INTEGRATED OCEAN DRILLING PROGRAM MANAGEMENT INTERNATIONAL

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Annual Report

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TABLE OF CONTENTS

INTRODUCTION

Past Annual Program Plan (APP) development has been hampered by the lack of a consistent format (content and style) among IO Program Plan proposals. This disparity in the proposal content and style from the IOs has made it particularly difficult for IODP-MI to adequately assess the content of each proposal, compare levels of effort between IOs and to present the Lead Agencies with a truly integrated Annual Program plan.

Recognizing this problem in the preparation of the FY2005 APP, IODP-MI has implemented (over a 2 year time span) a more consistent approach to the content and style of subcontractor proposals. The first step (taken in FY06 APP preparation) has been to request that each subcontractor provide budgets based upon Lead Agency designated Work Breakdown Elements (WBEs), in addition to usual department based budgets. For FY07 Annual Program Plan preparation, the subcontractors will, for the first time, prepare and present proposals to IODP-MI in the same format (both style and content). This new consistent format will allow IODP-MI to more easily assess and compare the responsibilities and deliverables of each subcontractor.

In addition, IODP-MI will now meet with each subcontractor during the APP preparation process. The meeting will provide IODP-MI the opportunity to clarify issues/concerns with each subcontractor proposal and to inform the subcontractor how their responsibilities and deliverables are integrated into each Annual Program Plan.

MANAGEMENT AND ADMINISTRATION

CONTRACTUAL ACTIVITIES

IODP-MI executed a subcontract with **Bremen University** in October 2004. The subcontractor experienced an unusually busy year in FY05, with activities including the move of the core repository from its former location in *Europahafen* to the Marum building on the Bremen University campus; two large "traditional" sampling parties; two u-channel parties; and the first MSP onshore science party. A record number of nearly 99,000 samples were taken at the Bremen Core Reposity (BCR) for more than 230 requests during the fiscal year, including standard operations and sample parties. BCR maintained a high level of routine sampling during the move to campus, with over 5,000 samples taken during the January-March 2005 reporting quarter. Cores arrived at the BCR from the Arctic Expedition (302), as well as the Atlantic Expeditions (303, 304, 305, 306, and 307). A total of 9,848 meters of recovered core were received at the BCR during FY05.

In November 2004 IODP-MI and **JAMSTEC** signed a Memorandum of Understanding (MOU) in order to establish a formal framework for the purpose of planning, coordinating, and implementing IODP-JAMSTEC activities in the future. Although not yet contracted with IODP-MI, JAMSTEC/CDEX submits courtesy progress reports every quarter.

Also in November, IODP-MI issued a sole source solicitation to the **British Geological Survey** (BGS) seeking a proposal to undertake Mission Specific Platform (MSP) science operations on behalf of IODP. The solicitation requested BGS to outline its capabilities to provide a project-based service and also a continuity of MSP structure that will allow both the planning of science operations and the ability to liaise within the extant IODP structure, including advising the science community of the capabilities of MSP operations, for fiscal years 2005 through 2013 inclusive. BGS tendered its technical and cost proposals on December 22 and -following comprehensive negotiations- a contract was executed between the parties in March 2005.

Following a competitive procurement via a Request for Proposals entitled, "Management of the IODP Site Survey Data Bank (**SSDB**)," IODP-MI awarded a contract to the Scripps Institution of Oceanography in May 2005. The fundamental mission of the SSDB is to receive, catalog, store, and distribute data necessary to support and review drilling proposals and to conduct drilling operations safely and efficiently. The SSDB became operational for international uploading on August 15, 2005.

In March 2005, IODP-MI sent the negotiated draft SOC subcontract between IODP-MI and he **Joint Oceanographic Institutions** (JOI) to NSF for agency review and approval. The performance period commenced April 1. The agreement between IODP-MI and JOI addresses the SOC requirements set forth by IODP-MI for the U.S. Implementing Organization and outlines the breadth of services the "JOI Alliance" brings to IODP. Taken collectively, the services (both POC and SOC) provided by JOI include a full suite of vessel, drilling, and information and publication services enhanced through research and outreach/education initiatives.

FINANCE REPORT

The annual financial report is attached (see Appendices).

Total contract funds approved:	$15,950,645	This reflects all modifications made during the fiscal year.
Total funds expended:	$12,285,660	
Funds remaining:	$ 3,664,985	

Of the remaining funds, $2,377,410 has been committed under the Joint Oceanographic Institution sub contract. An additional $1,287,575 of uncommitted funds is under consideration as a request for carry forward. The request will be sent in February.

PERSONNEL STATUS

All of the approved positions have been hired during FY05 with the exception of the Operations Manager position. We are currently in the hiring phase for this position and hope to have it filled during FY06 as planned in the FY 06 Annual Program Plan.

SUPPORT FOR SCIENCE ADVISORY STRUCTURE (SAS)

The IODP-MI Vice President-Science Planning (VP-SP) works with the chairs of SPPOC and SPC on the broader issues of science planning and review of science achievements and

SAS meetings. The SPPOC and SPC chairs are supported in their tasks by an IODP-MI secretariat of three science coordinators and one assistant. In this capacity, the group works with committee chairs and the VP-SP on meeting agendas, prepares the agenda books for the meetings, provides edits of material produced during the meetings, and drafts meeting minutes.

This group also provides overall coordination of all other SAS meetings including confirmation and distribution of meeting rosters and logistics, support at meetings for panel chairs and panelists, and updates the IODP web site with all SAS-related information. For two science planning panels, SSEP and SSP, science coordinators edit panel reviews, secure external reviewers, and help with site survey data packages. In addition, the IODP-MI Sapporo office oversees the IODP SSDB and data submission process, receives new drilling proposals, reviews proposals for completeness and adherence to IODP rules, corresponds with proponents, and secures and edits external reviews.

In FY05, IODP-MI received a total of 68 proposals and provided external reviews from 58 reviewers on 14 proposals. Scientific assessments of expeditions are initially made within the Preliminary Reports and in FY05 were reviewed by the VP-SP. In the future, the SPC chair will also be jointly involved. In the coming years, scientific review will expand to include joint SPC - IODP-MI review of individual projects (one or several related expeditions) around the time of the second post expedition science meeting. The IODP-MI VP-SP will also work with SPPOC on long-term scientific reviews addressing overall program achievements.

TECHNICAL, ENGINEERING AND SCIENCE SUPPORT

ESO (BGS)

Arctic Coring Expedition (ACEX), #302

The ACEX Onshore Party was held in the Bremen Core Repository from 8th to 19th November, 2004. 339 meters of core were described, analyzed, and sampled in 10 days. Description and analyses included whole core gamma ray and repeat measurements, split-core MSCL measurements, visual core and smear slide description, core photography, thermal conductivity, discrete physical properties, and organic and inorganic geochemical measurements.

Although this part of the expedition was not included in the ACEX REVCOM review that was held immediately after the offshore phase, an assessment was carried out by ESO and a copy sent to IODP-MI.

The ACEX post-cruise meeting was held at College Station, Texas, from June 27–30, 2005, following a pre-meeting with publications staff on June 26. The Expedition 302 Preliminary Report was published in April.

Tahiti Sea Level Expedition, #310

A meeting with the co-chief scientists was held in October 2004 to properly initiate planning for this expedition, and an initial meeting was held with the #650 APL proponent in November. In December, an ESO delegation visited Tahiti with co-chief Gilbert Camoin in

order to have discussions with the island's authorities regarding the drilling program; this meeting was most beneficial to the subsequent progress of the project.

A Tahiti Education and Outreach meeting was held in Paris in early January 2005, at which time the composition of the science party, based on PMO nominations, was also defined, with a telephone link to Japan. In late February, a second co-chiefs meeting was held at Aix-en Provence, when there was also consideration of APL#650.

Following the issuing of a tender for a drilling vessel, with three vessels offered, planning continued to place a contract. Repeated but unsuccessful attempts were made to get contractor agreement to visit the only vessel affordable within the existing budget, but a visit to one of the tender-compliant vessels, the *Kingfisher*, showed it to be ideally suited to the task. This led to reassessment of our position and a successful submission to ECORD Council for further POC funds to allow this vessel to be contracted through Seacore, Ltd. Unfortunately, the ship's owners decided to pursue other work and Seacore urgently began a world-wide search for an alternative vessel. A potentially suitable vessel was inspected by ESO in Tampa, Fla., and a contract signed on July, 22, 2005, to use the *DP Hunter* in the autumn.

In view of the delay to the offshore component of the expedition, it was decided on July 1 to delay the onshore party until the early part of 2006. This message was immediately conveyed to the science party, who had been regularly updated on planning progress and provided with the prospectus that included staffing models for both the onshore and offshore phases.

Meanwhile, all preparations had continued on the assumption that the expedition would take place. All clearances and permits for work were obtained and an Environmental Impact Assessment distributed, and all requirements for petrophysics, laboratories and curation, and data management were put in place to achieve the agreed-upon measurements plan.

The *DP Hunter* was mobilized in Tampa from August 28–September 6 before sailing for Tahiti via the Panama Canal. The ship arrived in Papeete on October 4, and a successful expedition subsequently took place.

New Jersey Margin

Limited early planning took place on the assumption that New Jersey would be the MSP target for 2006. An independent, shallow gas-hazard assessment based on existing high resolution seismic data was conducted by Gardline, Ltd.; the report was circulated to EPSP at the Edinburgh meeting in June 2005.

Science support

ESO representatives attended all SAS panels during the FY and carried out associated tasks. In addition, the June 2005 EPSP meeting was hosted by BGS in Edinburgh, and the University of Bremen hosted the STP meeting in July.

USIO (JOI)

Eight expeditions were implemented in FY05, and the final Phase 1 expeditions that will

take place in FY06 were planned. The schedule for JOIDES Resolution activities during FY05 took riserless operations from the central Atlantic to the equatorial Pacific, drilling 108 holes at 31 sites and penetrating more than 13,591 meters of marine sediments and crustal rocks.

Expeditions 303 and 306: North Atlantic Climate 1 and 2
Expeditions 303 and 306 were designed to sample and study climate records, including the composition and structure of surface or bottom waters and detrital layer stratigraphy indicative of ice sheet instability, at strategic sites that record North Atlantic Pliocene−Quaternary climate. The primary scientific objective was to place late Neogene−Quaternary climate proxies in the North Atlantic into a paleointensity-assisted chronology based on a combination of geomagnetic paleointensity, stable isotope, and detrital layer stratigraphies. The primary logging objective was to provide detailed core-log integration to allow assessment of core expansion as well as a quality-control check of the spliced record. The ultimate objective was to generate a chronostratigraphic template for North Atlantic climate proxies to allow their correlation at a sub-Milankovitch scale and their export to other parts of the globe. Expedition 306 objectives also included the installation of a Circulation Obviation Retrofi t Kit (CORK) near ODP Hole 642E (Vøring Plateau, Norwegian margin) to document the ability to recover bottom water temperature histories at decadal to centennial timescales by making high-precision temperature-depth measurements and to monitor subbottom diffusion over a 5 year period.

The drilling and recovery phase of Expedition 303 was an unqualified success. Seven sites were occupied, each of which was multiple-cored, and 4,656 meters of high-quality core was recovered from these sites, which had mean sedimentation rates in the 5−18 cm/k.y. range. Research on these cores in the coming years is expected to break new ground in the fields of paleoclimatology and paleoceanography.

During Expedition 306, complete sedimentary sections were drilled and a borehole observatory was successfully installed in a new borehole close to Hole 642E. The data recovered in the coming years will provide for the first time a directly measured record of bottom water temperature over the last approximately 100 years from an area of the North Atlantic that is very important in terms of paleoceanography

Expeditions 304 and 305: Oceanic Core Complex 1 and 2
Expeditions 304 and 305 were planned with the overall objectives of investigating the nature, evolution, and geophysical signature of the oceanic lithosphere accreted at slow-spreading ridges. More specifically, the aims were to address the formation of oceanic core complexes and to transect a section, possibly an alteration front, corresponding to the transition to rocks with a seismic velocity of 8 km/s - a transition commonly interpreted to represent fresh residual mantle peridotite.

Expedition 304 far surpassed its goal for the first phase of drilling at the footwall site. The drilling objective of Expedition 305 was to continue drilling and coring Hole U1309D to the targeted depth of more than 700 meters below seafloor (mbsf) in the presumed high seismic velocity zone. A depth of 1,415.5 mbsf was reached, which was about twice the expected final depth. The overall recovery in Hole U1309D was 75%, exceeding by far the standard average recovery of approximately 30% in hard rock boreholes.

The sequence of intrusive rocks cored at this site and the high recovery rates provided an unexpected wealth of information on petrologic, alteration, and structural processes that characterize the magmatic construction of young oceanic crust at slow-spreading ridges.

Because the petrology and alteration of the sequence varies on the scale of meters to a few tens of meters, relationships are available for study here that could not be addressed with prior ODP hard rock data.

During Expedition 304 no more than approximately 20 mbsf in the hanging wall was successfully drilled in Hole U1310A. The operational strategies employed were restricted because of loss of gear while the reentry system was set at the footwall site. Without significant recovery from the hanging wall, research cannot address petrogenetic relationships with the footwall rocks or the magnitude of hanging wall rotation relative to the footwall.

Hole U1309D is a unique, open, deep hole into the oceanic crust, ready for deeper drilling in the future and for in situ experiments, and it is viewed as an important legacy by IODP to the marine geosciences community.

Expedition 307: Porcupine Carbonate Mounds

The overall objectives for Expedition 307 included (1) establishing 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) defining the relationship, if any, between mound initiation, mound growth phases, and global oceanographic events, (3) analyzing geochemical and microbiological profiles that define the sequence of microbial communities and geomicrobial reactions throughout the drilled sections, (4) examining high-resolution paleoclimatic records from the mound section using a wide range of geochemical and isotopic proxies, and (5) describing 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, Site U1316, immediately downslope of Challenger Mound, and Site U1318, upslope, were drilled to constrain the stratigraphic framework of the slope/mound system, identify and correlate erosional surfaces observed in slope sediment seismics, and investigate potential gas accumulation in the sediments underlying the mound.

Prior to drilling, one hypothesis was that the growth of carbonate mounds is fueled by cold hydrocarbon seeps, with methane-oxidizing prokaryote communities playing a primary role. Although the expedition did not find the high levels of microbial micrite and extensive early cementation that would have supported this hypothesis, methane and the largest abundances of prokaryotes were only observed beneath the mound. The results favor another hypothesis that mounds are located where currents, controlled locally by seabed morphology, supply food and nutrients to the coral ecosystem. This core material, with postcruise analysis, will be used confirm or disprove hypotheses about carbonate mound initiation and growth.

Expedition 308: Gulf of Mexico Hydrogeology

The objectives of Expedition 308 were to (1) explore the coupling of overpressure, flow, and deformation in passive margin settings and (2) test a multidimensional flow model by examining how physical properties, pressure, temperature, and pore fluid composition vary within low permeability mudstones that overlie a permeable and overpressured aquifer. Drilling and postcruise studies were expected to illuminate controls on slope stability, seafloor seeps, and large-scale crustal fluid flow.

Research on cores and data generated during Expedition 308 is expected to provide new insights pertaining to the fields of geotechnical and hydrogeological analysis of continental slope sediment successions, whether at passive or active continental margins.

Expedition 309: Superfast Spreading Rate Crust 2

Expedition 309 was the second part of a three-part drilling project. The third part of the project, Expedition 312, took place during November and December in FY06. These expeditions complete the Superfast Spreading Rate Crust drilling project begun with ODP Leg 206. The objective of the project was to attain the first continuous sampling of the uppermost ocean crust from extrusive lavas, through the dikes, and into the underlying gabbros.

Drilling in Hole 1256D during Leg 206 resulted in the successful construction of the borehole infrastructure required for deep drilling into the oceanic basement. Expeditions 309 and 312 were planned to deepen Hole 1256D by rotary core barrel coring to the maximum depth possible. This section will provide hitherto unavailable knowledge about the geological, geochemical, and geophysical structure of the oceanic crust and the processes responsible for its accretion and evolution.

Expedition 309 was highly successful in all respects. The average rate core recovery for the expedition was 36%, with an average of approximately 70% in the lowermost section of the hole. Hole 1256D penetrated more than 800 meters of extrusive lavas, entering a region dominated by intrusive rocks, and was successfully deepened to a total depth of 1,255.1 mbsf, or 1,005.1 meters subbasement. At the conclusion of the expedition, the bottom of the hole was in a region of sheeted intrusives (below 1,061 mbsf), approximately 754 meters of eruptive lavas and an approximately 57 meter thick lithologic transition zone had been sampled, and the hole was near a depth where gabbros are predicted to occur if precruise predictions based on geophysical data are accurate. Together with the forthcoming observations from Expedition 312, the recovered cores will enable significant progress toward understanding the interdependency of magmatic and hydrothermal processes in crust formed at fast spreading rates.

As of the end of Expedition 309, Hole 1256D was the fourth deepest hole drilled into oceanic basement since the inception of scientific ocean drilling in 1968 and the second deepest penetration into in situ ocean crust behind Deep Sea Drilling Project (DSDP)/ODP Hole 504B. At 1,255 mbsf, Hole 1256D is tantalizingly close to the predicted minimum depth estimated for the frozen axial magma chambers (1,275 mbsf).

Expedition 311: Cascadia Margin Gas Hydrates

The primary objective of Expedition 311 was to constrain geologic models for the formation of gas hydrate in subduction zone accretionary prisms. This expedition built on the previous Cascadia margin gas hydrate drilling of ODP Legs 146 and 204 off the coast of Oregon. The expedition objectives included characterizing the deep origin of the methane, its upward transport, its incorporation in gas hydrate, and its subsequent loss to the seafloor. The main focus of this expedition was on the widespread seafloor-parallel layer of dispersed gas hydrate located just above the base of the predicted stability field.

A transect of four sites (Sites U1325, U1326, U1327, and U1329) across the northern Cascadia margin was cored during Expedition 311 to study gas hydrate occurrences and formation models for accretionary complexes. In addition to the transect sites, a fifth site (Site U1328), representing a cold vent with active fluid and gas flow, was visited. The four transect sites represented different stages in the evolution of gas hydrate across the margin from the earliest occurrence on the westernmost first accreted ridge (Site U1326) to its final stage at the eastward limit of gas hydrate occurrence on the margin in shallower water (Site U1329).

CORE CURATION

USIO

IODP-USIO core curation encompasses the activities associated with managing the USIO core collection, including participating in the development and implementation of sampling strategies for Expeditions 303−309, providing advisory support to shipboard staff during Expeditions 303−311, supporting shore-based sampling parties for Expeditions 304 and 305, and working with the IOs, Science Advisory Structure panels, and IODP-MI to define possible strategies to manage IODP curation and sampling challenges.

Curation and Fulfillment of Sample Requests
During FY05, the USIO curatorial office processed 710 sample requests from 26 countries for all DSDP, ODP, and IODP core. The three existing IODP-USIO repositories (East Coast Repository, Gulf Coast Repository [GCR], and West Coast Repository) distributed 40,116 IODP samples from 354 sample requests, and the JOIDES Resolution distributed 13,807 samples from 98 sample requests. The remaining 258 requests were forwarded to the Bremen Core Repository (BCR) to be processed from their collection. In addition, USIO curation staff assisted the ESO by hosting a sampling party for Expeditions 304 and 305 at the GCR instead of the BCR and by attending and helping with curation-related activities during the Expedition 302 shore-based science party at the University of Bremen and the BCR. The GCR also split more than 500 meters of frozen core sections from Expedition 307, before sending them to the BCR for postcruise description, sampling, and storage.

Sample, Data, and Obligations Policy
Initial drafting of the final IODP Sample, Data, and Obligations Policy was initiated in October 2004, with significant contribution by USIO and IODP-MI staff and input from CDEX and ESO staff members. The draft was reviewed and revised throughout the year, and by the conclusion of the last quarter of FY05, the policy was in near-final form (publication expected in October 2005 on the IODP Web site).

Establishment of IODP Repositories
During the fiscal year, the USIO, working with IODP-MI and the other IOs, played a major role in developing detailed plans that outlined three different scenarios for reconsolidation of legacy and future core materials. In early 2005, a final decision was made to consolidate the new IODP collections and the DSDP and ODP legacy collections at the three IODP repositories (Kochi, Japan; Bremen, Germany; and College Station, Texas) following a geographic distribution model recommended by the Science Advisory Structure. At the end of FY05, the USIO received approval from IODP-MI to use Science Operating Cost (SOC) funding to purchase initial supplies that will be required for the redistribution of DSDP and IODP legacy cores and the consolidation of the collection.

Curation Management
After the repository model for IODP was defined, the USIO participated in clarifying the roles and responsibilities of the IO curators during expeditions and at repositories and the definition of moratorium management and discussed procedures for management of joint expeditions related to sampling parties, moratoriums, and publications; and sample request procedures.

Curation Data Management Coordination
During FY05 curatorial representatives from the IOs met with the Data Management Coordination Group to discuss data management issues related to curation. Subsequently, as a first step toward the development of a three-repository curation system, critical software tool requirements were generated for an IODP Curation application for managing all aspects of core sample data management.

Bremen Core Repository
A summary of BCR activities for FY 2005 is included as Appendix 2.

DATA MANAGEMENT

Data management by IODP-MI accelerated in late 2004 following the appointment of a data management specialist (now Data Manager) within IODP-MI and a Publication Manager (with an IT background), both to start in the Sapporo office January 1st, 2005.

IODP-MI established and chaired the data management coordination group (DMCG) with members from each of the IOs. The DMCG held its first meeting in February 2005 in Kochi and a second one in June (Edinburgh). The group also performed a successful test of the CDEX J-CORES applications onboard the *JOIDES Resolution* in September 2005 during a two-week transit.

The IODP-MI Data Manager chairing the DMCG also chaired the seagoing test. USIO staff members (staff scientist, data managers, programmers and lab technicians) participated in order to help CDEX become ready for *Chikyu* operations with regards to data handling. Significant issues with the as-yet-untested J-CORES system were identified and described in a report by IODP-MI. USIO/TAMU have insights to the J-CORES programming structure and have identified features JANUS could benefit from. Likewise, J-CORES has been tested against a real user environment and areas of concern in this regard have been identified.

By the second half of 2005, it was concluded that the coordination of data between the different IOs in IODP will have to take place through the use of metadata characterizing primary data, rather than forcing one single data base structure onto all IOs. This decision is following general trends in global coordination of data access and was presented by IODP-MI at a special AGU session in 2005. All IOs are in line with this decision and realize that they need to provide metadata for an overarching data portal providing a single entry for data search. IODP-MI has developed a schema for the metadata structure and an ISO standard for metadata has been agreed upon. The name of the portal is Scientific Earth Drilling Information Services (SEDIS).

IODP-MI was assisted by an advisory group of unconflicted specialists in assessing the three bids for the new and all web based digital SSDB received by early February 2005 following a competitive RFP issued in late 2004. On the basis of the advisory group's comments, IODP-MI selected the successful vendor (SIO/SDSC). A detailed statement of work for the SSDB contract was prepared by IODP-MI in May and the basic SSDB launched in August by the contractor. Work also began on the construction of a new web-based proposal database (PDB) including improved administrative tracking tools. This project was later amended with

an additional feature of IODP registry function based on IODP-MI specifications. IODP-MI and the DMCG also have defined standard procedure for handling digital images and IODP measurements categorization, both of which were sent to Scientific Technology Panel for review in 2005.

The specification for and outsourcing of data management activities will continue in 2006 with new initiatives in addition the SSDB, the PDB, and the IODP User Registry. The two main new areas of new developments are the IODP Curation Management System (ICMS) and the basic metadata foundation for the common IODP data portal (SEDIS Phase I). These two initiatives will be based on the IODP-MI planning and coordination efforts during 2005.

In summary, IODP-MI will be managing the following projects /activities:

- A second J-CORES test and a data management meeting will be held in February 2006 in Kochi; a second meeting is expected later in FY06
- The development of the SSDB will continue this year including more advanced administration and tools to minimize IODP-MI work
- The PDB is expected to come online within the first half of 2006; rigorous tests by IODP-MI will be needed before launched
- IODP metadata profile and schema will be finalized and all IOs will start creating the required metadata
- SEDIS Phase I requirements completed and a competitive RFP be issued by IODP-MI in March/April. Goals of Phase II and III will be included to provide outlook for the vendors, see also outlook for 07/08 below. However, only Phase I will be described in detail and be part of the FY06 RFP.
- Development of the ICMS will start in February/March by involving all the IOs. No competitive RFP is planned for ICMS. USIO and CDEX will be charged to complete the ICMS under IODP-MI supervision. Additional FY06 IO funding required will come from IODP-MI budget item Data Management in the APP06.

IODP-MI is considering formation of a task force in data management in addition to DMCG, which we then will maintain as an IO - IODP-MI working group coordinating ongoing activities. The task force would provide more external resources for advising IODP-MI on and monitoring the major developments ahead, SEDIS in particular and might act as vehicle for generating a wider network of collaborators.

IODP-MI will soon be briefed by USIO about their plans for data management development under the SODV project. Since SODV funds are not SOC funds, we contractually have no guidance over these, but will follow this development as closely as possible.

For fiscal year 2007 and 2008, we see the following developments and projects being completed: ICMS & SSDB (2007), SEDIS II&III RFPs (2007), SEDIS II&III completed (2008).

PUBLICATIONS

Publications activities continued in FY 2005 with implementing --in close collaboration with the IOs-- the recommendations concluded at a Publications Task Force meeting in November 2004 (a task force which convened only once).

Following subsequent SPPOC approval, IODP has switched to entirely electronic publications of its program publications except for the journal *Scientific Drilling* published jointly with International Continental Scientific Drilling Program (ICDP). The IODP publication structure is shown as Appendix 3. Also, IODP has switched to publication of all post-expedition scientific papers to the open peer-reviewed literature except for expedition and project syntheses papers and peer-reviewed data reports.

Five expedition scientific prospectuses and nine expedition preliminary reports were published during FY2005. IODP-MI joined Crossref as a full member in April 2005, which allowed the implementation of digital object identifiers (DOI) for all IODP publications, as well as easing the task to link other publications through the use of DOIs and the Crossref database.

The program journal *Scientific Drilling* was launched in September 2005. It is published and printed biannually together with ICDP, with the intent to impact the larger Earth sciences community and to establish closer links with ICDP in order to trigger synergy effects among the programs. The journal features articles about ongoing and finished drilling projects, as well as reports on technical developments and program outlook.

For 2006 it is planned to start development of IODP publication wide search and indexing of electronic documents, see also data management efforts to access and link data to the respective publications. In addition, IODP-MI will pursue open access publication of program related publications. Eventually, this may require some program funds to pay fees to selected journal in order to provide full open access to IODP related publications printed in these journals. IODP-MI will also investigate what can be done in order to offer the IODP Proceedings (Expedition Reports part) in a print-on-demand version. This might be interesting for libraries and scientists preferring printed (over electronic) publication for selected and much used volumes. The program policy approved by SPPOC does not request this functionality, but it is known to be a desire by parts of the community. IODP-MI plans to investigate methods and cost for providing this facility. Users will have to pay all production costs if a system eventually is established.

LOGGING

ESO (BGS)

Core logging at the ACEX Onshore Party was planned and carried out by the European Petrophysics Consortium, and the Petrophysics Staff Scientist has contributed as a member of the Science Party.

It was decided that the Montpellier group would carry out downhole logging for Tahiti in view of their experience with logging of similar lithologies on Majorca and elsewhere. Several planning meetings were held with the loggers prior to the expedition.

Geotek were contracted to supply and fit the required MSCL equipment into the ESO petrophysics container for the Tahiti expedition, and ESO staff received training in its use.

USIO

Expeditions 303 and 306: North Atlantic Climate 1 and 2

Standard wireline logging runs at Site U1313 provided excellent correlation between downhole logging and shipboard multisensor track. Together with other downhole logging data, detailed information about permeability, fluid flows, and temperature gradients in the area will be available in future years.

Expeditions 304 and 305: Oceanic Core Complex 1 and 2

The downhole measurement program during Expeditions 304 and 305 was generally successful. A complete set of very high quality triple combination (triple combo) and Formation MicroScanner-sonic tool string data was obtained, certainly the best ever recorded in igneous rocks. This, together with the high recovery, offers a unique opportunity to establish the core-log structural integration

Expedition 308: Gulf of Mexico Hydrogeology

Obtaining downhole measurements was an integral part of achieving the major scientific objectives, and it was possible to integrate core data and measurement-while-drilling (MWD)/logging-while-drilling (LWD) results in a way that enabled reconstruction of basin dynamics and basin fill in space and time. MWD results also proved essential in real-time monitoring of potential hazardous shallow-water flow and overpressure zones. In addition, determination of pore pressure, rock properties, and overburden stress allowed scientists to predict the potential for slope failure in the present and to estimate conditions that drove previous slope failures.

Expedition 311: Cascadia Margin Gas Hydrates

The MWD/LWD logging program employed during this expedition surpassed all expectations. The newly developed MWD/LWD safety protocol provided an effective means to deal with concerns associated with shallow gas hazards. The logging data guided special tool deployments (Pressure Core Sampler, Fugro Pressure Corer, and Hydrate Autoclave Coring Equipment Rotary Corer) in addition to providing high-quality downhole measurements, which were used to identify and characterize gas hydrate concentrations. Pressure coring and logging and infrared imaging of hydrate-bearing cores was facilitated by external funding to JOI from the U.S. Department of Energy's National Energy Technology Laboratory. During Expedition 311, considerable effort was made to obtain high-quality resistivity log data from the MWD/LWD tool string. The potential presence of gas hydrates within the log-measured high-resistivity intervals will be examined further through the continuation of the drilling project in FY06 and postcruise.

EDUCATION AND OUTREACH

The IODP Education and Outreach (E & O) program structure took shape during FY 2004–05. Many of the targeted objectives identified by previous E & O Workshops were implemented during this period. Among many initiatives, the following represent fundamental activities:

- A program logo was designed, adopted, and integrated into program usage.
- A mission statement and stock paragraph about IODP were developed and used by most program offices to consistently represent the program.
- An E & O Task Force Meeting was convened by the IODP-MI director of communications: outreach strategies for the year were determined, and a network of working relationships was established between IOs and IODP-MI.
- A network of E & O specialists, a subgroup of the E & O Task Force, was established to synchronize expedition promotion, news release, web content and design.
- A program web portal was developed and launched to comprehensively present IODP online to stakeholders, the media and the public, and to connect the many institutions and program resources that are extensions of IODP.
- An electronic newsletter for scientists was developed and sent out bimonthly starting in May ’05. The distribution list, originally honed from an ODP list to 1,500 recipients, grew to approximately 1,700 individuals by Sept. 2005. Additional scientists opted into the list online.
- An IODP exhibition booth was designed, constructed, and used for international exhibition four times during the fiscal year: at AGU, EGU, AOGS, and at the Joint Meeting for Earth and Planetary Science (precursor to JGU). Exhibitions were cosponsored by IODP-MI with each of the IOs. Booths were furnished with materials about all the IOs and all the expeditions.
- Two Town Hall Meetings were held: one at AGU sponsored by IODP-MI; the second sponsored by ECORD with promotional support from IODP-MI. Each event attracted hundreds of scientists.
- Built infrastructure to support media outreach worldwide: subscribed to major science media outlet sites, procured access to international media database, built in-house press lists targeted to expeditions and member nations. Made pitch calls and sent mailings and information kits to hundreds of journalists who write about science.
- Published the first IODP-MI Annual Report to summarize program activity and use in outreach efforts.
- Wrote, published, and distributed IODP Brand Standards, a booklet of graphic guidelines to use in presenting the IODP logo: with other program institutions’ logos; in program material; online; and in newsletter applications. Wrote companion draft of IODP Editorial Guidelines (distributed FY ’06).
- Began tracking media coverage on a weekly basis and compiling coverage online.
- Began generating and tracking meaningful web site traffic.
- Began production of film documentary about IODP.

Results of Initiatives:

Coordinated significant news outreach for three USIO expeditions and one ESO expedition, culminating in three news conferences, two port call events, and hundreds of news placements nationally and internationally.

- Heightened expedition visibility in the media has led to incoming media inquiries on a regular basis. IODP-MI responds to 10-12 high-quality media inquiries each month, primarily from TV journalists. Inquiries typically come from significant print and broadcast media outlets, including BBC, MSNBC, Discovery TV, *Christian Science Monitor*, *Popular Science*, *Popular Mechanics.*

- Web traffic has grown from a trickle to a static site to robust traffic to a highly dynamic and integrated site that supports the latest IODP news, publications, meeting reports, calendar events, and many more links and special features. By Sept. 30, 2005, the IODP web portal generated more than 25,000 page views/month and attracted 7,822 visitors (6,510 first-time visitors; 1,312 returning visitors). Four months earlier, when statistics first became available (June '05) the site had only 371 returning users. The number of page views grew by more than 20 percent from June to Sept. 2005. During the same period, the IODP web portal provided 83,956 page views and supported 25,904 unique visitors; in total, there were 3,347 returning visitors.
- IODP booth exhibition where scientists (and media) learned first-hand about the program played a significant role in building traffic to www.iodp.org, where the full complement of the program's content resides. From the time of its launch, return visitation to the site built steadily: from 371 individuals during June (the month following its launch), to 673 the following month, to 991 in August, and 1,312 in September. The number of returning visitors nearly quadrupled in four months.

Results in Implementing E & O:

- Numerous visible program elements now populate the E & O program area and they are becoming integrated into the IODP program: news releases, the e-newsletter, guidelines for creating IODP outreach materials, resource areas online where E & O specialists can go to retrieve "help" guides, news coverage, and other informational resources.
- In gaining a foothold in a very competitive media marketplace, IODP has attracted the attention of significant media outlets: the *New York Times*, Discovery TV, National Geographic magazine. These relationships will be important in future news placements about expeditions and science developments.
- Scientists have learned—in increasing numbers—where they can go to access information about scientific ocean drilling. They now have one web portal through which they can find answers to any questions they may have about IODP. Once they know of it, scientists loyally return to the site again and again.
- We have gained a seat and at the table and an active role in planning a major Smithsonian Institution exhibition about oceans to open in 2008.
- By initiating its own film-making project, IODP is positioning itself to better control how the program's story is told. We will be able to provide pictures, spokespeople, and editorial from an IODP perspective.

Challenges in Implementing E & O:

There are precious few people conducting IODP E & O worldwide. With as many media outreach opportunities as we are creating, we can work only a few at a time.

- Since both IODP E & O specialists and many program spokespeople (i.e. scientists) work part-time for IODP and full-time for other institutions, there is a dearth of dedication to consistently or constantly promote IODP. The default is that promotional opportunities are most frequently used to promote only the involved IO or member institution. Going forward, the Management Forum may be able to help solidify key IODP messages with program partners and urge a more dedicated approach to consistently providing IODP context when the media call, particularly with IO staff and funding agencies.
- Scientists active in the program rarely identify themselves as IODP scientists, generally defaulting to their institution/employer and speaking as an expert from that role. Possibly, IOs who have agreed to promote key messages (see #2 above) may

encourage scientists at pre-expedition meetings to extend IODP messages and identify themselves as IODP scientists in connection with media opportunities generated by their participation in the program.

IODP program partners have prioritized a variety of E & O projects and approaches within their budgets, none integrated into a centralized E & O agenda. Solution: a centralized E & O budget beginning in 2007. This will help streamline program goals and activities and better integrate IODP outreach efforts.

IODP-MI ANNUAL REPORT DISTRIBUTION LIST

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