficulties with the operation mainly caused from its layout. We realise that there were physical constraints which had to be imposed in the conversion of the vessel. Nevertheless, the living quarters seem cramped for such a large vessel and there seem to be too many 4-berth staterooms. The Science Operator, by judicious berthing and staffing arrangements, is overcoming this difficulty. The Science Lounge is small, noisy, and not very conducive to scientific discussion. At the same time, the laboratory space was more than ample and some people expressed the view that its spaciousness would lead to compartmentalisation, working against the close relationships which developed on GLOMAR CHALLENGER.
- 3.4 We received some complaints that the power supply was "dirty" and that this was the most likely cause of equipment malfunctions. We understand that the Science Operator is discussing this problem with SEDCO for a quick resolution of this problem.
- 3.5 We heard that the hull is "noisy" for geophysics and that there is an inability to obtain good geophysical data at speeds in excess of 6 knots. We must stress that the SEDCO/BP 471 is a drillship and not a geophysical survey vessel. The underway geophysics is necessary for final site selection when ship speeds are low and results are adequate. Although some improvements may be desirable, we do not recommend any major commitment of funds to the improvement of underway geophysics. The Science Operator should be encouraged to make minor improvements as necessary and to maintain an awareness of new technologies for high (ship) speed seismic data acquisition.
- 3.6 There should be an improvement in communications between the bridge and underway geophysics and the bridge must become more involved in final position fixing for a site. This is particularly true as underway geophysics now has a GPS navigation facility. A minimum

requirement should be for GPS/SATNAV position output display on the bridge.

- 3.7 The laboratories have been equipped with advanced and often "state-of-the-art" instrumentation. This must be the first time such a collection of instruments has been housed in such an environment and there are some inevitable shakedown problems. It is vitally important that this equipment is supported by well-trained technicians under the oversight from the community acting as informal consultants to the Science Operator (see para. 2.5.3). There is a case for an increase in the number of technicians assigned to the scientific party.
- 3.8 An increase in the technician complement of the science party would be at the expense of the scientists in the party. It was suggested that a smaller number of scientists would increase the interaction between people which we commented on in Para. 3.3 above. This is not a recommendation but a suggestion which could be explored in future staffing.
- 3.9 Overall the ship is an impressive tool for the Program; we commend all those concerned with the acquisition and conversion of the SEDCO/BP 471 and the excellent spirit of cooperation which has already developed.
- 3.10 One of the members of the Evaluation Committee considered that it is important that there should be an early test of the full capabilities of the drillship in deploying its maximum drill string and in setting re-entry cones in the maximum water depth. This is, of course, a matter for JOIDES planning (see para. 6.4).

4. Wireline Logging Services

- 4.1 A major difference between ODP and its predecessor is the inclusion of a full logging program within the scientific operations. This program has been developed at L-DGO/Borehole Geophysics Group (BRG) with a further subcontract to Schlumberger.
- 4.2 We received presentations from both the L-DGO/BRG and from Schlumberger and it is clear that Schlumberger is deploying "state-of-the-art" logging tools and support in a very economic manner. Schlumberger is keen to be part of the Program, including taking the unusual step for the company of developing new instrumentation. This collaboration should be fostered not only though L-DGO but also in the community at large and on the ship. L-DGO/BRG is meeting their contractual obligations to ODP/JOI in an exemplary manner. They have provided the Program with the cutting edge of logging technology, and the Committee sees nothing to indicate that this should change in the immediate future. Recommendations for maintaining this superior position are given below.

- 4.3 The thrust of the logging operation could well be moved away from Borehole Geophysics towards Petrophysics. This may seem to be a matter of semantics, but in fact, it is not. Borehole geophysics, as practiced by most research groups, tends to concentrate on the ability to make effective measurements in the borehole. It has been the experience of at least one member of the review panel that research in this area tends to evolve into developing exotic measurement systems and associated tools that yield minimum practical information from a cost-benefit standpoint. Examples include borehole gravimetry, downhole electromagnetics, and, in certain cases, in situ neutron activation analysis.

On the other hand, groups that have tended to concentrate on the petrophysical aspect of well logging research have traditionally been more successful. Priorities are set on establishing effective correlations or linkages with the system that is being measured. In the oil industry, the linkage has been almost exclusively the fluid system (oil/gas/water). Only recently has there been a general interest in the industry to provide sophisticated linkages between well logs and the rock matrix (lithology, mineralogy, elemental analysis). As far as the Ocean Drilling Program, the primary linkage would be with the latter case -- the well log/rock matrix system.

In terms of ODP, a petrophysical orientation would tend to prioritize efforts to relate, in a multivariate statistical sense, the collected core data with the obtained logging suites. In practice, this means somewhere within the JOIDES framework greater emphasis should be placed on analyzing log response in terms of physical, chemical, and mineralogic properties of the cores. If this could be done aboard ship, so much the better. The staff at L-DGO/BRG would be extremely capable in shifting the emphasis as recommended. In Paragraph 6.10, we refer to the need for PCOM to consider the need to juxtapose lithological and logging information in terms of publications so that both data sets may be seen as complementary and to encourage the scientific community to take advantage of the opportunities for petrophysics research.

- 4.4 Wireline operations associated with the ODP are inherently different than "normal" onshore operations. These differences are not discussed or even hinted at in the ODP/BRG Logging Manual (March 1985). A section should be added to the Manual that explains, using graphics, the wireline operation, including rig-up and rig-down, and any special problems associated with the shipboard operation.
- 4.5 In order to maximize effective communication between logging experts and the rest of the ODP community, the former group should minimize the use of acronyms, abbreviations, etc. when referring to their logging packages.
- 4.6 In order to increase frequency of log data acquisition, efforts should be made to overcome open-hole bridging problems associated with ODP holes. Obviously, this is not an easy problem, and may be

basically insolvable, due to the unconsolidated nature of the section being penetrated, coupled with the special nature of the ODP drilling operation (for example, no routine use of drilling muds). Nevertheless, because of the importance of the problem, further study should be carried out, especially in the area of formation damage and clay mineralogy. One possible solution to this dilemma could be the use of the drill to position the logging sonde. Discussions are also underway between L-DGO/BRG, Schlumberger and the Science Operator to develop the use of a side-wall sub to provide a means of using the drill string to push through bridges without wireline trips.

- 4.7 The well logging training and education program associated with the ODP should be carried out by the subcontractors, both onboard and at L-DGO. In addition to L-DGO/BRG carrying out their mission in this area, Schlumberger has volunteered to carry out onboard training and education. This opportunity should not be overlooked as it apparently has been up to the present. The community must be made aware of the data resulting from the logging program and their value. L-DGO/BRG will need to undertake a major education and liaison program and will need to be involved in co-chief pre-cruise meetings, increased liaison with the Science Operator and with JOIDES panels. All of this will require an increased travel budget for L-DGO/BRG.
- 4.8 Complaints had been received from co-chief scientists regarding the time estimates for logging. These did not include hole preparation which considerably increased the overall time devoted to logging. Furthermore, L-DGO had not been involved in co-chief scientists' meetings at TAMU when detailed drilling plans and schedules were devised. It is clear that total logging time estimates are needed (we understand that this is now underway) and that the L-DGO logging staff scientist must be involved in the co-chief scientists' pre-cruise meeting.
- 4.9 Tool development by L-DGO and its associated scientists (M. Zoback's group at Stanford University) is progressing in accordance with the priorities assigned by PCOM.
- 4.10 Efforts should be made to minimize the purchases and/or leasing of exotic log analysis packages. The major interpretive challenge to the log analysts associated with the ODP is the petrophysical correlations. Certainly it is true that these petrophysical correlations are carried out in a multivariate sense within some of the sophisticated systems provided by TERRA and ENERGY SYSTEMS. Nevertheless, it is our opinion that some of the basic algorithms found in these purchased systems are available to the analyst within published sources. Furthermore, purchase of these software packages restricts the analysis of data to shipboard scientists or visiting scientists to L-DGO/BRG. The latter is costly and the only alternative (equally or more costly) is the purchase of the same software by the scientist at his/her home institution. We consider that it would be appropriate for L-DGO/BRG to develop

portable log analysis packages which could be made available to scientists in the general ODP community.

- 4.11 The L-DGO group is in a privileged position regarding the logging database in that this is physically sited at L-DGO along with the log analysis packages. It must be made absolutely clear to the community that the L-DGO is performing a scientific support role akin to that of the TAMU staff scientist with the additional freedom from working on one topic in a specialist laboratory. The need for both a logging staff scientist and a "community" logging scientist in the shipboard scientific party is imperative.
- 4.12 The present level of staffing at L-DGO seems appropriate for the tasks mandated to the group although we note that original underestimation of costs has reduced the staffing level by one f.t.e. We accept that the L-DGO logging scientist will be at sea more than the equivalent TAMU staff scientist. It has to be recognised that the latter performs many shore-based tasks and has prime responsibility for post-cruise activities and the production of the Part B volume. In the case of the L-DGO staff scientist, the requirement is to support shore-based log analysis and interpretation by other scientists and to carry out the education/liaison task noted above.
- 4.13 Management of the logging program has been good and responsive to the needs of the prime contractor and of NSF.
- 4.14 The L-DGO/BRG budget seems adequate to meet the Program's objectives. However, we do recommend that provision for travel to meet the education and liaison requirements is made in future years.
- 4.15 Overall, we were very impressed with the scientific calibre and enthusiasm of the L-DGO group and we are confident that its difficult role regarding data analysis, science support, education and training will be accomplished. L-DGO/BRG is in a very privileged position with regard to the provision of logging services and it is essential that the community obtains the full support of the subcontractor and that the latter not pursue his own logging research at the expense of the scientific community.

5. ODP Site Survey Databank

- 5.1 The ODP Site Survey Databank has already been subject to close scrutiny by the Klitgord Review Panel and we note that this has been accepted, in principle, by JOIDES and by JOI Inc. The Klitgord Review Panel laid down procedures and priorities for the Databank for the fulfillment of its mandate. If adhered to, these will improve the efficiency of the operation and eliminate any duplication with national data centers such as NGSDC in the U.S.A. and similar centres elsewhere.

- 5.2 The Klitgord Review Panel split into majority and minority recommendations concerning provision for the assessment of data adequacy for site surveys. A pragmatic approach (given budgetary constraints) has been to allow the JOIDES Site Survey Panel to take over this role (as per the minority recommendation) and this is reported as working well.
- 5.3 The Klitgord Panel recommended a modest increase of \$3k-4k on the original FY 85 budget to allow for the employment of low-level support to assist with photocopying and the compilation of data packages. However, this has not been included in the FY 86 budget which we found was fixed somewhat arbitrarily.
- 5.4 As stated above, every effort should be made to ensure that the Databank does not duplicate other national data centres as the ODP database, other than that necessary for compilation of the data packages.
- 5.5 The Databank budget is now at its minimum viable level and efforts should be made to include the Klitgord Review recommendations in future budgets. This should not be too difficult to achieve in view of the relatively minor cost of this activity in ODP. Although we do not recommend a seat for the Databank on the JOI Interface Working Group, a representative of the Databank should be invited should it be a subject on the agenda.
- 5.6 Deposition of data in support of drilling proposals is a delicate matter and we recognise that there is some sensitivity to their location at L-DGO. Every effort should be made by Databank staff to ensure that the data are protected from unauthorised use by other researchers.
- 5.7 We also recognise that there is a need to publicise the efforts of the Databank and to encourage data deposition by the ODP community and the authorised use of the facility. As a first step, we recommend that the JOIDES Journal resume publication of data deposited at the Databank. (We understand that this recommendation has been implemented in the October 1985 issue of the Journal.)

6. JOIDES Scientific Advisory Structure

- 6.1 The structure is overly complex and has become more so from the increasing complexity of DSDP and, thence, ODP and from the internationalisation of scientific ocean drilling. Nonetheless, it is very necessary to allow the full JOIDES community to develop a science plan to meet the COSOD objectives, on which the Program is based.
- 6.2 The present plan for drilling was developed in the final stages of DSDP and the early part of ODP and exhibits characteristics of DSDP science planning, in that too many diverse scientific objectives tend to be included in each leg. The result is often that the prime target sites tend to run out of drilling and logging time.

The shipboard party is also large in order to meet the varied scientific targets of each leg; this can result in strong lobbying by the scientific party for projects assigned only second priority by PCOM.

- 6.3 We note that the present advisory structure is under review by PCOM in early 1986. There appears to be some concern in the community that the present structure over-emphasises regional rather than thematic objectives and we understand that this will be addressed in the above review. We consider it to be of great importance that the thematic objectives of COSOD are allowed to emerge in the JOIDES structure.
- 6.4 There should be greater flexibility in JOIDES planning as legs are being too tightly scheduled. Allocation of more than a single leg in succession to a priority target is entirely appropriate in ODP. There also seems a reluctance on the part of JOIDES to assign more than one leg to a particular target (other than in MARK drilling) and this contributes to the dispersion of sites, many of which are left unfinished. JOIDES planning should also take advantage of the capabilities of the drillship in terms of drill string length (deep water/deep holes) and in deploying re-entry cones in deep water. Furthermore, there must be flexibility to include additional legs to complete priority targets commensurate with the constraints imposed on the Science Operator in terms of logistics, staffing and cruise clearances.
- 6.5 We believe that relations between JOIDES and subcontractors are good and that the latter are responsive to the JOIDES science plan.
- 6.6 PCOM members must take care to observe the rules regarding possible conflicts of interest as drilling proponents or as members of institutions actively funded through ODP.
- 6.7 The collective inexperience of the PCOM membership was raised. The lack of corporate memory on the part of PCOM has always been an issue, but the recent rapid turnover of membership has heightened the problem. Time has shown that the PCOM should not tightly schedule legs or attempt to overly fine-tune operations. Middle- and long-range planning is often forsaken by the press of operational problems. Only experience will resolve these problems. It is most important that the PCOM Chair be a person aware of these issues and difficulties and able to steer the Committee down a more useful path. The practice of chairmanship of the PCOM being assigned to a relatively inexperienced member of the committee should be avoided.
- 6.8 The rotation of the JOIDES Office among U.S. institutions was discussed. The views we heard were unanimous that this should continue although the most cost-effective way of rotating the EXCOM and PCOM chairmanships and their support should be studied and options investigated. A two year period for rotation may be too short as up to 6 months of this time is spent on the learning curve and in winding down the Office. A period of 3 years should be

considered, although this has significant implications for the career of an active scientist. In addition, it would be appropriate for JOI to determine if some equipment might be transferred with the Office. The appointment of a non-U.S. representative to the JOIDES Office should be continued.

- 6.9 We understand the concern about the involvement of PCOM in budgetary matters when these impinge on the science plan. We are satisfied that JOI and its subcontractors involve PCOM as early as possible and that due attention is paid to its scientific guidance.
- 6.10 We feel it is important and appropriate to juxtapose lithological information available from logging and that already available from the core barrel sheets. The PCOM should consider this and advise L-DGO/BRG and TAMU accordingly. There is currently no planning for this and the interaction of the two subcontractors would have to be measurably increased should PCOM implement this policy (see Para 4.3).

7. General Management Issues

- 7.1 We heard some criticism of JOI Inc. in its management role as the prime contractor to NSF for the Ocean Drilling Program. Some of this related to personal relationships in the JOI Contracts Office. We gather that these are much improved and should continue to do so under the direction of the new Contracts Manager. Other criticisms related to JOI in its performance of its management function. On the one hand it was seen as not involving the JOIDES scientific community (through the PCOM Chairman) early enough or sufficiently fully in the budget process. We do not accept this and are assured that where there are implications for scientific priorities, the PCOM Chairman is fully consulted.
- 7.2 However, JOI is perceived as having too "transparent" a management role in relation to the subcontractors. It is JOI's function to ensure that the subcontractors prepare their budgets in a timely fashion and in response to the community's priorities and that these are reviewed and amended as appropriate by JOI. Ultimately, the subcontractors must respond to JOI and not vice versa.
- 7.3 There may be some tendency on the part of the ODP Office in NSF and the Foundation in general to lean over the shoulders of JOI in the management of the Program. Although a close working relationship is necessary, a little more distance between NSF and JOI is desirable and JOI must be allowed to take full managerial responsibility for the Program
- 7.4 Sufficient scientific direction and management exists within the Program through the Project Director (at TAMU) and his staff, the Project Director (for Wireline Logging Services), and the PCOM Chairman. We consider that the present structure at JOI, with a Program Manager, is the correct one for the Program. However, we

consider that the prime liaison between JOI and the scientific planning process should be the JOI Program Manager.

- 7.5 Generally, we are satisfied that the links and relationships of the funding agencies (principally NSF), the prime contractor (JOI), the subcontractors and their further subcontractors, and the JOIDES scientific community are working well.
- 7.6 At this point we should like to discuss one item of budget presentation of concern to the non-U.S. partner agencies. Outside the U.S. science budgets tend not to include overheads which are provided through other budget headings. It, therefore, creates difficulties when non-U.S. science dollars are spent on overheads which are seen as supporting U.S. institutional infrastructures. We suggest that identifiable overhead charges in ODP should be paid directly by NSF with co-mingled funds being applied wholly to program costs. This would not reduce the overall cost of the Program but would aid in budget accounting in the non-U.S. partner nations.
- 7.7 Members of the non-U.S. scientific and engineering community must be encouraged to participate in all aspects of the program at L-DGO/BRG and with the Science Operator.

8. Performance Evaluation

8.1 Timing

A two-year interval seems appropriate for conducting the performance evaluation. This current evaluation took place at a time when the Program has still not yet reached a steady state. However, the timing is useful in that changes in procedures and performance may be implemented before the existing system is too well established.

8.2 Membership

It is important that the membership include representatives from industry and the non-U.S. partner nations. Furthermore, future reviews could well include members who are not necessarily familiar with the Program, in order to assess performance from a truly independent standpoint. Some continuity between members of successive evaluation committees is desirable.

8.3 Activities

- 8.3.1 We considered it very useful to interview people from a wide variety of levels in the organisation. It was also essential that these interviews be conducted in private in order to protect confidences. Managers of the subcontractor organizations should be prepared to agree to this point.

- 8.3.2 Paperwork should be concise, and prepared and transmitted to the Committee in advance of interviews. We were deluged by paper during our visits.
- 8.3.3 More time is necessary for visits and it is desirable for visits to subcontractors to be contiguous if at all possible.
- 8.3.4 We found some of the procedures laid down in the terms of reference unnecessarily cumbersome. Only after a final report is agreed upon by the committee members should it be presented to the President of JOI, who would then obtain comments from the subcontractors. The report plus the commentary should then be forwarded to the JOI Board of Governors and to JOIDES.

SUMMARY OF RECOMMENDATIONS

1. Science Operator (TAMU)

- 1.1 There is some concern at the overall staffing levels although there could be an increase in engineering and marine technicians, possibly at the expense of Science Services and Science Operations. There should be no increase in the overall staffing level.
- 1.2 The next Performance Evaluation Committee should examine the record of TAMU for timeliness of reporting.
- 1.3 Budgets should be realistic and should clearly identify activities rather than cost centers and should be presented in a way which enables the base budget to be examined.
- 1.4 Equipment procurement should involve non-U.S. as well U.S. suppliers.
- 1.5 There should be a major effort to reduce and simplify paperwork.
- 1.6 Staff scientists' role with regard to co-chief scientists should be stated as being an assistant to the co-chiefs. Overall responsibility for scientific activities on board JOIDES RESOLUTION must rest with the co-chiefs.
- 1.7 There should be greater interaction between staff scientists and marine technicians on-shore although we do not recommend management changes. The role of graduate student assistants should be re-examined.
- 1.8 The need for staff scientists to attend all JOIDES panel meetings should be reviewed.
- 1.9 There should be no arbitrary restriction as to publication in the Part B of ODP Proceedings.
- 1.10 There is a case for an increase of staffing in the engineering development section.
- 1.11 TEDCOM should be re-activated as soon as possible to act as an advisory panel for engineering development.
- 1.12 Priorities in engineering should include drilling in hot hydrothermal systems and improvements in drilling and coring systems as well as attempts to solve problems of hole instability and bridging.
- 1.13 Consideration should be given to inviting expertise from industry to the engineering and drilling operations activities.

- 1.14 Priority in the computer services budget should be given to twinning the shore-based VAX 11/750 machines.
- 1.15 Some effort must be deployed in software development for the scientific community.
- 1.16 Publications should be regarded as being of the highest priority.
- 1.17 Prime logging data should be included in Part A of the publications.
- 1.18 A professional study should be commissioned on long-term curation and utilization of cores.
- 1.19 The present plan for core curation at repositories at the East Coast (L-DGO), the West Coast (SIO), and the Gulf Coast (TAMU) is endorsed.
- 1.20 There should be a more flexible approach from all concerned with regard to shipboard sampling of core material.
- 1.21 Marine technicians should be recognized as being a cadre of professionals and that acknowledgement is given in published analyses and elsewhere. Publication of technical memoranda should be considered.
- 1.22 Clear responsibility for each of the onboard scientific instruments should be assigned under the oversight of outside experts. Standard reference samples should be run routinely to ensure high quality data are produced.
- 1.23 It is important that compensatory time for sea-going staff should be increased considerably. We trust that TAMU will accede to this request from ODP.
- 1.24 Public relations should ensure that due acknowledgement is given to the scientific community which makes the Program possible and that there should not be an over-emphasis on TAMU.
- 1.25 There may be a need for additional staff support for cruise clearances.
- 1.26 We recommend that plans for a shore-based laboratory should be reconsidered and not be included in future plans unless a strong case emerges.
- 1.27 Management should be flexible in order to move smoothly to a steady-state operation.

2. JOIDES RESOLUTION

- 2.1 A stable power supply should be a priority item.

- 2.2 We do not recommend any major expense be incurred to improve underway geophysics.
- 2.3 There should be an improvement in communications between the bridge and underway geophysics in terms of navigation with a repeat output of GPS fixes being on the bridge.
- 2.4 The official name (SEDCO/BP 471) should be used in communications and publications.

3. Wireline Logging Services

- 3.1 The emphasis in the Program should be moved to petrophysics.
- 3.2 The Logging Manual should be revised to include details of shipboard logging operations.
- 3.3 Acronyms, abbreviations and logging jargon should be eliminated as far as possible.
- 3.4 A major effort, involving TAMU and Schlumberger, should be made to overcome bridging problems encountered in open hole logging.
- 3.5 The L-DGO/BRG has responsibility for a training and education program. The transfer of expertise and sharing of knowledge to the whole ODP community must be encouraged.
- 3.6 Travel budgets should be increased to allow attendance of L-DGO/BRG personnel at co-chief pre-cruise meetings and at JOIDES panels.
- 3.7 The purchase of exotic log analysis packages should be minimized. The development of "portable" software packages is recommended.

4. ODP Site Survey Databank

- 4.1 Duplication with other data centers should be avoided.
- 4.2 Every effort should be made to protect data from unauthorized use.
- 4.3 A modest increase in low-level support should be included in future budgets.
- 4.4 The Databank should be involved in IWG as and when necessary.
- 4.5 Greater publicity should be given to the Databank activities.

5. JOIDES Scientific Advisory Structure

- 5.1 Every effort should be made to develop scientific planning in a thematic rather than a regional context as is proposed by the COSOD Report. Allocation of more than one leg to a target should be considered.
- 5.2 The planning process should ensure that prime objectives are completed.
- 5.3 The planning process should include tests of the full capability of the drillship.
- 5.4 There should be greater flexibility in planning commensurate with the constraints acting on the Science Operator.
- 5.5 Members of PCOM should abide by rules governing conflicts of interest.
- 5.6 The arrangements for rotation of the JOIDES Office should be reviewed.
- 5.7 A non-U.S. representative should continue to be appointed to the JOIDES Office.
- 5.8 The EXCOM should keep the composition of PCOM under continuous review to ensure that there is not only scientific expertise but that there is adequate administrative and JOIDES experience available for chairmanship.
- 5.9 PCOM should consider the need to bring logging and coring data together and should ensure increased cooperation between L-DGO/BRG and the Science Operator to achieve this.

6. Management

- 6.1 JOI must be allowed to manage the Program without undue interference from NSF in the management function.
- 6.2 JOI has the prime responsibility for ensuring that subcontractors adhere to budgets, guidance, etc.
- 6.3 The prime liaison between JOI and the scientific planning process should be the ODP Program Manager.
- 6.4 A system should be devised to identify overheads as a U.S. responsibility within the budget.

7. General

- 7.1 Both TAMU and L-DGO are in a privileged position regarding ODP data. Care should be taken that this position is not abused.

- 7.2 The subcontractors' roles should be re-emphasised as being that of providers of services.
- 7.3 Non-U.S. involvement must be encouraged in all aspects of the program at L-DGO/BRG and with the Science Operator.

APPENDIX 1

LIST OF PEOPLE INTERVIEWED

1. Lamont-Doherty Geological Observatory

24 October:

D.J. Baker (President, JOI Inc.)
R.N. Anderson (Director of Operations, Borehole Research Group)
D. Moos (Scientist-in-Charge, BRG)
C. Broglia (Log Analyst, BRG)
M. Zoback (Stanford University)
D. Fornari (Manager, Logging Services)
J. West (Schlumberger, Houston District Manager)
R. Ghiselin (Schlumberger Offshore Services)
P. Stambaugh (L-DGO Contracts Office)

25 October:

R.N. Anderson
S. Asquith (East Coast Repository Superintendent)
J. Ladd (Principal Investigator, ODP Site Survey Databank)
R.L. Larson (JOIDES POOM Chairman)
J. Knauss (JOIDES EXCOM Chairman)
B. Raleigh (L-DGO Director)

2. JOIDES RESOLUTION/Other Interviews (St. John's, Newfoundland)

27 October:

M. Salisbury (Co-chief Leg 102)
G. Brass (ODP Program Director, NSF)
M. Arthur (Co-chief Leg 105)

-Visit to JOIDES RESOLUTION included discussions with the following:
L. Garrison (Deputy Program Director ODP)
Cpt. E. Oonk (Master, SEDCO/BP 471)
D. Steere (Drilling Superintendent, SEDCO)
L. Hayes (ODP Operations Superintendent)
T. Gustafson (ODP Laboratory Officer)
S. Serocki (Supervisor, Development Engineering ODP)
S. Howard (ODP Development Engineer)

28 October:

S. Srivastava (Co-chief Leg 105)

3. Science Operator, Texas A&M University

6 November:

P. Rabinowitz (Program Director)
L. Garrison (Deputy Program Director)
R. Kidd (Manager Science Operations)
A. Meyer (Assistant Manager Science Operations)
C. Auroux, J. Baldauf, B. Clement, A. Palmer, E. Taylor, S.
O'Connell, K. Emeiss (Staff Scientists)

S. Herrig (Administrator)
Y. Pommerville (Administration Manager)
W. Lancaster (Fiscal Affairs Manager)
L. Holst (Contracts Manager)
R. Merrill (Manager, Science Services)
W. Rose (Supervisor, Publications)
J. Foster (Supervisor, Computer Services)
W. Meyer (Chief Shipboard Systems Manager)
M. Sun (Shorebased Systems Manager)
W. Johnson, N. Fortson, M. Ling, D. Bontempo (Computer Services)

7 November:

J. Austin (Co-chief Leg 101)
W. Schlager (Co-chief Leg 101)
C. Mato (Supervisor, Curation and Repositories)
A. Bakker (Supervisor, Databases)
P. Brown (Assistant Databases Supervisor)
B. Harding (Manager, Engineering and Drilling Operations)
G. Foss (Supervisor, Drilling Operations)
L. Hayes (Operations Superintendent)
M. Storms, D. Huey (Engineering Development)
P. Thompson, W. Robinson (Drilling Engineers)
C. Mabile (Visiting Engineer - IFREMER France)
R. Olivas (Manager, Technical and Logistics Support)
J. Peloso (Assistant Manager, Technical and Logistics Support)
C. Jones (Supervisor, Logistics Support)
D. Graham (Supervisor, Technical Support)
T. Gustafson (Laboratory Officer)
B. Julson, B. Dmeyer, J. Weisbruch, G. Peretsman, R. Current, D. Mossman, J. Jones, W. Autio, T. Frank, H. Grosche, H. Huton (Marine and Electronic Technicians)

8 November:

K. Riedel (Public Information)
L. Garrison
P. Rabinowitz
M. Friedman (Principal Investigator & Dean, College of Geosciences)

APPENDIX 2

REPORT OF INTERVIEWS

Strictly confidential and not included

APPENDIX 3

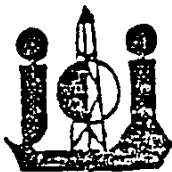
LIST OF PAPERS PRESENTED TO THE PERFORMANCE EVALUATION COMMITTEE

1. Program Plan FY 84 and 85
2. Program Plan FY 86
3. FY 86 Budget:
 - a. Letter from D. James Baker to EXCOM (24 May 1985)
 - b. Report of EXCOM Budget Review Subcommittee (27 June 1985)
 - c. Memo from J. Clotworthy to EXCOM (23 September 1985)
4. Report of the PCOM Subcommittee on Publications (1985)
5. Report of the ODP Databank Review Panel (1985)
6. Report of the JOIDES Advisory Group on Equipment for Laboratories (1984)
7. Written submissions from co-chief scientists:
 - a. Leg 103 - G. Boillot
 - b. Leg 104 - O. Eldholm
8. Staffing structures and numbers for DSDP in 1978 and 1980
9. Extracts of subcontract to TAMU
10. Extracts of subcontract to L-DGO (Logging)
11. L-DGO/BRG logging contract and budgets (D. Fornari)
12. L-DGO/BRG project overview (R. Anderson)
13. Legs 101, 103 & 104 analysis of logging v coring time (R. Anderson)
14. Details of Merlin Module (Terrascience Inc.) (R. Anderson)
15. L-DGO/BRG data acquisition analysis and presentation programs (C. Broglia)
16. Letter (10/14/85) from J. Thiede (Leg 104 Co-chief) to R. Anderson
17. Letter (8/28/85) from P. Lysne (Sandia) to R. Anderson
18. Letter (10/23/85) from R. Anderson to J. Thiede
19. Letter (10/3/85) from R. Larson (PCOM Chairman) to D. Hunt (JOI)
20. Staff structures and office layouts at TAMU (P. Rabinowitz)
21. Staff scientists' background and leg responsibilities (R. Kidd)
22. Staff scientists' responsibilities (R. Kidd)
23. ODP Staff Handbook (S. Herrig)
24. ODP Administrative Newsletters (S. Herrig)
25. TAMU/ODP overhead review (S. Herrig)
26. Relationship of TAMRF to ODP (S. Herrig)
27. ODP contracts (L. Holst)
28. ODP administrative services (Y. Pommerville)
29. ODP fiscal affairs (W. Lancaster)
30. Computer services presentation and status report (J. Foster)
31. Off-the-shelf purchases of software by ODP computer services group in FY 85 (J. Foster)
32. ODP publications program (W. Rose)
33. Revised database timetable and status report (A. Bakker)
34. Typical cruise sampling plan (C. Mato)
35. Instructions for completing a cruise sampling plan (C. Mato)
36. ODP curation and repositories (C. Mato)
37. Costs to establish a bare rock hole to 400m (B. Harding)
38. Typical public information pack (K. Riedel)
39. Summary of public information activities (K. Riedel)
40. Press distribution lists (K. Riedel)

41. Water chemistry procedures on SEDCO/BP 471 by J. Gieskes & G. Peretsman
42. Extracts from Organic Geochemistry on JOIDES RESOLUTION by K. Kvenvolden & T.J. Macdonald
43. Comments on staff scientists' responsibilities (W. Schlager & J. Austin)
44. TAMU College of Geosciences structure and staff lists (M. Friedman)
45. Drill string limit guidelines (G. Foss & S. Serocki)
46. DSDP staffing chart
47. JOI Office costs FY 84, 85, 86 including breakdown of ODP Databank and JOIDES Office costs (J. Clotworthy)
48. History of ODP/TAMU Shorebased Laboratories concept (D. Hunt)

In addition to the above, the Committee also received the following publications:

- Onboard JOIDES RESOLUTION
- ODP publicity brochure
- JOI Inc. publicity brochure
- ODP Sample Distribution Policy
- Operational and Laboratory Capabilities of JOIDES RESOLUTION - Technical Note No. 2
- Shipboard Scientists' Handbook - Technical Note No. 3
- Wireline Logging Manual
- JOIDES Journal Special Issue No. 4 - Guide to the ODP



SECTION C DESCRIPTION/SPECIFICATIONS

Audit of the Ocean Drilling Program administered by Texas A & M Research Foundation (120+ million, five year Cost Reimbursement Type subcontract) and major lower-tier subcontractor (drillship operator: Underseas Drilling, Inc.)

I Background

Joint Oceanographic Institutions, Incorporated (JOI, Inc.) is under a five year \$140+ million contract with the National Science Foundation (NSF) to manage the Ocean Drilling Program (ODP). JOI, Inc.'s major Subcontractor, Texas A & M Research Foundation, is under a five year subcontract with JOI, Inc. to serve as the Science Director for ODP. The drillship operator, Underseas Drilling Incorporated (UDI), is under agreement with TAMRF.

It is the expressed policy of the Texas A & M Research Foundation (TAMRF) subcontract with JOI, Inc. that the National Science Foundation Contracting Officer or his representatives and the JOI Contract Executive shall have the audit and inspection rights to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to reflect properly all direct and indirect costs of whatever nature are claimed to have been incurred and anticipated to be incurred for the performance of that subcontract.

In addition, it is the responsibility of JOI, Inc., in its designated management role over the Ocean Drilling Program to insure that lower-tier subcontractors receive similar audit and assist TAMRF in that objective.

Accordingly, JOI, Inc. has a need to have audited the reported and claimed costs of their cost reimbursement type subcontract with TAMRF for that portion of the subcontract period of performance February 1, 1984 through September 30, 1985 (\$45+ million, two contract years). Additionally, at the request of TAMRF, and in the mutual best interests of both TAMRF and JOI, Inc., JOI, Inc. requires simultaneous audit of TAMRF's major lower-tier Subcontractor, Underseas Drilling Incorporated (UDI - a wholly owned SEDCO/BP joint venture subsidiary).

II Scope of Work

The IPA shall audit the Subcontractors' (Texas A & M Research Foundation and Underseas Drilling Incorporated) accounting records and financial operating procedures. The examination shall include, but need not be limited to the following:

1. Examination of costs incurred and encumbered to be reported cumulative on the September 30, 1985 Monthly Base Project Summary submission to JOI, Inc.

2. All general ledger program areas shall be audited except for:

- a) TAMRF cash, whereby all cash transactions (receipts and disbursements) are administered by TAMRF through their comingled checking account, audited annually by TAMRF's independent CPA firm. A review of the CPA's latest audit coverage of the cash area should be made, if possible and determined by the IPA that sufficient audit work was performed when testing actual cash receipts and disbursements (i.e. cancelled checks, bank reconciliation, etc.) to prevent duplicate audit work by both auditing firms.
 - b) A count or observation of the TAMRF physical inventory (equipment purchase) will not be required since JOI has contracted services to account for items in this area. However, inventory records, etc. will be available for review by the Contractor at request of the IPA.
3. Review the allowability and allocability of costs as defined under the basic JOI, Inc./TAMRF subcontract.
 4. Determine the compliance with OMB Circular No. A-21, cost principles for educational institutions (for TAMRF) and Part 1-15-2 of the FPR, "Contracts with commercial organizations," for UDI.
 5. Review internal control procedures and overall financial management procedures.
 6. Review and itemize insurance coverages currently in effect for which premium reimbursement is being provided by JOI, Inc.
 7. Determine adequacy of Subcontractors' disclosure statements and certificates of current cost or pricing data from lower-tier Subcontractors.
 8. Review TAMRF Administrative fee from a cost effectiveness point of view in its role as a substitute for TAMRF's normally charged and Federally audited indirect cost rate.

The following information is provided for information purposes to assist in preparation of both cost and technical proposals:

Average Number of Monthly Transactions - TAMRF/ODP & UDI/SEDCO

For TAMRF/ODP, the monthly average is 2,600. This includes about 200 transactions a month due to automatic postings of payroll and another 400 per month as a result of check disbursements by TAMRF accounting. The 2,600 transactions stated above would include those resulting from UDI/SEDCO invoicing ODP. The UDI related transactions average approximately 25 per month.

The ODP average was based on activity since September, 1984, but should be fairly indicative of the February, 1984 to September, 1985 anticipated audit period.

3. Summary of Recommendations and Responses

In this section, we provide the response to the summary recommendations that have been taken directly from the main body of the PEC report. The recommendations of the PEC and the response of the subcontractors TAMU and LDGO; JOIDES and JOI are provided directly after the PEC recommendations.

In each case we feel that the recommendations are being met in a substantive way, either through modified procedures or through the budget and the Program Plan.

In some cases, particularly for JOIDES, some of the recommendations directed to TAMU or Lamont-Doherty were more logically directed to JOIDES. We have asked the PCOM to address these as well as those directly applicable.

In the request for these formal responses, JOI transmitted only that part of the PEC report relevant to the particular group asked to answer. The PCOM response suggests that it would be better for JOI to send the entire report, so that the recommendations can be read in context. JOI views this suggestion as eminently sensible, and will carry out future reviews in this way.

PEC Recommendations on
Science Operator (TAMU) and
JOIDES RESOLUTION.

1. Science Operator (TAMU)

- 1.1 There is some concern at the overall staffing levels although there could be an increase in engineering and marine technicians, possibly at the expense of Science Services and Science Operations. There should be no increase in the overall staffing level.
- 1.2 The next Performance Evaluation Committee should examine the record of TAMU for timeliness of reporting.
- 1.3 Budgets should be realistic and should clearly identify activities rather than cost centers and should be presented in a way which enables the base budget to be examined.
- 1.4 Equipment procurement should involve non-U.S. as well U.S. suppliers.
- 1.5 There should be a major effort to reduce and simplify paperwork.
- 1.6 Staff scientists' role with regard to co-chief scientists should be stated as being an assistant to the co-chiefs. Overall responsibility for scientific activities on board JOIDES RESOLUTION must rest with the co-chiefs.
- 1.7 There should be greater interaction between staff scientists and marine technicians on-shore although we do not recommend management changes. The role of graduate student assistants should be re-examined.
- 1.8 The need for staff scientists to attend all JOIDES panel meetings should be reviewed.
- 1.9 There should be no arbitrary restriction as to publication in the Part B of ODP Proceedings.
- 1.10 There is a case for an increase of staffing in the engineering development section.
- 1.11 TEDCOM should be re-activated as soon as possible to act as an advisory panel for engineering development.
- 1.12 Priorities in engineering should include drilling in hot hydrothermal systems and improvements in drilling and coring systems as well as attempts to solve problems of hole instability and bridging.
- 1.13 Consideration should be given to inviting expertise from industry to the engineering and drilling operations activities.

- 1.14 Priority in the computer services budget should be given to twinning the shore-based VAX 11/750 machines.
- 1.15 Some effort must be deployed in software development for the scientific community.
- 1.16 Publications should be regarded as being of the highest priority.
- 1.17 Prime logging data should be included in Part A of the publications.
- 1.18 A professional study should be commissioned on long-term curation and utilization of cores.
- 1.19 The present plan for core curation at repositories at the East Coast (L-DGO), the West Coast (SIO), and the Gulf Coast (TAMU) is endorsed.
- 1.20 There should be a more flexible approach from all concerned with regard to shipboard sampling of core material.
- 1.21 Marine technicians should be recognized as being a cadre of professionals and that acknowledgement is given in published analyses and elsewhere. Publication of technical memoranda should be considered.
- 1.22 Clear responsibility for each of the onboard scientific instruments should be assigned under the oversight of outside experts. Standard reference samples should be run routinely to ensure high quality data are produced.
- 1.23 It is important that compensatory time for sea-going staff should be increased considerably. We trust that TAMU will accede to this request from ODP.
- 1.24 Public relations should ensure that due acknowledgement is given to the scientific community which makes the Program possible and that there should not be an over-emphasis on TAMU.
- 1.25 There may be a need for additional staff support for cruise clearances.
- 1.26 We recommend that plans for a shore-based laboratory should be reconsidered and not be included in future plans unless a strong case emerges.
- 1.27 Management should be flexible in order to move smoothly to a steady-state operation.

2. JOIDES RESOLUTION

- 2.1 A stable power supply should be a priority item.

- 2.2 We do not recommend any major expense be incurred to improve underway geophysics.
- 2.3 There should be an improvement in communications between the bridge and underway geophysics in terms of navigation with a repeat output of GPS fixes being on the bridge.
- 2.4 The official name (SEDCO/BP 471) should be used in communications and publications.

TAMU Response to Science PEC Recommendations
on Science Operator and JOIDES RESOLUTION

July 1, 1986

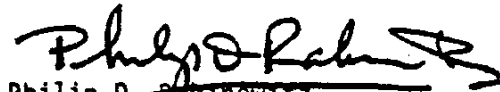
Dr. James Baker
President
Joint Oceanographic Institutions, Inc.
1755 Massachusetts Ave. NW Suite 800
Washington, D.C. 20036

Dear Jim:

Enclosed are our responses to recommendations (1. and 2.) of the JOI Performance Evaluation Committee Report. The positive remarks made by the Committee are appreciated. We will continue to do our utmost to successfully carry out our duties as Science Operator, and to be responsive to the Scientific Community.

Thank you for this opportunity to respond to the Report.

Sincerely,



Philip D. Rabinowitz
Director

PDR:pvs

cc: M. Friedman
A. Maxwell
L. Garrison

3-5

RECEIVED JUL 2 1986

- 1.1 There is some concern at the overall staffing levels although there could be an increase in engineering and marine technicians, possibly at the expense of Science Services and Science Operations. There should be no increase in the overall staffing level.

We agree that the staffing, as outlined in the Program Plan, is at the proper level. We do not intend to either increase or decrease staff unless functions as outlined by JOIDES change.

- 1.2 The next Performance Evaluation Committee should examine the record of TAMU for timeliness of reporting.

We agree. TAMU-ODP has an excellent track record in the timely submission of reports for the last 15 months and intends to continue with punctual submissions.

- 1.3 Budgets should be realistic and should clearly identify activities rather than cost centers and should be presented in a way which enables the base budget to be examined.

We concur. We have previously used a format as outlined by JOI. We now also submit Program Plan Budgets by task.

- 1.4 Equipment procurement should involve non-U.S. as well as U.S. suppliers.

We agree. TAMU-ODP has a very good record in this regard and has enjoyed favorable comments by JOIDES, NSF and JOI for those successful efforts.

- 1.5 There should be a major effort to reduce and simplify paperwork.

We wholeheartedly concur. Any actions to reduce and simplify paperwork on the part of the Science Operator would be very much appreciated.

- 1.6 Staff scientists' role with regard to co-chief scientists should be stated as being an assistant to the co-chiefs. Overall responsibility for scientific activities on board JOIDES RESOLUTION must rest with the co-chiefs.

Absolutely. This has been TAMU-ODP's interpretation and has been the basis for operational procedures since the inaugural cruise.

- 1.7 There should be greater interaction between staff scientists and marine technicians on-shore although we do not recommend management changes. The role of graduate student assistants should be re-examined.

Staff scientists and marine technicians indeed should continue to interact.

- 1.8 The need for staff scientists to attend all JOIDES panel meetings should be reviewed.

Our review overwhelmingly supports representation by staff scientists. It is necessary for TAMU-ODP to be fully responsive to JOIDES, and it is essential for our own planning.

- 1.9 There should be no arbitrary restriction as to publication in the Part B of ODP Proceedings.

We agree. We follow JOIDES policy in this regard and do not believe the policy contains any arbitrary restrictions.

- 1.10 There is a case for an increase of staffing in the engineering development section.

We concur and have added staff in this area (one of which is an enhancement in the Program Plan).

- 1.11 TEDCOM should be re-activated as soon as possible to act as an advisory panel for engineering development.

This is a JOIDES matter.

- 1.12 Priorities in engineering should include drilling in hot hydrothermal systems and improvements in drilling and coring systems as well as attempts to solve problems on hole instability and bridging.

We agree. We have, and will continue to direct major efforts in these areas.

- 1.13 Consideration should be given to inviting expertise from industry to the engineering and drilling operations activities.

We agree. We have and will continue to involve industry.

- 1.14 Priority in the computer services budget should be given to twinning the shore-based VAX 11/750 machines.

We agree. When funds become available, this will be a high priority item. In the meantime, we are configuring the present equipment for maximum efficiency.

- 1.15 Some effort must be deployed in software development for the scientific community.

The economics of developing and supporting software to run on the many different computers with the variety of peripherals and environmental considerations available to the scientific community are awesome. We are not staffed or funded to compete with commercial software companies; however, we are happy to assist individuals in solving their problems.

- 1.16 Publications should be regarded as being of the highest priority.

We agree and are acting accordingly.

- 1.17 Prime logging data should be included in Part A of the publications.

We agree. JOI and L-DGO are currently working out funding for preparation of camera-ready copy.

- 1.18 A professional study should be commissioned on long-term curation and utilization of cores.

We agree. This study has been underway for about one year, and will require several more to complete.

- 1.19 The present plan for core curation at repositories at the East Coast (L-DGO), the West Coast (SIO), and the Gulf Coast (TAMU) is endorsed.

Acknowledged.

- 1.20 There should be a more flexible approach from all concerned with regard to shipboard sampling of core material.

We agree and we are re-emphasizing curatorial flexibility during pre-cruise briefings.

- 1.21 Marine technicians should be recognized as being a cadre of professionals and that acknowledgement is given in published analyses and elsewhere. Publication of technical memoranda should be considered.

We agree and are pleased that the committee acknowledges this.

- 1.22 Clear responsibility for each of the onboard scientific instruments should be assigned under the oversight of outside experts. Standard reference samples should be run routinely to ensure high quality data are produced.

We have inhouse expertise for all but one piece of equipment for which we are presently discussing the possibility of using outside expertise.

- 1.23 It is important that compensatory time for sea-going staff should be increased considerably. We trust that TAMU will accede to this request from ODP.

We don't believe this to be within the terms of reference for the committee. This is a State-of-Texas issue.

- 1.24 Public relations should ensure that due acknowledgement is given to the scientific community which makes the Program possible and that there should not be an over-emphasis on TAMU.

We agree.

- 1.25 There may be a need for additional staff support for cruise clearances.

We do not believe this position is necessary. We have a 100% track record of obtaining clearances.

- 1.26 We recommend that plans for a shore-based laboratory should be reconsidered and not be included in future plans unless a strong case emerges.

This is a JOIDES, JOI, and NSF matter.

- 1.27 Management should be flexible in order to move smoothly to a steady-state operation.

We agree. We have and will continue to take steps to ensure a smooth, steady-state operation.

- 2.1 A stable power supply should be a priority item.

We agree. This issue has been addressed; it has and will continue to receive top priority.

- 2.2 We do not recommend any major expense be incurred to improve underway geophysics.

We agree. There have to-date been changes made based on co-chiefs' recommendations; we believe no other major changes will be necessary.

- 2.3 There should be an improvement in communications between the bridge and underway geophysics in terms of navigation with a repeat output of GPS fixes being on the bridge.

This has been done (per 2.2, above).

- 2.4 The official name (SEDCO/BP 471) should be used in communications and publications.

We agree.

PEC Recommendations for
Wireline Logging Services

3. Wireline Logging Services

- 3.1 The emphasis in the Program should be moved to petrophysics.
- 3.2 The Logging Manual should be revised to include details of shipboard logging operations.
- 3.3 Acronyms, abbreviations and logging jargon should be eliminated as far as possible.
- 3.4 A major effort, involving TAMU and Schlumberger, should be made to overcome bridging problems encountered in open hole logging.
- 3.5 The L-DGO/BRG has responsibility for a training and education program. The transfer of expertise and sharing of knowledge to the whole ODP community must be encouraged.
- 3.6 Travel budgets should be increased to allow attendance of L-DGO/BRG personnel at co-chief pre-cruise meetings and at JOIDES panels.
- 3.7 The purchase of exotic log analysis packages should be minimized. The development of "portable" software packages is recommended.

L-DGO/BRG RESPONSE TO JOI PERFORMANCE EVALUATION REPORT

OF FEBRUARY, 1986

3. Wireline Logging Services (page 29).

3.1 The emphasis in the program should be moved to petrophysics.

Our main thrust all along has been to deliver to JOIDES a logging program customized to doing geological sciences, as opposed to the major technological thrust of the tools which is to find hydrocarbons. That means to develop techniques to measure rock properties in situ, not just to determine pore fluid content. We therefore concur with the performance evaluation report that petrophysics is the direction in which the JOIDES logging program should proceed. Synergism between the continuous measurements made in situ by the logging suite and the limited core recovered in ODP holes is necessary to maximize the scientific return from both the core and the logs. We are now making a powerful set of scientific observations in ODP boreholes, including neutron activation, multichannel sonic

refraction, ultrasonic imaging, phasor induction electrical resistivity, direct drawdown permeability and pore pressure measurements. Most of these data are delivered every 0.5 feet throughout the logged interval of each hole.

Regrettably, the weakest of the laboratory analyses performed on the recovered core aboard the JOIDES RESOLUTION are the physical properties that would locate where within the logs the core came from. Porosity, permeability, electrical resistivity, compressional and shear velocity, density and radioactive mineral content should be measured on every core in order to better establish the correlation between logs and core, which is petrophysics. Luckily, the geochemical measurements from the XRF and XRD when they are working are excellent ties to the neutron activation logging.

Our mission is to develop geological uses for logs, not to develop new "gee-whiz" measurement techniques in the borehole. We leave that to the commercial logging companies. We instead track new tool developments in the oil industry and ask how each may be customized for doing geology in ODP holes.

Acting upon the Performance Evaluation Report will require JOI purchase of physical property laboratory equipment. We will develop integration software to analyze the core and log petrophysics. Synergism has been our direction all along.

3.2 The Logging Manual should be revised to include details of shipboard logging operations.

We concur and will integrate such a section into the scientific logging issue to be produced in concert with our logging schools to be held in the JOIDES member countries in FY 87.

3.3 Acronyms, abbreviations and logging jargon should be eliminated as far as possible.

We concur and are attempting to eliminate their use whenever possible. The industry is shot through with acronym-itis, perhaps as a security precaution, so we ourselves, who are from the scientific community, not the logging community, have trouble with acronyms too.

3.4 A major effort, involving TAMU and Schlumberger, should be made to overcome bridging problems encountered in open hole logging.

We have indeed made such a joint attack on this problem, with the results soon to be determined. Our logging statistics show that 22% of loggable hole is being lost to bridges caused by clay swelling. We can prove the correlation because of the increase in radioactivity from the gamma ray log at places where the caliper log shows bridging.

Clays rich in radioactive elements swell when contacted with drilling muds of different salinity to the pore fluids. Our attack on this problem is two pronged:

1. Correct the drilling mud salinity to that of the pore fluid. Turning to the expertise on the JOIDES Downhold Measurements Panel, we asked ARCO for help. They assigned their most experienced mud engineer to help us. TAMU brought in their mud supplier, Milchem, and Schlumberger volunteered their field engineer to provide onboard engineering assistance. As a result, we determined that the flushing muds used by TAMU were too fresh-water for the clays. A new mud program was developed by ARCO and Milchem which utilizes a small chemistry experiment performed on the cored clays to directly match the mud salinity to that of the clays onboard ship. Then KCl of the appropriate quantity is custom mixed for each hole. We anticipate major improvement in the mud swelling problem from this mud salinity change, beginning on leg 110.

2. To further improve the bridging situation, Lamar Hayes of TAMU, and Schlumberger have together developed a Sidewall Entry Sub logging technique to allow the drillstring to be lowered to knock out any bridges encountered during a logging run WHILE THE TOOL IS STILL DOWN THE HOLE. This system was tested on leg 108, and should be operational by leg 111.

3.5 The L-DGO/BRG has responsibility for a training and education program. The transfer of expertise and sharing of knowledge to the whole ODP community must be encouraged.

We completely concur. Early on, we were occupied with establishment of the logging services on the ship itself. Now, we turn to the second of our major charges: to teach the scientific community about the powerful science one can extract from these sophisticated in situ measurements.

We are developing geophysical weapons such as synthetic seismograms and excess pore pressure detection techniques, and geological methods such as a Milankovich Climate cycle time series analysis, volcanic cycle identification, and rifting history extraction methods. The mission is to allow the scientists aboard each leg to fully utilize the logging program to answer the unique problems posed by each leg, while providing techniques which will provide information to the scientific data base growing with each successive leg.

In order to teach these techniques, we must first develop and extract them from the influence of an industry bent on finding oil and gas. Then we must package them into an understandable format, and the addition to the logging manual of a section called Scientific Well Logging is the next step (to be completed by December, 1986). Next, we must have schools in each of the member countries to directly convey these techniques to

the JOIDES community. We have elicited Schlumberger's help and are currently scheduled to have schools in Japan in November, and England, France and Germany in January. The French meeting is under the aegis of the European Science Foundation. Unscheduled but discussed are similar schools in Canada and Russia (if they join). We need help in planning such an effort in the US (perhaps from USSAC?).

This comment hits another point raised in the text of the Performance Evaluation Report about the L-DGO/BRG being in a "privileged position with regard to the ODP logging data, that we should be conscious not to pursue our own logging research at the expense of the scientific community." We are trying very hard to develop new ways for the ODP to do science with the logs. At the same time we are active ocean scientists-that is one secret to the success of the ODP logging effort in that we are not oil industry engineers. We are hoping that over the years, JOIDES will see that we have not pursued our own interests, but have instead sacrificed to make this the best logging program in the world. Only time will prove how successful we have been, but we are making every effort to place JOIDES interests at the top in every instance.

3.6 Travel budgets should be increased to allow attendance of L-DGO/BRG personnel at co-chief pre-cruise meetings and at JOIDES panels.

We have been absent at these meetings only because of the extreme shortage of funds in FY84 and FY85. For FY86, we have reprogramed monies internally to go to these important meetings, and in FY87 we have new funds to continue.

3.7 The purchase of exotic log analysis packages should be minimized. The development of "portable" software packages is recommended.

We see the usefulness of this directive, but the software existing in the marketplace is complex, sophisticated, and protected by patent and copyright laws. We needed such expertise for the ODP program, and so purchased one package and were given another for \$1.

The expertise exists and the economic climate is appropriate for us to obtain such a portable ODP package from a subcontractor if additional funds were made available to us in FY87. Modification of the KOALA system developed by John Doveton at the Kansas Geological Survey is a prime candidate. We do not have the expertise at the L-DGO/BRG to produce such a package ourselves. We could, however, hire a full-time programmer for about one year to produce the basics of such a system for ODP purposes. This is a money problem.

PEC Recommendations for
ODP Site Survey Data Bank

4. ODP Site Survey Databank

- 4.1 Duplication with other data centers should be avoided.
- 4.2 Every effort should be made to protect data from unauthorized use.
- 4.3 A modest increase in low-level support should be included in future budgets.
- 4.4 The Databank should be involved in IWG as and when necessary.
- 4.5 Greater publicity should be given to the Databank activities.

ODP Data Bank Response to
PEC Recommendations

JOIDES/ODP SITE SURVEY DATA BANK

Lamont-Doherty Geological Observatory
Palisades, N.Y. 10964
Telephone: 914-359-2900



July 2, 1986

Dr. D. James Baker
JOI, Inc.
The Brookings Institution
1755 Massachusetts Ave., N.W.
Suite 800
Washington, D. C. 20036

Dear Jim,

In response to the Data Bank section of the Performance Evaluation Committee report, we have the following comments:

- 4.1 We agree that duplication with other data centers should be avoided. Of course we make every effort to establish contacts with other data centers, both U.S. and international, with the intention of acquiring data that may be useful for ODP purposes. However, we do not feel it is appropriate for the ODP Data Bank to routinely supply individuals with data that is freely available from, say, the NGSDC. We make exceptions in this policy only when responding to requests from scientists in the non-U.S. community (because their access to U.S. data is limited) and in responding to U.S. scientists whose institutions do not have a mainframe computer on which they can house such data.

Because our mandate is to serve the JOIDES community by supporting the Site Survey Panel, the Safety Panel, and the science operator, there is no danger of any overlap of tasks with another data center. The Data Bank's entire effort is devoted to ODP tasks and is supervised and directed by the JOIDES community via the Site Survey Panel. The priorities of the Data Bank as laid down by the Klitgord Review Panel and the Data Bank's pivotal position in the proposed review process both ensure the efficiency of its operation and the "single-mindedness" of its efforts.

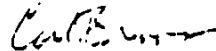
- 4.2 We are very sensitive to the JOIDES community's concern that its data be protected from unauthorized use, and we take every precaution to ensure that the data's proprietary nature is respected. To my knowledge there has never been a breach of this policy.

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- 4.3 JOI has responded to this recommendation in the implementation of the FY'87 program plan. We would like to stress that the Klitgord Review Panel and the PEC intended this to be a permanent modification for inclusion in the FY'88 budget and beyond.
- 4.4 We strongly agree, and hope that JOI will follow through on this recommendation.
- 4.5 We agree, and feel this is already taking place via publicity in the JOIDES Journal and such activities as the recent tour of the Data Bank during the May PCOM meeting.

I hope the above comments are useful to JOI and EXCOM.

Sincerely,



Carl Brenner

CB/ms

JOIDES ODP DATA BANK
TO PEC REPORT



JOIDES/ODP SITE SURVEY DATA BANK

Lamont-Doherty Geological Observatory
Palisades, N.Y. 10964
Telephone: 914-359-2000

July 3, 1986

Dr. D. James Baker
JOI, Inc.
The Brookings Institution
1755 Massachusetts Ave., N.W.
Suite 800
Washington, D. C. 20036

Dear Jim,

Regarding our letter dated July 2, 1986 responding to the Performance Evaluation Committee report, please be advised of the following correction. The third sentence in the second paragraph of Section 4.1 should read as follows: "The priorities of the Data Bank as laid down by the Klitzgord Review Panel and the Data Bank's pivotal position in the proposal review process both ensure the efficiency of its operation and the "single-mindedness" of its efforts."

Sincerely,

Carl Brenner

CB/ms

PEC Recommendations Relevant
to JOIDES Scientific Advisory Structure

2. Science Operator

2.2 Science Operations

2.2.8 Staff scientists have been assigned liaison functions with JOIDES Panels. We have reservations whether this is necessary for all panels. Such liaison can be very useful if the staff scientist is supplying operational information needed for planning. It is also very useful for the Science Operator, in planning for the future, to be made aware of panels' "thinking."

2.3 Engineering and Drilling Operations

2.3.3 We commend the approach taken by the Science Operator in convening workshops to discuss engineering and drilling priorities and to respond to likely future scientific needs. The JOIDES TEDCOM should be a main avenue of contact both with JOIDES and the engineering community, and it is very important that this Committee be re-activated as soon as possible. We encourage it to develop a link to engineering similar to that of the DMP to the Wireline Services Contractor.

2.4 Science Services

2.4.4.8 In terms of sampling policy, we note that this has been agreed by JOIDES both for post-cruise sampling and for on-board sampling. Some co-chiefs felt that the latter was somewhat restrictive. Extensive sampling for destructive tests was usually not allowed unless additional core material was obtained. We would support a review of the guidelines for on-board sampling urging a flexible and pragmatic approach from both the viewpoint of proper curation and the shipboard scientific party.

3. JOIDES RESOLUTION - Facilities

- 3.10 One of the members of the Evaluation Committee considered that it is important that there should be an early test of the full capabilities of the drillship in deploying its maximum drill string and in setting re-entry cones in the maximum water depth. This is, of course, a matter for JOIDES planning (see para. 6.4).

4. Wireline Logging Services

- 4.3 The thrust of the logging operation could well be moved away from Borehole Geophysics towards Petrophysics. This may seem to be a matter of semantics, but in fact, it is not. Borehole geophysics, as practiced by most research groups, tends to concentrate on the ability to make effective measurements in the borehole. It has been the experience of at least one member of the review panel that research in this area tends to evolve into developing exotic measurement systems and associated tools that yield minimum practical information from a cost-benefit standpoint. Examples include borehole gravimetry, downhole electromagnetics, and, in certain cases, in situ neutron activation analysis.

On the other hand, groups that have tended to concentrate on the petrophysical aspect of well logging research have traditionally been more successful. Priorities are set on establishing effective correlations or linkages with the system that is being measured. In the oil industry, the linkage has been almost exclusively the fluid system (oil/gas/water). Only recently has there been a general interest in the industry to provide sophisticated linkages between well logs and the rock matrix (lithology, mineralogy, elemental analysis). As far as the Ocean Drilling Program, the primary linkage would be with the latter case -- the well log/rock matrix system.

In terms of ODP, a petrophysical orientation would tend to prioritize efforts to relate, in a multivariate statistical sense, the collected core data with the obtained logging suites. In practice, this means somewhere within the JOIDES framework greater emphasis should be placed on analyzing log response in terms of physical, chemical, and mineralogic properties of the cores. If this could be done aboard ship, so much the better. The staff at L-DGO/BRG would be extremely capable in shifting the emphasis as recommended. In Paragraph 6.10, we refer to the need for PCOM to consider the need to juxtapose lithological and logging information in terms of publications so that both data sets may be seen as complementary and to encourage the scientific community to take advantage of the opportunities for petrophysics research.

6. JOIDES Scientific Advisory Structure

- 6.1 The structure is overly complex and has become more so from the increasing complexity of DSDP and, thence, ODP and from the internationalisation of scientific ocean drilling. Nonetheless, it is very necessary to allow the full JOIDES community to develop a science plan to meet the COSOD objectives, on which the Program is based.
- 6.2 The present plan for drilling was developed in the final stages of DSDP and the early part of ODP and exhibits characteristics of DSDP science planning, in that too many diverse scientific objectives tend to be included in each leg. The result is often that the prime target sites tend to run out of drilling and logging time. The shipboard party is also large in order to meet the varied scientific targets of each leg; this can result in strong lobbying by the scientific party for projects assigned only second priority by PCOM.
- 6.3 We note that the present advisory structure is under review by PCOM in early 1986. There appears to be some concern in the community that the present structure over-emphasises regional rather than thematic objectives and we understand that this will be addressed in the above review. We consider it to be of great importance that the thematic objectives of COSOD are allowed to emerge in the JOIDES structure.
- 6.4 There should be greater flexibility in JOIDES planning as legs are being too tightly scheduled. Allocation of more than a single leg in succession to a priority target is entirely appropriate in ODP. There also seems a reluctance on the part of JOIDES to assign more than one leg to a particular target (other than in MARK drilling) and this contributes to the dispersion of sites, many of which are left unfinished. JOIDES planning should also take advantage of the capabilities of the drillship in terms of drill string length (deep water/deep holes) and in deploying re-entry cones in deep water. Furthermore, there must be flexibility to include additional legs to complete priority targets commensurate with the constraints imposed on the Science Operator in terms of logistics, staffing and cruise clearances.
- 6.5 We believe that relations between JOIDES and subcontractors are good and that the latter are responsive to the JOIDES science plan.
- 6.6 PCOM members must take care to observe the rules regarding possible conflicts of interest as drilling proponents or as members of institutions actively funded through ODP.
- 6.7 The collective inexperience of the PCOM membership was raised. The lack of corporate memory on the part of PCOM has always been an issue, but the recent rapid turnover of membership has heightened

the problem. Time has shown that the PCOM should not tightly schedule legs or attempt to overly fine-tune operations. Middle- and long-range planning is often forsaken by the press of operational problems. Only experience will resolve these problems. It is most important that the PCOM Chair be a person aware of these issues and difficulties and able to steer the Committee down a more useful path. The practice of chairmanship of the PCOM being assigned to a relatively inexperienced member of the committee should be avoided.

- 6.8 The rotation of the JOIDES Office among U.S. institutions was discussed. The views we heard were unanimous that this should continue although the most cost-effective way of rotating the EXCOM and PCOM chairmanships and their support should be studied and options investigated. A two year period for rotation may be too short as up to 6 months of this time is spent on the learning curve and in winding down the Office. A period of 3 years should be considered, although this has significant implications for the career of an active scientist. In addition, it would be appropriate for JOI to determine if some equipment might be transferred with the Office. The appointment of a non-U.S. representative to the JOIDES Office should be continued.
- 6.9 We understand the concern about the involvement of PCOM in budgetary matters when these impinge on the science plan. We are satisfied that JOI and its subcontractors involve PCOM as early as possible and that due attention is paid to its scientific guidance.
- 6.10 We feel it is important and appropriate to juxtapose lithological information available from logging and that already available from the core barrel sheets. The PCOM should consider this and advise L-DGO/BRG and TAMU accordingly. There is currently no planning for this and the interaction of the two subcontractors would have to be measurably increased should PCOM implement this policy (see Para 4.3).

JOIDES Response to
PEC Recommendations

JOINT OCEANOGRAPHIC INSTITUTIONS for DEEP EARTH SAMPLING (JOIDES)

JOIDES Office
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University of Rhode Island
Narragansett, RI 02882

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Telex: 9103802848 (JOIDES URI UD)
Telemail: JOIDES.URI

September 5, 1986

Dr. D. James Baker, Jr., President
Joint Oceanographic Institutions, Inc.
1755 Massachusetts Avenue, N.W.
Suite 800
Washington, D.C. 20036

Dear Jim:

At the August PCOM meeting, some time was spent in reviewing the report of the Performance Evaluation Committee, particularly as it relates to the JOIDES operation. The PCOM response is attached. I have also reviewed the Performance Evaluation Committee report and in particular its recommendations and comments with respect to JOIDES. The PCOM response reflects my own views on these matters. The issue of the timing and extent of PCOM involvement in each year's formulation of the ODP budget is complicated. It is almost impossible to satisfy all constituencies and still proceed to a budget formulation in a timely manner, but there is little question in my mind but PCOM has a role to play. My views on this have been elaborated in a letter to Don Heinrichs of (a copy of which is attached.)

Sincerely,



John A. Knauss
Chairman, EXCOM

JAK:abb
Att.
cc: R. Larson

3-26

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JOINT OCEANOGRAPHIC INSTITUTIONS for DEEP EARTH SAMPLING (JOIDES)

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18 August 1986

Dr. John Knauss
EXCOM Chairman
Graduate School of Oceanography
University of Rhode Island
Narragansett, RI 02882

Dear John:

Please find enclosed the response of the JOIDES Planning Committee to the portion of the Performance Evaluation Committee (PEC) report provided by JOI President, Jim Baker, for our review and reply. The views expressed here were agreed to by the entire PCOM after consideration over the summer and debate at our most recent meeting on August 11-15, 1986. We present this report to EXCOM for their consideration in formulating a formal response from the JOIDES Advisory Structure to JOI, Inc. In submitting this reply to you I emphasize that our comment on the PEC Terms of Reference is the most important statement in our report. I also convey to you the consensus view of PCOM that a review of these specific portions of the PEC report should have been done after we had seen the entire report, not just these selected excerpts. We request that this somewhat more open procedure be followed in future reviews.

Sincerely yours,


Roger L. Larson
Chairman, JOIDES
Planning Committee

cc: PCOM Members

18 August 1986

TO: John Knauss, EXCOM Chairman

FROM: Roger Larson, POOM Chairman

RE: POOM Reply to the Performance Evaluation Committee Report

The portions of the draft report of the JOI Performance Evaluation Committee (PEC) relevant to the JOIDES Scientific Advisory Structure were distributed to all members of POOM at our meeting on May 28-30 for review and comment. Below is a point by point reply, numbered in the same fashion as the draft report, that is the consensus of POOM's positions and opinions regarding the points raised by the PEC. The views expressed here were agreed to by the entire POOM after consideration over the summer and debate at our most recent meeting on August 11-15, 1986. Before describing those specifics, however, POOM makes the following statement on the PEC Terms of Reference that is our most important comment on this review.

PEC TERMS OF REFERENCE

Although the PEC conducted a detailed and often insightful investigation, this investigation is basically flawed and incomplete. The PEC focused only on evaluating how the various ODP subcontractors carry out their functions, and reported these findings to JOI Inc. who is the prime contractor. POOM believes that the PEC Terms of Reference should have also directed the PEC to include a complete review of all of JOI's functions as the prime contractor for ODP, and the PEC should have reported directly to EXCOM. It is only possible to have a complete and impartial review of the entire ODP structure if the prime contractor is included in that review, and if the report is made directly to EXCOM as the principal oversight body. Indeed it would seem that the conduct and analysis of such a review should become one of the prime functions of EXCOM, now that ODP is on a firm membership footing. POOM believes that this change in the Terms of Reference in the future will answer the lurking question of "who watches the watchers" and assuage any possible accusations of "whitewash."

SPECIFIC POOM COMMENTS ON THE PEC DRAFT REPORT

- 2. Science Operator
 - 2.2.8 Science Operations - POOM generally agrees that it may be unnecessary for TAMU staff scientists to attend all JOIDES panel meetings, although it is often useful.
- 2.3 Engineering and Drilling Operations
 - 2.3.3 POOM agrees that TEDCOM is a useful element in the JOIDES advisory structure and re-activated the Committee under Chairman Jean Jarry of France who convened their most recent

meeting in February 1986 in Marseilles. We point out that it is unlikely that TEDCOM will serve as an engineering link to TAMU similar to that of DMP to Wireline Services because DMP is composed mainly of users of ODP while TEDCOM is composed mainly of advisors outside of ODP.

2.4 Science Services

- 2.4.4.8 Sampling policy - PCOM agrees that sampling policy should be reviewed and have directed our Information Handling Panel to do so. We have also asked that new member suggestions for IHP come from the sample user community rather than from the data base community.

3. JOIDES RESOLUTION

- 3.10 PCOM has no specific plans for an early test of full drillstring length (30,000' = 9150m) or maximum depth of setting conventional re-entry cones (20,000' = 6100m). Such tests will probably be conducted in late 1988 in the western Pacific when we encounter water depths in excess of 6300m for the first time.

4. Wireline Logging Services

- 4.3 PCOM believes that the main thrust of the logging program is already a petrophysics description of the borehole. Furthermore, we are convinced that the Wireline Services Contractor has always had this orientation and is capable of carrying out this basic mandate in the future. Logging data will be printed directly after lithological data in the Volume A ODP reports. The format is now being finalized as described below in Para. 6.10.

6. JOIDES Scientific Advisory Structure

- 6.1 PCOM agrees that the present advisory structure is complex and considered directly the question of revising it at their January 1986 meeting. The outcome of that discussion was in accord with a previous EXCOM opinion that stability of the present structure is more important at this time. PCOM instead redirected the regional and thematic panels to different specific tasks as described below in the PCOM Chairman's letter to panel chairman dated 4 February 1986:

"Instead of changing the JOIDES panel structure or hierarchy at this time, PCOM decided that the duplication of effort between regional and thematic panels could be eliminated, and yet the checks and balances of the present system could be preserved by re-directing the regional and thematic panels to different specific tasks in the planning procedure. Ideally, we see this as a sequential, three-step process for each geographic area of planning as follows. First, we request the thematic panels to specify the overall thematic objectives that can best be achieved in this geographic area, placing this area in the world-wide view of their subject that lies within their panel's mandate. Second, this information is then communicated to the regional panel(s) responsible for

this area, and the regional panels are asked to define a specific drilling program within the thematic constraints set down by the thematic panels. Finally, this proposed drilling program is reviewed by the thematic panels who comment on its adequacy in meeting the thematic objectives. This advice is then communicated to the PCOM who are the final arbiters of the drilling program. We do not see that the regional panel function will be changed drastically from its present function, except that drilling programs should be created within the specific thematic framework, rather than the present "carte blanche" method of planning. Thematic panels, however, should seriously de-emphasize the review of all specific drilling proposals that are forwarded to them, and concentrate on long-term world-wide planning. The JOIDES Office will continue to forward specific drilling proposals to thematic panels in the present manner so that proposed drilling programs created by the regional panels can be intelligently reviewed. However, we hope that the regional panels' prioritization of specific proposals, and their subsequent proposed drilling programs will serve as initial screening processes for thematic panel review."

As of this writing, this new system seems to be working very well for Pacific planning. Further attempts will be made to fine-tune the panel structure in the future if necessary.

- 6.2 PCOM disagrees that "often the prime target sites tend to run out of drilling and logging time (due to too many diverse scientific objectives)." This can probably only be argued for Leg 104, and there it is debatable. Furthermore, 20/20 hindsight in that case suggests that both the basement and paleoenvironment objectives are very important scientific results and the only planning error was not to allocate more drilling time to Leg 104. PCOM tries to avoid multiple objective legs if possible, but when this is unavoidable, such as the upcoming Leg 112 on the Peru margin, we now attempt to optimize the situation by scheduling additional drilling time for those situations.
- 6.3 PCOM commented on their review of the advisory structure in 6.1 above. We agree that the thematic objectives of COSOD should be the focus of this program, but point out that different oceans are in a different state of exploration, and that it is more appropriate to plan long-term thematic experiments in well-explored regions (the Atlantic/eastern Pacific) than in poorly-explored ones (Indian Ocean).
- 6.4 PCOM does not believe that greater flexibility is possible, or even desirable, in the present phase of ODP. This is because we have chosen to utilize to the fullest JOIDES RESOLUTION's station keeping/drilling capabilities to investigate both the northern and southern high latitude oceans in the first three years of ODP. This is basically a different strategy from DSDP planning because we are forced to meet very narrow

weather windows in various remote parts of the world. In DSDP the flexibility of including additional legs to complete priority targets was done by simply deferring the subsequent program by the amount of additional time required. This is not possible in ODP because of the high latitude weather window constraints, and the only recourse would be to eliminate other upcoming legs. Given the high degree of scientific coordination necessary to organize each program, this would be very unfair to a leg's personnel who were eliminated on short notice, and PCOM has not yet found an uncompleted target of sufficient priority to justify the elimination of an entire leg on short notice. PCOM points out that the upcoming Antarctic campaigns, first in the Weddell Sea/South Atlantic sub-Antarctic and second in the Kerguelen/Prydz Bay area are both planned to a certain extent as interlocking, multiple leg programs. PCOM further points out that JOIDES RESOLUTION will not encounter a water depth that even approaches the maximum drillstring length until 1988 and that we see no a priori reason to seek out very deep water drill sites prior to that time.

6.5 PCOM agrees, especially at the level of subcontractor representation at PCOM meetings, that relations between JOIDES and the subcontractors are good and that the subcontractors are responsive to the JOIDES science plan.

6.6 PCOM liaisons and JOIDES panel chairmen have been re-advised on policy related to conflict of interest. The text of that most recent statement from the PCOM Chairman dated 3 June 1986 follows:

"This letter is to reaffirm PCOM's position regarding conflicts of interest in the consideration of drilling proposals for ODP. Basically this position is that proposal proponents should not be involved in panel discussions relevant to the potential inclusion of their proposal in drilling plans, and panel members who are proponents should not participate in votes related to their proposals. In asking you to implement this position in the conduct of your panel meetings, I am well aware that many panel members, as well as some PCOM members, are proposal proponents, and that it is this personal interest in the evolution of the drilling program that, in large part, encourages them to contribute their time and expertise to the JOIDES advisory structure. Thus, the issue of potential conflicts of interest is a sensitive and personal one that requires everyone's cooperation. I urge you to use good judgement but firm guidance in continuing to provide the PCOM with the best possible set of scientific plans for ODP."

6.7 PCOM is aware of its collective inexperience and requested EXCOM to permit two long standing members, Dennis Hayes and Jose Honnorez, to stay on the Committee one additional year in order to provide additional "corporate memory." We also view

our "collective inexperience" as an asset that brings new leadership blood into the program and prefer that to the stagnant situation during DSDP when some PCOM members were allowed to remain on the Committee in excess of a decade. PCOM believes that its past, present, and upcoming chairmen have been, are, and will be the best people for the job, given the manpower and other commitment constraints facing American oceanographic institutions.

- 6.8 PCOM agrees that the JOIDES Office should continue to rotate among U.S. oceanographic institutions, but feels that the two-year rotation period is about right. Extending the rotation period beyond two years would make it impossible to continue to find the best person for the job of PCOM Chairman, because the best people are reluctant, even now, to abandon as much as two years of prime research time. Rather, funding should be approved for a short (several months) overlap of PCOM Chairmen and JOIDES Office personnel during transitions. PCOM fully supports the appointment of a non-U.S. representative to the JOIDES Office.

- 6.9 PCOM will continue to reserve the right to review the upcoming fiscal plan in accord with their motion passed at the May 1984 meeting:

"Motion 473A: The Planning Committee requests that it receive each year a draft of the proposed ODP budget at a sufficient level of detail so that it may have full information for future scientific recommendations.

Vote: 14 for; 0 against; 1 abstain"

- 6.10 PCOM accepts the combined advice of LDGO/BRG, TAMU, and the JOIDES Information Handling Panel that logging data will be published directly after lithological data (the barrel sheets) in Part A of the Proceedings. The logs will be keyed to the barrel sheets by core numbers and will be unprocessed. This sequential format, rather than juxtaposed format for the logging and lithological information, will allow additional data to be displayed for ready visibility without encouraging spurious correlations between the two data sets.

PEC Recommendations on Management
and General Issues

6. Management

- 6.1 JOI must be allowed to manage the Program without undue interference from NSF in the management function.
- 6.2 JOI has the prime responsibility for ensuring that subcontractors adhere to budgets, guidance, etc.
- 6.3 The prime liaison between JOI and the scientific planning process should be the ODP Program Manager.
- 6.4 A system should be devised to identify overheads as a U.S. responsibility within the budget.

7. General

- 7.1 Both TAMU and L-DGO are in a privileged position regarding ODP data. Care should be taken that this position is not abused.
- 7.2 The subcontractors' roles should be re-emphasised as being that of providers of services.
- 7.3 Non-U.S. involvement must be encouraged in all aspects of the program at L-DGO/BRG and with the Science Operator.

JOI Response to PEC Recommendations on
Management and General Issues

6. Management

6.1 JOI must be allowed to manage the Program without undue interference from NSF in the management function.

JOI has a close and mutually beneficial relation with NSF and believes that the current management interactions do not involve undue interference.

6.2 JOI has the prime responsibility for ensuring that subcontractors adhere to budgets, guidance, etc.

In the past year, JOI reorganized and appointed a Director for Ocean Drilling Programs to ensure that this prime responsibility is appropriately carried out. The new organization appears to be working well.

6.3 The prime liaison between JOI and the scientific planning process should be the (JOI) ODP Program Manager.

We agree, and such liaison has been established.

6.4 A system should be devised to identify overheads as a U.S. responsibility within the budget.

We are exploring with NSF various means of identifying and paying overhead costs for the Ocean Drilling Program. In the meantime, it must be recognized that these are real program costs, including office rental, legal advice, communication and duplication, depreciation, and salaries and benefits for corporation employees directly working on ODP. Toward a better understanding, the Program Plan now provides a breakdown of ODP absorbed overhead costs by category.

7. General

7.1 Both TAMU and Lamont-Doherty are in a privileged position regarding ODP data. Care should be taken that this position is not abused.

Each of these subcontractors is well aware of this privileged position, and to date, we have not had a problem. We will monitor this.

7.2 The subcontractors' roles should be reemphasized as being that of providers of services.

This point is continually emphasized, and we believe that the requested services are in fact being provided. At the same time, it should be recognized that the subcontractors are centers of intense scientific and engineering activity, a benefit to the intellectual environment at the institution.

7.3 Non-U.S. involvement must be encouraged in all aspects of the program at L-DGO BRG and with the science operator.

We believe this is being done now, and we continue to encourage it.

4. Suggestions for future evaluations

1. General points

The general terms of reference for the first PEC review have been addressed by the PCOM and by TAMU. It is useful to note their comments so that future procedures can be drafted with all interests in mind. It was noted that the PEC often took terms of reference more broadly than its charter might have allowed, and in many cases addressed criticism at TAMU, the science operator, which was more appropriately addressed to the overall management or science advisory structure. In JOI's view, such criticisms need to be redirected to the responsible body and then evaluated.

TAMU also noted the potential conflict of interest with the Executive Assistant to the Chairman of PCOM (Mr. Mayer) serving as principal staff for the PEC. Although JOI is satisfied that the procedure followed was strict and careful to avoid any overlap, nonetheless, even the appearance of a potential conflict must be avoided in a review process. Thus in future PEC reviews, the staff support will come from JOI headquarters staff or the staff of the PEC chairman.

There was also a lack of follow-up procedures after the interviews at Texas A&M. Neither Department Managers, the Program Director, nor the Deputy Director were given exit interviews, which could have been helpful for both the PEC and TAMU. TAMU noted that the committee is to be commended for their comprehensiveness in the time allowed, but that allotting more time to the committee would help resolve the problem. JOI notes that the PEC should ensure that all are heard. This direction will be given to the next PEC.

Finally, we note that the review was of subcontractors only, not of JOI itself. See Section 4 below for a discussion of this point.

2. Terms of reference for future Performance Evaluations

In our view, the terms of reference should be examined before each PEC convenes to ensure that any specific issues that have come up since the last review are addressed. The terms of reference as used by the first PEC are a good starting point, but we would add on the basis of our experience the following points in membership and mode of operation; with an emphasis on speeding up the whole process.

Membership:

To be chosen by the President of JOI in consultation with NSF, JOIDES, JOI and other experts.

Secretariat to be provided by or through JOI.

The committee should be chaired by an eminent scientist, knowledgeable about ODP but not involved. Other members, to be drawn from the international scientific community will be eminent scientists and engineers able to review all aspects of the Program. In all cases, they should not be currently active in ODP or JOIDES. It may be desirable to include members not previously involved in scientific ocean drilling to provide a fresh look at ODP.

Mode of Operation:

- a) The PEC will visit JOI Headquarters in Washington, D.C. and all subcontractors at L-DGO, TAMU, and the JOIDES Office. The PEC will visit JOIDES RESOLUTION should the vessel be in a convenient part of the world.
 - b) The PEC will interview selected members of EXCOM and PCOM.
 - c) The Executive Secretary will transmit a list of issues and questions to be raised by the PEC, directly to JOI and the subcontractors in advance of visits. This document will be drawn up by the PEC Chairman and the Executive Secretary, who will also determine the type and style of paperwork to be provided, again in advance of interviews.
 - d) The PEC will decide its own interview process. It may be necessary, occasionally, for people to be interviewed privately or on a group basis, e.g., marine technicians, etc.
 - e) The PEC will have the right to call for any papers or information which it deems necessary.
 - f) The PEC should have the right to propose specific studies of ODP and its operations by professional consultants, as appropriate.
 - g) At the end of each visit, the PEC must assign time to discuss its impressions and conclusions, and it must provide exit interviews with appropriate supervisory personnel. After completion of the evaluation, the chairman of the PEC will discuss the Committee's findings with the President of JOI and the senior official of the subcontractors and/or the subcontractors' staff as is mutually agreed.
 - h) The report should consist of a descriptive section outlining activities, a section dealing with observations and impressions, and a section on conclusions and recommendations. The report must be accompanied by an executive summary.
- A record of the interviews will be kept on a strictly confidential basis and will be deposited with the President of JOI. The draft report will be prepared by the PEC Chairman. It will then be circulated to other PEC members for comment, and revisions will then be made. It may be necessary to convene a

special PEC meeting to discuss the final report. But the final report shall be completed within two months of the evaluation. On agreement of the final report by all PEC members, a copy should be transmitted by the PEC Chairman to the President of JOI.

The President of JOI or his representative will discuss with and transmit the report to the subcontractors and will ask for written comments including plans where action is required. After receiving the subcontractor comments and plans, JOI will discuss the report with and transmit a copy of the report and response to the Chairmen of EXCOM and PCOM and to the National Science Foundation. This should occur within two months after receipt from the PEC.

3. Timing

In terms of timing for the next PEC reviews, we believe that the next site visits should take place in April-September 1988, about 2-1/2 years after the last site visits in October-December 1985. This would allow review of the program 3-1/2 years into its operational phase, and would allow the report to be finished in January 1989, well before Program Plan preparation and the April 1989 EXCOM and Council meeting. The table shows the specific recommended dates.

We would intend to carry out two subsequent reviews with the same relative timing in 1990-91 and 1992-3. In this way, the program is reviewed every two years, with site visits and evaluation in the summer, the most convenient time. This would allow four evaluations over the life of the program.

TABLE 1

Timing for the Performance Evaluations

PEC 1

Jan-Jul 1985	Nominations for membership solicited, members appointed.
Oct-Dec 1985	Site visits and evaluation.
Apr 1986	Committee report completed.
Sept 1986	Final responses received and report distributed.

PEC 2

Dec 87-Apr 1988	Nominations are received for Performance Evaluation Committee by the President of JOI.
Apr 1988	President of JOI selects Performance Evaluation Committee in consultation with NSF, EXCOM, PCOM, and others as appropriate.
Apr-Sept 1988	Evaluation accomplished.
Sept-Oct 1988	Prepare evaluation report and submit to President of JOI.
Nov-Dec 1988	JOI receives formal responses from subcontractors and prepares final report and action plan.
Jan 1989	Performance Evaluation Report presented to EXCOM. Copies distributed to NSF/EXCOM/ PCOM.

PEC 3

Dec 89-Apr 1990	Nominations are received for Performance Evaluation Committee by the President of JOI.
Apr 1990	President of JOI selects Performance Evaluation Committee in consultation with NSF, EXCOM, PCOM, and others as appropriate.
Apr-Sept 1990	Evaluation accomplished.
Sept-Oct 1990	Prepare evaluation report and submit to President of JOI.
Nov-Dec 1990	JOI receives formal responses from subcontractors and prepares final report and action plan.
Jan 1991	Performance Evaluation Report presented to EXCOM. Copies distributed to NSF/ EXCOM/PCOM.

PEC 4

Dec 91-Apr 1992

Nominations are received for
Performance Evaluation Committee
by the President of JOI.

Apr 1992

President of JOI selects Performance
Evaluation Committee in consultation
with NSF, EXCOM, PCOM, and others as
appropriate.

Apr-Sept 1992

Evaluation accomplished.

Sept-Oct 1992

Prepare evaluation report and
submit to President of JOI.

Nov-Dec 1992

JOI received formal responses from
subcontractors and prepares final
report and action plan.

Jan 1993

Performance Evaluation Report presented
to EXCOM. Copies distributed to NSF/
EXCOM/PCOM.

4. A larger scope

The PCOM also raises a more fundamental issue by suggesting that the PEC should have reviewed all of JOI's functions as the prime contractor for ODP, and that the PEC should have reported to EXCOM. There are two issues here:

(1) The need for JOI, as a requirement of its contract with NSF, to review the performance of its subcontractors; and

(2) The need for a review of the entire program, including the prime contractors.

The PEC was established in accordance with provisions of the JOI contract with NSF to address (1) above. Such a review of performance will always be required periodically by a prime contractor, and JOI is obligated contractually to provide such a review.

However, the need addressed in (2) above for a review of the entire management chain, is a legitimate one. Since JOI has contracted with NSF for the operation of the program, it is JOI's view that NSF is the appropriate body to carry out such an overall review, perhaps with the oversight of the ODP Council. The results of the review, which would include the science advisory structure as well as the operations, would be made available to EXCOM, PCOM, and other groups as appropriate. If such a comprehensive NSF review were undertaken, then it would encompass the JOI PEC review, which would then not be necessary.

We also note that NSF, under contract with Price-Waterhouse, is undertaking a comprehensive review of management efficiency of JOI as well as the University Corporation for Atmospheric Research (UCAR) and the Associated Universities for Research in Astronomy (AURA). Although the Price-Waterhouse review does not substitute for a total review of ODP since it is not being carried out by experts in ocean drilling, any new comprehensive review of ODP by NSF will have to take this ongoing management review into account.

5. Appendix

Chronology of events, Performance Evaluation Committee

1985

January 23	Letter from Clotworthy to Knauss - initiate request to JOIDES for names.
February 4	Response from Knauss
March 20	JOI Board meeting - discuss members, terms of reference, dates
October 15	Membership selection complete
October 24-25	PEC meets @ LDGO, Logging Data Bank JOIDES, PCOM, EXCOM East Coast Core Repository
October 26-28	PEC meets @ JOIDES RESOLUTION Onboard Ship - Master/Drilling Manager - ODP personnel Co-chief scientists 102, 105
November 6-8	PEC meets @ TAMU ODP Staff Leg 101 co-chief scientists
December 20	PEC chairman and J. Creager visit JOI office Accounting and contracting staff

PEC Chronology

1986

January 30	Final draft of report completed and distributed to PEC for comment
February 25	Final report completed by PEC
March 4	Final report received at JOI
March 18	PEC report distributed to TAMU, Lamont-Doherty, JOIDES for response - major errors, clarification, etc.
April 18	JOI asks Hay for minor clarifications
April 25	Response from Hay
April 28	Distributed advance copy to EXCOM, JOI agrees to send copy of PEC plus response to PCOM, EXCOM, NSF
May 22	Formal request to JOIDES for response
June 23	Formal request to TAMU for response
June 23	Formal request to Lamont-Doherty (Logging) for response.
June 23	Formal request to Data Bank for response
July 1	TAMU response received
July 2	Lamont-Doherty Data Bank response received
July 4	Lamont-Doherty Logging response received
September 5	JOIDES response received
September 30	Final report plus responses delivered to EXCOM, PCOM, NSF