IODP Operations Review Task Force Meeting

Expeditions 303 & 306
North Atlantic Climate I & II

Expedition 307
Porcupine Basin Carbonate Mounds

February 20-21, 2006
College Station, TX

Expeditions 303, 306 and 307
Review Task Force Attendees
February 20-21, College Station, Texas

Jack Baldauf	JOI Alliance, Texas A&M University, USA
Christian Bücker	RWE, Hamburg, Germany
Jim Channell	University of Florida, USA
Daniel Curewitz	CDEX, JAMSTEC, Japan
Tim Ferdelman	Max Planck Institute for Marine Microbiology, Germany
Jeff Fox	JOI Alliance, Texas A&M University, USA
Ron Grout	JOI Alliance, Texas A&M University, USA
Sean Higgins	JOI Alliance, Lamont-Doherty Earth Observatory (LDEO), USA
Dave Huey	Stress Engineering, Houston, Texas, USA
Thomas Janecek	IODP Management International, Inc., Washington, DC, USA
Toshiya Kanamatsu	CDEX, JAMSTEC, Japan
Mitch Malone	JOI Alliance, Texas A&M University, USA
Suzanne O'Connell	Wesleyan University, USA
Heiko Pälike	University of Southampton, UK
Frank Rack	JOI Alliance, Joint Oceanographic Institutions, Inc., USA
Alister Skinner	ECORD Science Operator/British Geological Survey, UK
Rüdiger Stein	Alfred Wegener Institut (AWI), Germany
Kozo Takahashi	Kyushu University, Japan
Manik Talwani	IODP Management International, Inc., Washington, DC, USA
Trevor Williams	JOI Alliance, Lamont-Doherty Earth Observatory (LDEO), USA
Rainer Zahn	ICREA, Universitat Autònoma de Barcelona, Spain
Carlos Alvarez Zarikian	JOI Alliance, Texas A&M University, USA

Observers

James Allan	National Science Foundation, USA

INTRODUCTION

Meeting Format

The IODP-MI Operations Review Task Force met on February 20th and 21st at the TAMU offices of the United States Implementing Organization (USIO) in College Station, TX, to review the operational aspects of IODP Expeditions 303, 306, and 307. The review concentrated on "lessons learned" from the expedition with an emphasis on "what should be done differently in the future." The committee review was based upon confidential reports submitted by the US Implementing Organization (USIO) and the Expedition 303, 306, and 307 Co-chief scientists.

The meeting began with oral presentations by Expedition 303 and 306 co-chief scientists, Jim Channel and Rüdiger Stein, respectively, summarizing their written confidential report. These two presentations were followed by the USIO operator summary given by Mitch Malone. The Review Task Force then identified specific pre-expedition, expedition, and post-expedition topics for discussion based upon the written and oral reports.

Expedition 307 Co-chief scientist Tim Ferdelman then summarized the Expedition 307 co-chief scientist written report. Trevor Williams followed with a summary presentation of the USIO report. As with the Expedition 303 and 306 issues, the Review Task Force identified specific expedition, expedition, and post-expedition topics for discussion based upon the written and oral reports.

The Review Task Force spent the remainder of the first day of the meeting discussing the combined set of issues and developing specific recommendations for the USIO (and other Implementing Organizations [IOs]), for IODP-MI, and for the Science Advisory Structure (SAS). On the second day of the meeting, the committee reviewed the recommendations and came to a consensus on each one. These recommendations are presented in this report.

Expedition 303/306 Scientific Summary

Expedition 303, Sept 25, St. John´s, Nfld to Nov17, 2004, Ponta Delgada, Azores
Co-Chief Scientists: James Channell, Tokiyuki Sato
Staff Scientist: Mitch Malone
USIO Operations Supt: Ron Grout

Expedition 306, March 02, Ponta Delgada, Azores to April 26, 2005, Dublin
Co-Chief Scientists: Toshiya Kanamatsu, Rüdiger Stein
Staff Scientist: Carlos Alvarez Zarikian
USIO Operations Supt: Michael Storms

IODP Expedition 303/306 drilling sites were chosen to: (1) capture Miocene-Quaternary millennial-scale climate variability in sensitive regions at the mouth of the

Labrador Sea and in the North Atlantic ice-rafted debris (IRD) belt and (2) provide the sedimentary and paleomagnetic attributes, including adequate sedimentation rates, for construction of high-resolution isotopic and magnetic stratigraphies.

Expeditions 303/306 recovered apparently complete composite sections from multiple holes at key locations in the North Atlantic. High accumulation rates, reaching 20 cm/kyr, will permit the study of millennial-scale variations in both climate and in the Earth's magnetic field, over the past several million years, when the amplitude and frequency of climate variability changed substantially. Shipboard logging and scanning data (magnetic susceptibility and remanence, density, natural gamma radiation, digital images and color reflectance) and post-cruise XRF scanning data have revealed that Expedition 303/306 sediments contain detailed histories of millennial-scale climate and geomagnetic field variability throughout the late Miocene to Quaternary. The climate proxies will be integrated with paleomagnetic data in order to place the records of millennial-scale climate change into a high-resolution stratigraphy based on oxygen isotope and relative geomagnetic paleointensity (RPI). The paleomagnetic record (comprising polarity reversals, excursions and RPI) in these cores is not only central to the construction of the stratigraphic template but will also provide detailed documentation of geomagnetic field behavior.

In addition to the North Atlantic paleoceanographic study, a borehole observatory was successfully installed in a new 170-m-deep hole close to Ocean Drilling Program Site 642. It consist of a CORK (circulation obviation retrofit kit) to seal the borehole from the overlying ocean, a thermistor string, and a data logger to document and monitor bottom-water temperature variations through time.

Expedition 307
Expedition 307, 25 April, 2005 Dublin Ireland – 30 May 2005 Dublin, Ireland
Co-chief Scientists: Timothy G. Ferdelman and Akihiro Kano
Staff Scientist: Trevor Williams
USIO Operations Supt: Derryl Schroeder

Challenger Mound, a carbonate mound structure covered with dead deepwater coral rubble and located in Porcupine Seabight on the southwest Irish continental margin, was the focal point of twelve days of scientific drilling aboard the *JOIDES Resolution* during Integrated Ocean Drilling Program Expedition 307.

Specific drilling objectives included the following: (1) Establish whether the mound base rested on a carbonate hardground of microbial origin and whether past geofluid migration events acted as a prime trigger for mound genesis, (2) Define the relationship, if any, between mound initiation, mound growth phases, and global oceanographic events, (3) Analyze geochemical and microbiological profiles that define the sequence

of microbial communities and geomicrobial reactions throughout the drilled sections, (4) Examine high-resolution paleoclimatic records from the mound section using a wide range of geochemical and isotopic proxies, (5) Describe the stratigraphic, lithologic, and diagenetic characteristics, including timing of key mound-building phases, for establishing a depositional model of deepwater carbonate mounds and for investigating how they resemble ancient mud mounds.

In addition to the mound, one site immediately downslope of Challenger Mound and another site upslope were drilled to (1) constrain the stratigraphic framework of the slope/mound system, (2) identify and correlate erosional surfaces observed in slope sediment seismics, and (3) investigate potential gas accumulation in the sediments underlying the mound.

Drilling revealed that the mound rests on a sharp erosion boundary. Sediments below this erosion surface consist of glauconitic and silty sandstone drift deposits of middle Miocene age that grade upward toward more clay-rich intervals. The latter are tentatively interpreted to represent relatively low-energy environments deposited in the late Miocene–Pliocene succession. The Pliocene strata end abruptly in a firmground that is overlain by the Pleistocene mound succession. Biostratigraphic results suggest that the hiatus between the two successions spans at least 1.65 m.y. The mound flanks are draped by late Pleistocene (<0.26 Ma) silty clay deposits that frequently contain dropstones.

The mound succession just above the firmground is represented by interbedded grainstone, floatstone, rudstone, packstone, and wackestone in decimeter thicknesses, all reflecting relatively rapidly changing depositional realms. Above this lower level, the mound succession shows pronounced recurring cycles of Pleistocene coral floatstone, rudstone, wackestone, and packstone on a several meter scale that are well represented in the carbonate content change and are most probably associated with Pleistocene glacial–interglacial cycles. A role for hydrocarbon fluid flow in the initial growth phase of Challenger Mound is not obvious either from the lithostratigraphy or from initial geochemistry and microbiology results. No significant quantities of gas in the mound or in the subbasal mound sediments were found, nor were carbonate hardgrounds observed at the mound base.

Microbial effects on mound and submound diagenesis are more subtle. A methane–sulfate transition was detected only in the deeper-lying Miocene silt and sandstones underlying the mound, where methane concentrations and prokaryotic cell abundances increase with increasing depth. In the mound itself, interstitial water profiles of sulfate, alkalinity, Mg, and Sr suggest a tight coupling between carbonate diagenesis and microbial sulfate reduction. Decomposition of organic matter (organoclastic) by sulfate reduction may drive the biogeochemical processes of mineralogical transformation by (1) producing CO_2, which enhances aragonite dissolution and (2) increasing overall dissolved inorganic carbon concentration, which allows dolomite or high-Mg calcite to precipitate.

RECOMMENDATIONS BY THE EXPEDITION 303/306/307 OPERATIONS REVIEW TASK FORCE

The Expedition 303/306/307 Operations Review Task Force members identified and discussed several main areas of improvement for future operations including:

- Pre-cruise planning
- Multiple expedition issues
- Drilling equipment
- Laboratory Equipment
- General Overarching IODP issues

While the primary focus of this review was on USIO (JOI Alliance) operations during Expeditions 303/306/307 (with an eye toward future riserless operations) many recommendations will be equally valuable for other IODP operators, to IODP management and to the Science Advisory Structure. As such, many recommendations are also directed to these entities.

A) Pre-cruise Planning

Numerous pre-cruise planning issues were raised during the meeting. The source of many of the issues can be traced back to (1) limited lead time with respect to planning of USIO Phase 1 operations and (2) the lack of (or poorly defined) specific IODP policies and procedures (e.g. staffing, logging, etc) associated with the start of the IODP. The recent move by IODP management, operators and advisory structure toward a 24-month lead-time for scheduling of expeditions has appeared to alleviate much of this lead-time issue. In addition, the experience gained by the IOs and National Offices during the first phase of IODP operations has significantly improved the procedures and protocols of staffing in IODP.

The following issues were discussed in detail and only a summary is reported here. Some issues merited specific recommendations, while the Review Task Force thought other topics had been adequately addressed since the three expeditions and thus did not merit a specific recommendation.

Compressed timelines and inadequate policies/procedures

As discussed above in the preamble to this section (Section A), many of the pre-expedition planning (and some expedition and post-expedition) issues resulted from compressed or inadequate lead times for these expeditions and/or the ad hoc nature of many procedures and protocols (associated with the start-up of IODP) for staffing, publications, logging, sampling, etc. Many of these procedures, policies, and protocols have now been formalized and the planning/scheduling system has moved to 24 month (and hopefully longer) timelines. Given this change in planning procedures and

implementation of IODP policies since these expeditions were first scheduled, the Review Task Force thought the issues raised in the reports and discussion regarding short lead time planning are now adequately addressed and no formal recommendation regarding timelines or lead-times was made.

Contingency Tree for Operations

The Task Force discussed how adequately prepared the co-chiefs were to make the myriad of operational decisions/changes needed on an expedition. Two issues arose which hampered decision-making, (1) the need for more alternate sites to assist in the decision process (addressed below) and (2) the need to better understand the history of the proposal and scheduling process. The latter issue is important for co-chiefs selected late in the scheduling process (e.g., as a replacement for another co-chief) or who may not be intimately familiar with the particulars of the drilling proposal. To this end the following recommendation was made:

> **Recommendation 303/306/307-01**
> IODP-MI should provide the IOs and the co-chief scientists with a documented (hardcopy) history of proposal, SAS, and OTF discussion. IODP-MI will work with the SAS and IOs to ensure this history is well-documented and easily available. The IOs will track the history of discussions at the pre-expedition meetings through the execution of the operation.

Alternate Sites:

Expedition 303 and 306 operations were plagued by bad weather and the need to transit long distances to operational areas not associated with the primary paleoceanographic goals of the original proposal. The expedition's co-chiefs, especially for Expedition 306 found that that they did not have an adequate selection of alternate sites to drill outside of original areas of operations should weather be an issue in the area of interest. The Review Task Force discussed numerous methods to increase the breadth of alternate sites and felt it was important to identify these sites early on in the Science Advisory Structure proposal review process. In addition to the inclusion of an adequate selection of alternate sites to drill outside the original areas of operation, there also is a need to develop a selection of alternate sites for "add-on" sites/operations (e.g., the distant Voring Plateau objective in Expedition 306).

> **Recommendation 303/306/307- 02**
> The Operation Task Force (OTF) will discuss with the SAS (particularly SSEP/SPC) methods to increase number of alternate sites including, but not limited to, increasing number of proposals at OTF for scheduling, using alternates sites from previous expeditions, and utilizing Site Survey Data Bank as repository for alternate site information.

Pre-cruise Meeting (co-chief) Education

The Task Force briefly discussed the general issue of co-chief "education" at pre-cruise meetings. In particular, does the USIO supply them with enough information about procedures and protocols for them to address the issues that will arise during an expedition. While the co-chiefs felt that for most part they were adequately prepared by the USIO (aside from the alternate site issue discussed above), the Review Task Force thinks there is substantial benefit to be derived by inviting other IOs to observe the USIO pre-cruise meeting process (particularly CDEX which has yet to go hold a pre-cruise meeting)

> **Recommendation 303/306/307-03**
> USIO to invite appropriate CDEX personnel to observe pre-cruise meeting planning procedures and protocols

Pre-expedition workshop for Expeditions with Short Transits

Expedition 307 was hampered by an extremely short transit prior to the start of drilling operations. To this end, the Co-chiefs, staff scientist, operations manager, curator, and all shipboard scientist attended a "pre-expedition" meeting just prior to sailing. Drilling strategy, the operations plan, core flow, and sampling plans were discussed and working groups were formed for each major scientific discipline (e.g., sedimentology, geochemistry etc). As the ship left port early, it turned out this meeting time was extremely valuable as the normal port-call time often utilized to accomplish these tasks was curtailed. The Review Task Force thought that a pre-cruise workshop could be essential to the success of expeditions with short transits. While there will be some additional cost (per diem) to implement this type of workshop, these costs can be identified well in advance and appropriately budgeted

> **Recommendation 303/306/307-04**
> For expeditions with very short transits, the IOs are asked to utilize port-call (or days prior to port call) for pre-expedition workshops with shipboard scientists to discuss sampling protocols, core processing procedures, safety issues, etc.

Extending Moratoriums

The Task Force briefly discussed ideas about how to insure that expedition scientists had adequate time to sample and analyze cores following an expedition. Of concern was the demand for large sample quantities in high-resolution paleoceanographic studies and that large "academic factories' can come in after the one-year moratorium, analyze many samples in a short period of time, and publish before an individual expedition scientist on the same topic. Several suggestions were made to assist individual scientists including concentrating efforts on certain sites during the Moratorium and then extending the Moratorium for other sites. The Review Task Force did not make a

specific recommendation on how to solve this issue but decided to ask the Scientific Technology Panel (STP) to review the situation.

> **Recommendation 303/306/307-05**
> IODP-MI to request STP examine alternate scenarios for extending sampling moratoriums for multiple expeditions and make recommendations (if required) for changes to the IODP Sampling, Data and Obligations Policy.

Staffing

The Expedition 303/306/307 Co-chief scientists experienced staffing problems associated with USIO attempts balance partner quotas with scientific discipline. In addition, the short lead-time planning for Expedition 307 (which resulted from that expedition being the first one of the extension period for Phase 1) also proved problematic for staffing. Thus the dual combination of short lead times for staffing and the lack of well-defined staffing protocols in the early part of the program (in this case between the IOs, IODP-MI, and Program Member Offices [PMOs]) resulted in numerous staffing problems. As stated earlier in this section, the longer lead-time now employed for USIO operations and the implementation of more formal IODP staffing policies developed by the PMOs and IOs should reduce the staffing problems that occurred with these early expeditions. Thus the Review Task Force did not make any specific recommendations in this area.

Support vessel

The IRM sites for Expeditions 303/306 were not drilled as the ship operator (Transocean) determined a support vessel would be required to operate in these waters. The cost of this operation could not be supported by IODP and the sites were removed from the schedule by the OTF. The timing of this decision was relatively late in the planning process. Thus, the Review Task Force examined the situation to determine whether there was a systematic problem/issue in the overall planning process or if this situation was a one-time scenario that most likely will not be repeated. The USIO explained the history of the issue in detail and the conclusion of the Task Force was that with the longer-lead time planning now in place, along with lessons learned by the USIO in dealing with the ship operator, this situation should not occur again.

B) Multiple Expedition Issues

Multiple Expeditions that were scheduled to accomplish the objectives of a single proposal were common in Phase 1 of USIO operations (Expeditions 303/306, 304/305, 309/312). As this type of operation will occur at least once in USIO Phase 2 operations (e.g., NanTroSEIZE), the Review Task Force examined some of the problems encountered with this type of combined expedition including staffing, sampling, timelines for examination of results between expeditions, and post-expedition publications. While discussing problems related to this topic, the Review Task Force

came to the conclusion that most of the issues have been resolved since these expeditions were planned and executed. Many of the "multiple expedition" issues for Expedition 303/306 resulted from inconsistent (or ad hoc) logging, staffing, publication, sampling, and daily reporting policies present at the start of the program (most of which have since been rectified). As a result, the Task Force did not make any specific recommendations on this subject.

However, one new aspect of multiple expeditions in the future will be simultaneous operations of the same program (NanTroSEIZE) by two platforms. Handling the daily exchange of technical and coring information between two platforms run by different operators and producing post-expedition reports will be a challenge. These issues are being explored by the NanTroSEIZE Project Management Team and the IOs and thus the Task Force did not feel it necessary to make specific recommendations in this case.

C) Drilling/Equipment Issues

Three main issues arose out of the discussion of drilling procedures and drilling equipment. Two of these issues (seemingly random shattering or collapse of core liners during APC operations and magnetic overprint of the sediments by the drillstring) have been with ocean drilling since its inception and the Task Force did not make much headway furthering the resolution of these issue. A third issue, the use of fluid perfluorocarbon tracers (PFTs) during coring (for microbiological operations) is relatively new to ocean drilling operations and will require significant input from the microbiological community to develop more stringent QA/QC methodology.

Shattered/Collapsed Liners

Shattering of core liners (more aptly, the collapse of core liners) has occurred numerous times (usually during APC operations) over the past 38 years of scientific ocean drilling (and again on Expedition 303). Numerous explanations have been put forward as to the cause, no one cause has been unambiguously identified. The Review Task force discussed the issue, possible causes, and some solutions (e.g., new liner material - which is likely to be more expensive) and determined that in the overall scope of issues facing IODP this is not one we can invest a large amount of time and resources to resolve at this time. However, the Task Force encourages the USIO to engage Transocean/ODL in process toward understanding the causes of this issues

Recommendation 303/306/307-06

The USIO is encouraged to work with Transocean/ODL Core Technician to examine APC coring tools, equipment, and statistics (sea state, lithology, water depth, etc.) associated with operations resulting in shattered liners and work toward a better understanding of the root causes of liner collapse. The development of database containing the statistics of this study is highly recommended.

Non-magnetic core barrels

Expeditions 303 and 306 made extensive use of non-magnetic core barrels and the "drill over" technique during APC coring operations. The current limited stock of non-magnetic core barrels are considered more fragile than standard core barrels and thus standard core barrels were utilized to protect the limited non-magnetic core barrel inventory during "drill-over operations" (which can result in bending of core barrels). The limited inventory of non-magnetic core barrels was found to be the result of the (then) expected end of USIO Phase 1 operations (which were subsequently extended).

However, the use of non-magnetic core barrels is critical to the fidelity of magnetic records obtained from cores. Thus, in any instance where drill-over operations are expected and standard core barrels are used there will be a degradation of magnetic data. Ultimately, the decision to switch to magnetic core barrels or risk staying with the more fragile non-magnetic core barrel to collect better data should be a decision made by the operations superintendent and the co-chief scientists after weighing the scientific benefits of obtaining high-quality magnetic data vs. potentially trashing the hole with a bent/broken core barrel. This decision should not be based solely on the inventory of non-magnetic core barrels. Thus, to this end, the Task Force made a recommendation for the evaluation of core barrel usage on APC intensive expeditions.

> **Recommendation 303/306/307-07**
>
> The OTF and USIO should examine expeditions that will require an extended inventory of non-magnetic core barrels and balance increased supply of non-magnetic core barrels against other scientific priorities well before the expedition so that adequate supplies can be made available if deemed necessary.
>
> Concurrently, T. Jancek (Review Task Force Chair) will consult the Engineering Development Panel about the potential for re-engineering non-magnetic core barrels (to decrease cost and improve strength) so IODP can use them widely in future operations.

XCB operations and microbiology techniques

Microbiological procedures encompass an enormous range of approaches and methodologies. Based upon previous work in this area (particular Leg 201) for most biogeochemical process rates, organic biomarker studies, and microscopic cell counts, the potential presence of small numbers of contaminating prokaryotes as indicated by PFT and microsphere data is not a problem. Low-level contaminants are highly relevant if there is a method-inherent risk that contaminating populations are amplified and selected for by specific enrichment. Overall, Expedition 307 scientists had a great deal of confidence in most of the samples obtained from drilling operations aboard the *JOIDES Resolution* and contamination tests run during those drilling operations confirm this confidence.

However, on Expedition 307, contamination issues arose during drilling with the XCB and/or during coring in highly permeable or brecciated sediments. XCB operations on Expedition 307 were hampered by poor recovery and "biscuiting" of core material. In addition, Expedition 307 also used fluid PFTs during XCB coring operations with the results being of dubious use for microbial studies. The combined effects of poor core recovery, core biscuiting, and unknown utility of PFT tracers during XCB coring speak to the limited utility of microbial studies on cores obtained with this methodology. However, the larger issue to the Task Force was the evolution of consistent QA/QC methods and procedures for all microbiological operations and sampling. In this regard the Task Force sees an urgent need to determine a more consistent set of microbiological procedures and develop better tools for more reliable samples from difficult environments for future (FY07) IODP operations.

> **Recommendation 303/306/307-08**
> IODP-MI to request STP and the Deep Biosphere Workshop to examine and develop consistent QA/QC microbiology methodology for IODP operations that will begin in late FY2007.

D) Laboratory Issues:

A number of issues surrounding laboratory operations and equipment arose out of this Review Task Force meeting. In particular, the Review Task Force discussion included (1) how the USIO evaluates and tests equipment prior to transferring it to the ship for sea-going operations, (2) how each IO is currently evaluating the use of full-time internet access in future operations, (3) How CT scanning might be included in future USIO operations, and (4) "fast-track" core logging equipment necessary for making composite sections

The USIO provided the Task Force with details on how it is proceeding with the prioritization and planning for laboratory operations on the USIO Scientific Ocean Drilling Vessel (SODV). This detailed planning process is overseen by numerous advisory teams and management groups. The Review Task Force felt the laboratory needs for the SODV were adequately being addressed by this process and did not make any specific recommendations about laboratory equipment.

The Review Task force also briefly discussed the issues surrounding the processing of cores on expeditions that have multiple themes, which could require substantial changes in the normal core-processing regime. (e.g., paleoceanography and microbiology). In the end, the Task Force agreed this issue is adequately identified and addressed at the USIO pre-cruise meeting and thus no specific recommendations were made on this issue.

Finally, the Task Force members discussed issues surrounding intensive sampling at sea vs. post-expedition shore-based sampling. The co-chiefs from all three expeditions and

the USIO expressed concern as to the adequacy of resources (personnel and budget) to address the volume of sampling and the number of meetings that seem to be occurring (especially if additional ad hoc core sampling or core processing parties are required). The Task Force discussed the issue of allocating resources in an equitable manner for personnel from all partners to attend shore-based sampling parties as well as other pre- and post-expedition meetings (e.g., post-expedition editorial meetings). The different Program Member Offices (and the IOs) have vastly different resources to put toward these meetings. In order to make this process more equitable, the Lead Agencies will need to be apprised of the issues by IODP-MI and discuss a solution.

Recommendation 303/306/307-09
IODP-MI to discuss with Lead Agencies the adequacy of resources for within the program for addressing the pre- and post-cruise science needs IODP, especially with respect to post-expedition core processing and sampling meetings

E) IODP Issues

Several issues were discussed by Review Task Force that have ramifications for IODP in general, including the impact of disparate science programs in one expedition, how scheduled but un-drilled sites will be addressed in scheduling future operations, and the impact of "short" (i.e., < 2month) expeditions on the IODP system.

Impact of separate programs w/in one expedition
Expedition 306 had a separate objective (CORK installation) not related to the main expedition paleoceanographic proposal. In addition, this CORK deployment location was far (>5 days transit) from the main Expedition 306 operations area. Fortunately, good weather conditions prevailed for this deployment. Had weather conditions been severe, there were no real alternatives to this additional program. Ensuing discussion of these Expedition 306 operations highlighted two issues that merited recommendations: (1) insuring enough viable alternatives were available in any drilling program and (2) the problems and risks associated with having multiple (disparate) objectives on one expedition which compete for operational time. A recommendation was made earlier with respect to alternate sites (see RECOMMENDATION 303/306/307-02 above). An additional recommendation was made the Task Force relating to increasing SAS awareness of risks to completing primary expedition operations when choosing scheduling options that include non-related objectives w/in one expedition.

Recommendation 303/306/307-10
Operations Task Force Chair (T. Janecek) to work with SPC and SPPOC chairs to increase SAS awareness of costs and risks associated with selection of

scheduling options that include programs with separate objectives in one expedition.

Leftover parts of proposals

Several sites (LAB sites on Eirik Drift) could not be drilled during Expeditions 303/306. The Operations Task Force and SAS have procedures that specify how the parts of proposals not put on the drilling schedule are evaluated for future operations. However, meeting participants determined there aren't any specific guidelines or protocols to evaluate the status of sites that are scheduled but not drilled (because of weather, logistical problems, time constraints, etc).

Recommendation 303/306/307-11

The Operations Task Force Chair (T. Janecek) will work with SPC to develop consistent protocols for determining the future scheduling status of sites or operations that were originally scheduled for operations but could not be drilled during the expedition.

Pre- and post-cruise efforts required for "short" expeditions.

From the written reports and oral presentations by the Expeditions 307 Co-chief scientists and the USIO, along with ensuing discussion, it became very obvious to the Review Task Force participants that a "short' expedition needs the same level of pre-expedition efforts of a "normal" 2 month expedition and often has increased post-cruise efforts. A disproportionate amount of shipboard work (compared to standard expeditions) may spill over into post-cruise events and facilities. Because of time constraints on the vessel during these shorter expeditions, increased post-cruise efforts may be needed for core description, preparing the preliminary reports, sampling, etc. Review Task Force members thought that this was an "awareness" for OTF, SAS, Program Member Offices and IOs in scheduling these types of expeditions and developing appropriate budgets and timelines.

Recommendation 303/306/307-12

The Chair of the Operations Review Task Force (T. Janecek) will bring the issue of pre- and post expedition resources and sampling policies to the attention of all relevant bodies during scheduling discussions for all future "short" expeditions.