

IODP Operations Review Task Force Meeting

Expeditions 309/312
Superfast Spreading Rate Crust

June 12th – 13th
Washington, D.C.

EXPEDITION 309/312 OPERATIONS REVIEW TASK FORCE PARTICIPANTS

Expedition 309/312 Task Force Members

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| Jeff Alt | Dept of Geological Sciences, University of Michigan, USA |
| Neil Banerjee | JOI Alliance, Texas A&M University, USA |
| Ben Bloys | Chevron Corporation, Houston, USA |
| Tim Brewer | ECORD Science Operator, University of Leicester, UK |
| Mike Coffin | Ocean Research Institute, University of Tokyo, Tokyo, Japan |
| David Divins | JOI Alliance, Joint Oceanographic Institutions, Inc., USA |
| Ron Grout | JOI Alliance, Texas A&M University, USA |
| Gerardo Iturrino | JOI Alliance, Lamont-Doherty Earth Observatory, USA |
| Thomas Janecek | IODP Management International, Washington, D.C., USA |
| Mitchell Malone | JOI Alliance, Texas A&M University, USA |
| Catherine Mével | Institut de Physique du Globe de Paris, France |
| Sumio Miyashita | Department of Geology, Niigata University, Japan |
| Clive Neal | University of Notre Dame, South Bend, IN |
| Frank Rack | JOI Alliance, Joint Oceanographic Institutions, Inc., USA |
| Mark Reichow | JOI Alliance, University of Leicester, UK |
| Manik Talwani | IODP Management International, Washington, D.C., USA |
| Damon Teagle | National Oceanography Centre, University of Southampton, UK |
| Susumu Umino | Dept of Biology and Geosciences, Shizuoka University, Japan |

Observers

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| Jamie Allan | National Science Foundation, Arlington, VA, USA |
| Toshiyuki Oshima | Ministry of Education, Culture, Sports, Science, and Tech, Japan |
| Yoichiro Otsuka | IODP Management International, Washington, D.C., USA |

MEETING FORMAT

The IODP-MI Operations Review Task Force met on June 12th-13th at the IODP Management International office in Washington, D.C. to review the operational aspects of IODP Expeditions 309 and 312 (Superfast Spreading Rate Crust). 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 309/312 co-chief scientists.

The meeting began with oral presentations by Damon Teagle and Neil Banerjee summarizing the co-chief scientist and USIO reports, respectively. Following these oral presentations, the Review Task Force identified specific pre-expedition, expedition, and post-expedition topics for discussion. The Review Task Force spent the remainder of the first day of the meeting discussing the issues and developing specific recommendations for the USIO. 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 309

Expedition 309: July 8th – August 28th, 2005; Cristobal, Panama to Balboa, Panama
Co-Chief Scientists: Damon Teagle, Susumu Umino
Staff Scientist: Neil Banerjee
USIO Operations Superintendent: Kevin Grigar

Expedition 312

Expedition 312 Oct 28th – Dec 28th, 2005; Acapulco, Mexico to Balboa, Panama
Co-Chief Scientists: Jeffrey Alt, Sumio Miyashita
Staff Scientist: Neil Banerjee
USIO Operations Superintendent: Ron Grout

Expeditions 309 and 312 are the second and third scientific ocean drilling cruises in a multiphase undertaking to Site 1256 to recover, for the first time, a complete section of the upper oceanic crust from extrusive lavas through the dikes and into the uppermost gabbros. Expedition 309, Superfast Spreading Rate Crust 2, successfully deepened Hole 1256D (6.736°N, 91.934°W) by 503 m to a total depth of 1255.1 mbsf (1005.1 msb). At the end of Expedition 309, Hole 1256D had penetrated a total of >800 m of extrusive lavas and entered a region dominated by intrusive rocks. Following the completion of a comprehensive wireline logging program, the hole was successfully exited and left clear of equipment with only minor unconsolidated fill at the bottom of the hole.

Expedition 309 (July–August 2005) was followed closely by Expedition 312, Superfast Spreading Rate Crust 3 (November–December 2005). Expedition 312 deepened Hole 1256D by 252.0 m to 1507.1 mbsf (1257.1 msb), successfully achieving the main goal of

the Superfast Spreading Crust scientific prospectus, penetration through lavas and dikes into gabbros. The hole now extends through the 345.7 m-thick sheeted-dike complex and 100.5 m into gabbroic rocks. The latter were first encountered at 1406.6 mbsf, near the middle of the depth range predicted from geophysical observations. A complete suite of wireline logging including a VSP was carried out, and the hole remains clear and open for future drilling deeper into the plutonic foundation of the crust.

See <http://iodp.tamu.edu/publications/PR/312PR/312PR.html> for more details regarding the background and objectives, the preliminary scientific results and conclusions of Expeditions 309 and 312.

RECOMMENDATIONS

The Review Task Force identified several main areas of improvement for future operations including:

- Lead Time Planning Issues
- Staffing
- Shipboard Operations
- Publications/Communications

Many of the issues discussed during this review are inter-related and, in some sense, the above divisions are artificial. However, they help in categorizing the issues and determining key problems to solve before the start of the next phase of IODP operations.

While the primary focus of this review was on USIO (JOI Alliance) operations during Expeditions 309/312, many recommendations in this report are equally valuable for other IODP operators, IODP management, and to the Science Advisory Structure. As such, some recommendations are also directed to these entities.

A) Lead Time planning issues

Numerous pre-cruise (lead-time) planning issues were raised during the meeting. As with the majority of the “Phase 1” IODP Expeditions (June 2004-Dec 2005), planning and staffing efforts for these two expeditions were highly compressed. In addition, the USIO was understaffed in key positions (e.g., Staff Scientists, Operations Superintendents) during these initial IODP operations. This combination of a compressed planning and personnel shortages led to less than optimal interaction among the Implementing Organizations (IO), Program Member Offices (PMOs) and Expedition co-chief scientists with respect to scientific staffing decisions and developing operational plans.

IODP-MI, the IOs, and the Science Advisory Structure (SAS) have been moving towards a 24-month lead-time for the scheduling of expedition operations to alleviate the lead-time issues that have plagued Phase 1 operations. Once implemented, this extended planning process should resolve many of the lead-time issues identified in this and

previous reviews. To assist in the implementation of this new planning process, the Expedition 309/312 Review Task Force participants put forth a series of recommendations.

Optimal lead times

Currently, the operational schedule for the IODP platforms is approved only 13 months prior to the start of a fiscal year's expedition operations. For example, Fiscal Year 2008 operations (start date Oct 1, 2007) will be recommended in August 2006 by the Science Planning Committee (SPC). Extending this process out to 15-17 months is a preferred goal for the IOs in order to improve planning for long lead acquisitions and proper staffing interactions with the co-chief scientists and Program Member Offices (PMOs). We note, however, that concerns have been expressed in the SAS about increasing the time between proposal submission and drilling, i.e., potentially decreasing IODP's apparent responsiveness to the community it serves.

Recommendation 309/312-01:

The Expedition 309/312 Review Task Force recommends that where possible, IODP develop a 15-17 month interval between the time the Scientific Planning Committee recommends the operations schedule and start of the first program operations in that schedule.

Alternate Sites/ Contingencies

At the beginning of Expedition 309, a detailed series of contingency plans in case of catastrophic hole failure was submitted by the co-chiefs to the USIO for review by the SAS (SPC, SSP, EPSP) and the Operations Task Force. However, the 309 shipboard party did not receive a response during the expedition. The final official response wasn't received until November 7th and the response simply stated: "The contingency proposed by the Co-Chiefs in the prospectus and the subsequent letter reviewed by IODP-MI and SPC members is endorsed and approved for 312 operations."

This issue, and another involving permission for conducting overnight VSP experiments, highlights two problems with IODP operations. First, there appears to be a need to better define the process for developing well-defined contingency plans prior to an expedition. Second, there must be clearly defined communication pathways among all parties (Co-chiefs, IOs, IODP-MI, SAS) for contingency plan implementation.

Recommendation 309/312-02:

The Expedition 309/312 Review Task Force recommends that proponents describe contingency plans encompassing all scientific objectives and sites in proposals, and that a prime deliverable of the pre-cruise meeting should be a well-defined contingency plan. The contingency plan delivered at the pre-cruise meeting should include not only site contingency information but also the protocols and communication pathways for contingency implementation. Primary and alternate contact personnel must be identified prior to the start of each

expedition. In addition, information on proper contingency planning should be included in the IODP drilling proposal guidelines.

Scheduling

IODP Proposal 522-Full3 requested one drilling expedition of 58 days, but (fortunately) two shorter expeditions adding up to greater time on site (~56 coring days) were scheduled. Given the significant slowdown in penetration rates in the lower sheeted dikes on Expedition 312 (<1 m/h compared to predicted 1.5 m/h), and the time lost to problems encountered (~10 days of reaming, milling, hole conditioning), the scientific objectives would not have been achieved in one 58-day expedition. Unpredictable problems are commonly encountered during deep basement drilling, and it is essential to take into account that time will almost certainly be lost to such problems when estimating times for reaching depth objectives and scheduling deep basement drilling expeditions.

Given the time/effort/funds involved in deep drilling, maximizing time on site during an expedition is critical. The Task Force discussed numerous mechanisms that could be utilized for maximizing time on site (e.g., “at-sea” crew changes, lengthening of standard expedition time, etc.) and recommended that the IOs critically examine new scenarios to achieve this goal, bearing in mind human resource limitations in the scientific community.

Recommendation 309/312-03:

The Expedition 309/312 Review Task Force recommends that IODP-MI work with IOs to investigate alternate scheduling strategies to maximize on-site time for deep-drilling expeditions. Initial estimates of various strategies such as “at-sea” crew changes and lengthening of standard expedition durations and the issues surrounding these strategies, including human resource limitations in the scientific community, should be developed by the time of IODP Deep Drilling Workshop in September 2006.

Multi-Expedition Planning

The Review Task Force discussed planning issues surrounding combined science parties such as that developed for Expeditions 309/312. These combined science parties can be beneficial, providing access to samples for scientists interested in the entire mission but unable to participate on all of the expeditions. Combining science parties appears to work for expeditions closely-spaced in time (e.g., Expeditions 309 and 312). Those separated by more than a few months (~1 year) may encounter different problems that requires some thought to address (e.g., the requirements to publish reports; the sampling moratorium versus the need to start working on samples, and publication during the moratorium period).

The Task Force determined there was a general lack of information (from IODP-MI) about expectations for the format of Expedition Report, particularly how to integrate the

two expedition reports into one. The Expedition 309/312 co-chief scientists also recommended flexibility in the integrated Expedition Reports (i.e., the need to “design to suit the experiment”). There was general agreement among the Task Force members that the issues surrounding integration of science parties on multiple expeditions (staffing, sampling strategies, reports, etc) need to be defined *no later* than the pre-cruise meeting.

Recommendation 309/312-04:

The Expedition 309/312 Review Task Force recommends that the IOs and co-chief scientists establish the formats for science party, sampling protocols, and the Expedition Report no later than the expedition pre-cruise meeting. IODP-MI must consider, advise, and make recommendations on these issues, in a timely manner, immediately following the drafting of the expedition prospectus so that their input can be incorporated in the published version.

B) Staffing

Optimizing Staffing procedures

The Expedition 309/312 Review Task Force discussed numerous staffing issues that arose during planning for these expeditions. The short lead times contributed to such problems as the under-staffing of certain scientific disciplines, a disproportionate number of junior scientists, and the late assignment of IO personnel to the expeditions. There was inadequate time for the IO and co-chiefs to work with the Program Member Offices (PMOs) to develop optimal scientific staffs with respect to the expertise and experience of the science participants and national/consortia balance.

Recommendation 309/312-05:

The Expedition 309/312 Review Task Force recommends that IODP-MI work with the IOs and PMOs to develop a staffing process that insures appropriate iteration time among the PMOs, IOs, and co-chief scientists in order to balance staffing disciplinary needs and expertise with national/consortia balance. It is critical to incorporate co-chief scientist input at the pre-cruise meeting (to be held 9-12 months pre-cruise). Identification of critical scientific disciplines and engineering/technical/specialty personnel should occur shortly after co-chief scientist selection (12-15 months pre-cruise),

Continuity of Personnel on Multi-Expedition Programs

The Task Force discussed the importance of continuity of operational and scientific personnel for multi-expedition missions to a single deep hole. Operations personnel that participate on all the expeditions will be familiar with problems associated with the specific deep hole (e.g., borehole stability, clearing of cuttings, coring conditions, etc), and scientists will be familiar with the cores, scientific interpretations, and report formats. However, sailing the same scientific participants on the multiple expeditions could result in significant national/consortia imbalances as well as place undue strains on human resources in specific portions of the scientific community. Thus it is important for the

PMOs to recognize the need for this type of staffing and work with the IOs, co-chief scientists, and IODP-MI to develop mechanisms to insure staffing continuity balanced with human resource considerations for such expeditions.

Recommendation 309/312-06:

The Expedition 309/312 Review Task Force recommends that IODP-MI ensures that the PMOs are aware of the importance of scientific staff continuity for multiple expedition programs and that IODP-MI, the IOs and the PMOs work to develop staffing protocols that ensure appropriate continuity for these multiple expedition programs for *both* scientific and operations personnel, bearing in mind human resource limitations.

During this discussion surrounding PMO recognition of the need for continuity in staffing for multiple expeditions, the IOs noted the importance of scheduling PMO meetings to maximize/optimize the attendance of IO personnel. In addition, scheduling PMO meetings to coincide with the yearly staffing process would help to identify staffing issues at an earlier stage.

Recommendation 309/312-07:

The Expedition 309/312 Review Task Force recommends that IODP-MI work with IOs and PMOs to schedule PMO meetings that maximize IO attendance. In addition, the PMO meeting schedule should be adjusted to provide PMO (and IO) input to staffing process as soon as FY platform schedule is finalized.

Logging Personnel roles and responsibilities:

The compressed lead times during the initial IODP operations and the shortage of USIO logging personnel during this period resulted in the late assignment of a logging scientist to Expedition 312. This late assignment contributed to some misunderstandings and slow progress on several logging-related issues. The Task Force members discussed the particular logging issues related to Expedition 309/312 and the overall responsibilities of the logging scientist during IODP expeditions. As a result of this discussion, the Task Force thought that roles/responsibilities of the “logging staff scientist” need to be reexamined and clarified with respect to each platform.

The IOs should endeavor to develop a pool of wire-line tool scientists with broad scientific interests who can both undertake the planning and gathering of logging tool data during the sea-going expeditions but are also actively involved with the post-cruise analysis and interpretation of the wire-line data for the accomplishment of the expedition scientific objectives.

Recommendation 309/312-08:

The Expedition 309/312 Review Task Force recommends that IODP-MI work with IOs to (1) clarify roles/responsibilities of logging scientists for each platform, (2) determine IODP-wide needs for logging scientists, and (3) ensure

resources (e.g., personnel, tools, etc) are available to advance IODP-wide logging needs.

C) Expedition Operations:

Downhole Tools

On Expedition 309 the Well Seismic Tool (WST) failed to enter Hole 1256D past the casing, and the Vertical Seismic Profile (VSP) experiment could not be conducted. The tool apparently hung up in the rat-hole beneath the 16-in casing. During the attempt to enter the hole, a short section of the logging cable also was damaged. Due to its light weight, the WST is difficult to deploy in challenging hole conditions. As a result the WST was replaced with the Vertical Seismic Imager (VSI) for Expedition 312.

The Task force did not make a specific recommendation with respect to WST or Versatile Seismic Imager (VSI) tool usage as the USIO indicated it would use alternate VSP tools such as the VSI on future deep deployment expeditions. However, the Task Force discussed future downhole tool needs in deep hole penetrations like Hole 1256D. Discussion centered on tools such as a 3-component magnetometer and high-temperature fluid sampling tools, as well as large diameter pipe needs for some specialty downhole tools. The Task Force did not make a recommendation for a specific tool but thought that the Science Advisory System should first examine the proposals in the system and then determine the long-term needs and priorities for IODP.

Recommendation 309/312-09

The Expedition 309/312 Review Task Force recommends that IODP-MI request that the Engineering Development Panel and Scientific Technology Panel determine and prioritize downhole tool development and acquisition needs for future IODP operations.

VSP Gun Configurations

The air-gun depths and generator-injector chamber configuration for the seismic experiments were chosen after evaluating the Leg 206 check-shot data. These settings were adjusted to the Expedition 312 requirements to increase the first arrival signal in deeper sections of the borehole and obtain velocity data from levels below 750 mbsf. Despite modifying the G.I. air gun to its maximum capacity, the air gun clearly failed to provide the energy required to obtain an adequate first arrival signal from the bottom of Hole 1256D. A similar problem was encountered at Hole 504B where the signal from a 1000 cu inch air gun was marginally above the noise level below 700 mbsf, and the SAS had expressed concerns in 2005 about adequacies of seismic sources proposed for Oceanic Core Complex Expeditions 304/305 deep basement holes.

The Task force discussed various gun configuration options and the need to identify these configurations for both the USIO Environmental Impact Statement that will be used for

obtaining permits and clearances in future SODV operations and for future *Chikyu* operations . The Task Force determined that the Scientific Technology Panel and Site Survey Panel have a better pool of expertise to determine these gun configuration requirements and recommended that IODP-MI work with these panels to produce a short report identifying not only potential gun configurations but the scientific rationale for them.

Recommendation 309/312-10:

The Expedition 309/312 Review Task Force recommends IODP-MI work with the Science Advisory Structure to develop a short report that identifies a suite of VSP gun configurations that may be required in future IODP operations and the specific scientific and technical justification for these configurations. IODP-MI will provide this report to the USIO after input from the STP and SSP.

Deep Drilling Strategies

Coring in sheeted dikes during Expedition 312 was extremely slow and resulted in very low recovery. This slow coring/low recovery appears to be related to some combination of (1) the inability to fully clear debris and cuttings from the hole, (2) the very hard, fine grained dike rocks, (3) the abundant natural fracturing of the very fine grained chilled dike margins, and (4) drilling-induced decompression fracturing, which produces sub-horizontal, saddle-shaped, fine open cracks. The Task Force discussed, at length, methodologies/technologies to improve penetration rates and recovery in such environments. Advances in bit design and technology were discussed, as were new drilling processes developed by industry (e.g. Fast Drill process). While there is no easy solution to better recovery and higher coring rates in deep drilling, the program must pursue new/different avenues in this area.

Recommendation 309/312-11:

The Expedition 309/312 Review Task Force recommends that Engineering Development Panel work with the IOs, Industry, IODP-MI, and other appropriate Science Advisory Structure groups (e.g., STP, IIS PPG) to investigate and prioritize avenues for enhancing coring/drilling capability for deep-drilling programs.

Mud Usage

During Expedition 312 mud usage exceeded even the most conservative pre-expedition estimate, including the contingency inventory. Large amounts of mud were necessary because each reentry required circulation to clear fill from the bottom of the hole. In addition, circulation of larger than typical mud plugs was found to help remove cuttings. However, circulation of mud plugs was limited and strategically scheduled because of the limited quantity of mud on board. Remedial operations that occurred during Expedition 312 (e.g., reaming, milling broken roller cones) also required large amounts of mud. The limited quantities of mud could potentially have been disastrous, had larger rock fragments fallen into the hole and jammed the bit.

The limited mud supply was an unusual and unique situation because the USIO was attempting to deplete the inventory of drilling/coring supplies prior to the demobilization of the vessel subsequent to the end of Expedition 312. The USIO told the Review Task Force members that when/if the vessel returns to Hole 1256D, it will have a minimum of 60 tons of bulk sepiolite or attapulgitite to insure that there is sufficient product aboard.

The Task Force then discussed, in length, the more general issue of mud usage for hole cleaning and stabilization. The Task Force heard about numerous examples of current industry usage that could be applicable to IODP operations and determined that IODP should be more proactive in researching/exploring new mud strategies and technology for future riserless operations in deep holes.

Recommendation 309/312-12:

The Expedition 309/312 Review Task Force recommends that the IOs should build on the experiences of Phase 1 expeditions and actively explore future applications of drilling muds for riserless hole cleaning and stabilization.

Magnetic Overprinting

One major objective of Expeditions 309 and 312 was to correlate and calibrate remote geophysical seismic and magnetic imaging of the structure of the crust with basic geological observations, including establishment of the contribution of different layers of the oceanic crust to marine magnetic anomalies. Unfortunately, all cores recovered to date from Hole 1256D have very strong magnetic overprints, and measurement of true paleomagnetic vectors and intensities remains extremely difficult.

This problem of magnetic overprint has been a common complaint in DSDP/ODP/IODP operations. The use of a nonmagnetic BHA (bit and bit sub, for example) may reduce magnetic overprinting during drilling, and a functioning, gyroscopically oriented, three-component wireline magnetometer would also undoubtedly help in interpreting the magnetic data. However, the Task Force believed that a more systematic approach in understanding the cause(s) of magnetic overprinting and determining the proper technological solution(s) to the problem is required.

Recommendation 309/312-13

The Expedition 309/312 Review Task Force recommends that IODP-MI request that the Engineering Development Panel investigate the cause(s) of magnetic overprinting of cores and prioritize options to reduce the effect of overprinting.

“POOL” Sampling

Beginning on ODP Leg 206, a subset of the science party with complementary interests in basement geochemistry started taking shared “POOL” samples. The idea was that each investigator could perform their own specific geochemical or isotopic analyses, but that the analyses would all be on the same samples, maximizing the information to be gained

from the samples and analyses. The POOL samples were generally given priority over that of the individual scientist. This sampling protocol was continued on Expeditions 309 and 312.

The Review Task Force thought this type of sampling was highly beneficial for single and multi-expedition programs. The Task Force recommended that this concept be discussed at all future pre-cruise meetings and implemented, subject to consultation with the shipboard scientific parties, where appropriate.

Recommendation 309/312-14:

The Expedition 309/312 Review Task Force recommends that the pre-cruise meeting agenda should include a discussion of the “POOL” sampling concept.

QA/QC issues

Task Force members discussed the need for the availability of relevant geochemical reference materials, in this case MORB reference materials. It is important to have available well-characterized reference materials that represent the full spectrum of compositions expected (in this case at least N-type and P/E-type MORB). These reference materials should be available on all platforms and at shorebased labs (see SciMP recommendation 04-06-13; <http://www.iodp.org/stp/>).

Recommendation 309/312-15:

The Expedition 309/312 Review Task Force recommends that IODP develop an internationally recognized set of geochemical reference materials as part of QA/QC process prior to return of vessel operations in 2007. This suite of reference materials should, in the first instance, include rock types of great importance to the IODP community that are presently poorly represented in the international suite of Geostandards/Reference materials (e.g., N-type and P/E-type MORB, ocean floor gabbro, ocean floor peridotite). These materials should be available for all IODP platforms and shorebased laboratories.

D) Publication/communications issues:

Education Initiatives

The Task Force discussed problems and issues encountered with the “Educator at Sea” program during Expedition 312, which was implemented in a compressed pre-expedition time frame. While the Task Force members felt the Educator at Sea has great potential benefits for conveying science to the public, the roles and responsibilities of those associated with this program did not seem to be well-defined. In addition, the impact and time demands of these programs on IO and shipboard scientific staff can be substantial. IODP has a duty to improve its public outreach, but this must be done without compromising the achievement of the scientific objectives of the expedition. Clarifying

roles/responsibilities and deliverables for all involved in future at sea educational initiatives is essential if these types of programs are to continue.

Recommendation 309/312-16

The Expedition 309/312 Review Task Force recommends that the IOs and IODP-MI improve planning for sea-going education initiatives. The planning should (1) include clearly defined roles/responsibilities for the educator, IO personnel, and shipboard scientists, (2) provide specific, pre-determined deliverables appropriate to the expedition and/or educational initiative, (3) respect the expedition science moratorium, and (4) specify the approval procedure for release of any expedition-related details during the moratorium period (or during the expedition).

Press Releases

The Expedition 309/312 scientific party experienced several difficulties with the press release process as a result of their plan to submit a paper to *Science* shortly after the expedition. First, the journal *Science* imposed an apparent information embargo that conflicted with a timely release of expedition news. In addition, the Expedition Staff Scientist and Co-chief Scientists experienced problems with the IODP-MI Director of Communications over modifications to the press release. The latter issue highlights the lack of a well-defined (and posted) media policy for IODP that clearly defines the lines of communication and the development/approval pathway for a press release. The former issue is a much broader one involving the balance between the timely dissemination of information to the greater scientific community and respecting the publication needs of the shipboard scientific party.

The IODP-MI President informed the Review Task Force that a “Media” Task Force was being established to address these and other media-related issues for IODP. He asked that the Expedition 309/312 Task Force provide input (via a recommendation) to this new Media Task Force.

Recommendation 309/312-17:

The Expedition 309/312 Review Task Force recommends that IODP-MI work with the IOs and Lead Agencies to clearly define the process for generation, approval, and distribution of press releases. The process must (1) define clear lines of contact among co-chief scientists, IOs and IODP-MI, (2) take into account the issues surrounding the publication of high-profile science immediately after an expedition, and (3) communicate this policy to high-level science journals (e.g., *Science*, *Nature*, etc.).

Preliminary Report

The USIO, on behalf of the Expedition 309/312 Science Party, asked IODP-MI and NSF/MEXT to grant permission to delay publication of the 312 Preliminary Results in order to avoid infringement of the apparent *Science* embargo policy (This apparent embargo was imposed after the Science Party submitted a manuscript to *Science* shortly

after Expedition 312). As with the press release issue described above, this delay can be problematic for timely output of program publications (i.e., Preliminary Report, press releases, etc). Although permission was granted for a delay in the publication of the Preliminary Report, this issue is also part of a larger one surrounding the fact the Preliminary Report is now a citable document. If this Preliminary Report contains detailed expedition specific data (and it often does), IODP cannot protect the interests of the shipboard science party with regard to data/publishing moratoriums

This publication/moratorium/citation issues are not trivial and the Task Force thought they should be referred to IODP-MI for consideration.

Recommendation 309/312-18:

The Expedition 309/312 Review Task Force recommends that the IODP-MI Publications Task Force generate a consistent publications policy to address the competing demands of contractual obligations and the desire to publish highly integrated data sets in the expedition Preliminary Report. The Publications Task force should generate a “straw man” set of contractual metrics for the Preliminary Report for review by the Lead Agencies. The Publications Task Force should work directly with high-profile scientific journals (e.g., *Nature/Science*) to insure that the publications policy does not inhibit rapid publication in these journals. Finally, the Publications Task Force should address the above issues with the understanding that any press release/publication protocol must be flexible, pragmatic and responsive to ensure that IODP science achieves the greatest possible scientific impact and public awareness.

Post-cruise Funding

The review and postcruise production of the Expedition Reports volume is an integral component of science delivery from the program. One of the Expedition 309 scientists invited to the editorial meeting in College Station could not procure funding from their country’s IODP office to attend. This issue of post-cruise meeting funding directly affects the quality of science delivered to the international scientific community and general public. It is imperative that partner organizations and individual country offices ensure adequate funds are available for individual scientists to travel to the editorial postcruise meeting in College Station.

Recommendation 309/312-19:

The Expedition 309/312 Review Task Force recommends IODP-MI to discuss with IODP Council the need to evaluate and enhance post-expedition funding support mechanisms to ensure that all required scientists are available to participate in post-expedition editorial and science meetings.

Weekly Reports

The weekly reports provide a good summary of operational issues. However, they often lack a summary of significant scientific results that would help the community evaluate how well the expedition is progressing toward achieving their scientific objectives.

Recommendation 309/312-20

The Expedition 309/312 Review Task Force recommends that the IOs provide a short summary of significant scientific results at the beginning of their weekly reports.