

# INTEGRATED OCEAN DRILLING PROGRAM MANAGEMENT INTERNATIONAL



1 October 2005 – 30 September 2006

Annual Report

Contract No. NSF OCE 0432224

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to

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## MANAGEMENT AND ADMINISTRATION

### CONTRACTUAL ACTIVITIES

#### **NSF-CMO Prime Contract**

During FY2006 NSF made several modifications to Contract OCE-0432224. Modification #10 (dated October 14, 2005) approved the FY2006 IODP-MI Annual Program Plan at the level of \$22,062,010, the FY2006 contract budget at \$21,224,573, and provided IODP-MI with \$8 million in incremental funding.

In April, IODP-MI received contract modification #11 which approved FY2005 carry forward funding in the amount of \$299,335 and provided incremental funding for FY2006 IODP SOC activities.

NSF sent modifications 12, 13, and 14 in September 2006. The final modification increased the incremental contract funding level by \$1,751,033 to \$35,367,223.

On September 22, 2006 the Lead Agencies approved the revised IODP FY2007 Annual Program Plan with a contract budget of \$26,605,274 for SOC.

#### **Advanced Earth Science & Technology Organization (AESTO)**

AESTO maintains the IODP-MI office in Sapporo, Japan. All functions of this office are supervised by the IODP-MI Vice President for Science Planning (VP-SP) who is stationed at the Sapporo office. The Sapporo office continues to provide a full range of support functions to the Science Advisory Structure, including publications and data management.

During the reporting period, IODP-MI executed subcontract modification #4 with AESTO, which revised the FY2006 subcontract budget to the level of \$1,099,887, representing a reduction of \$198,500 from the previous approved level of \$1,298,387. Modification #4 also revised the subcontractor's certified indirect cost rate from 20% to 18% based on an adequate final JP FY 2005 indirect cost rate proposal presented to IODP-MI. IODP-MI determined that the revised rate is based on the subcontractor's actual direct cost experience for the period.

#### **Bremen University**

Bremen provides core repository services to IODP-MI. During the reporting period, IODP-MI executed bilateral modification #1 to its subcontract with the university which authorized the FY2006 Bremen Core Repository (BCR) operations budget at the level of \$250,877 as set forth in the Annual Program Plan.

In May, IODP-MI executed modification #2 to the subcontract which revised the FY2006 subcontract budget to \$310,877 representing an increase of \$60,000 from the previous approved level. This increase reflected a reprogramming of funds under the FY2006 core redistribution project.

#### **British Geological Survey (BGS)**

Through its subcontract with IODP-MI, BGS (acting as the coordinator responsible for overall ECORD science operations) undertakes Mission Specific Platform (MSP) science operations on behalf of the IODP as a project-based service that allows for 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.

In early FY2006, IODP-MI executed bilateral modification #2 to its contract with BGS that authorized the FY2006 subcontract budget at the level of \$3,734,800. This budget consisted of \$2,984,300 in SOC from the original FY2006 Annual Program Plan and \$750,500 in SOC from the deferral to FY2006 from FY2005 of offshore MSP activity for the Tahiti Sea Level Expedition. Not included in the subcontract budget was \$160,000 in travel funding. All travel costs incurred by the subcontractor continue to be paid directly from the European Management Agency.

The parties executed Modification #3 to the subcontract in June, which revised the FY2006 subcontract budget to \$2,274,500, representing a reduction of \$1,460,300 from the previous level. This revision reflected the deferral to FY2007 of \$1,460,300 in offshore MSP costs associated with the New Jersey Shallow Shelf Expedition.

**Japan Agency for Marine Earth-Science and Technology (JAMSTEC/CDEX)**

In December 2005, IODP-MI released a sole source solicitation to JAMSTEC seeking technical and cost proposals to conduct the system architecture and high-level design during the "Feasibility Phase" of the Long Term Monitoring (LTM) system as preliminarily set forth in the FY2006 Annual Program Plan.

During the second quarter, IODP-MI executed subcontract #IODP-MI-06-02 with JAMSTEC/CDEX to conduct the LTM feasibility study. The authorized subcontract budget was set at the level of \$136,000, with an additional \$39,000 set aside by IODP-MI to reimburse project-specific travel expenses.

**Joint Oceanographic Institutions (JOI)**

In October 2005, IODP-MI executed bilateral modification #3 to its subcontract with JOI that authorized the FY2006 SOC subcontract budget at the level of \$10,541,327 and conditionally approved \$175,000 for the JOIA Pulsed Telemetry Module project pending receipt of the Engineering Development Panel's recommendations.

In February 2006, JOI requested approval to carry forward \$209,335 of uncommitted SOC funds from FY2005 into the current FY budget. The basis of this request was a desired reprogramming of funding for data management and technical engineering and science support tasks that were not included in the FY2006 Annual Program Plan, such as hiring additional staff to support the integration of the JANUS database into the IODP-MI-led information portal by providing required metadata, supporting the modification of software, and encouraging staff exchanges and collaborations with the other IOs to advance these activities. NSF ultimately approved this carry forward request.

The parties executed modification #4 to the subcontract in April. This revised the FY2006 subcontract budget to \$10,356,327, representing a reduction of \$185,000 from the previous approved level of \$10,541,327. The reduction represented a reprogramming of funds under the FY2006 core redistribution project.

Modification #5 occurred in May. This further revised the FY2006 subcontract budget to \$10,585,662, representing an increase of \$229,335 from the previous approved level of \$10,356,327. The increase represented a reprogramming of \$20,000 for travel expenses under the core redistribution project and approval of JOI's aforementioned FY2005 carry forward request.

### **Scripps Institution of Oceanography (SIO)**

SIO at the University of California, San Diego is the subcontractor providing the services to receive and archive scientific ocean drilling-related electronic and digital data in support of the Site Survey Data Bank (SSDB). The IODP-MI Sapporo office oversees the technical work of the subcontractor and will provide support and quality control of previously archived samples and data from the Deep Sea Drilling Project and the Ocean Drilling Program.

In January 2006, IODP-MI and the SIO executed bilateral modification #1 to the subcontract, which authorized the FY2006 SSDB budget at the level of \$380,000 as set forth in the Annual Program Plan.

In May, the parties executed modification #2 to the subcontract, which revised the FY2006 subcontract budget to \$470,000, representing an increase of \$90,000 to augment the continued operation and development of the SSDB in accordance with the subcontractor's supplemental FY2006 proposal dated April 12, 2006.

Subcontract modification #3 took effect in September. This revision increased the FY2006 subcontract budget by \$97,938 to accomplish the digital scanning of approximately one thousand (1,000) analog documents identified by IODP-MI.

### **University of Miami**

During the reporting period, IODP-MI executed subcontract #IODP-MI-06-01 with the University of Miami for Dr. Keir Becker (Rosenstiel School of Marine and Atmospheric Science) to assume the chairmanship duties of the IODP Science Planning Committee. The authorized FY2006 subcontract budget was set at the level of \$170,486.

## **FINANCE REPORT**

The annual financial report is attached (see Appendix 1).

Total contract funds approved:	\$19,638,608	This reflects all modifications made during the fiscal year.
Funds obligated from FY05	\$ 2,377,410	
Total funds expended:	\$17,773,107	
Funds remaining:	\$ 4,242,911	

Of the remaining funds, \$1,830,048 has been committed. An additional \$361,451 of uncommitted funds is under consideration as a request for carry forward. The request was sent in late January. The remainder of \$2,051,412 is unobligated.

## **PERSONNEL STATUS**

All of the approved positions have been hired during FY2006.

## **SUPPORT FOR SCIENCE ADVISORY STRUCTURE (SAS)**

The IODP-MI Sapporo Office is headed by Vice President of Science Planning & Deliverables (VP-SP) Hans Christian Larsen. The Sapporo office is hosted by Hokkaido University at no rental cost for office space. All other Sapporo Office staff and associated

activities are conducted through a subcontract with AESTO under the supervision of the VP-SP. The main tasks of the VP-SP and this IODP-MI office are: (1) Overseeing the IODP science planning process and support of the Scientific Advisory Structure (SAS), (2) IODP scientific publications, and (3) IODP Data Management.

During FY2006, the former SAS executive committee, SPPOC, was restructured by IODP-MI into the SAS Executive Committee (SASEC) and support of the SASEC Chair transferred to the IODP-MI office in Washington. Accordingly, IODP-MI Sapporo Office support of the SPPOC was limited to one meeting (January 2006).

The VP-SP works with the chairs of SASEC and SPC on the broader issues of science planning and review of science achievements and approves all SAS meetings except SASEC (charge of IODP-MI President). In FY2006 the SPC chair was supported by the IODP-MI science coordinators in the following fields: meeting agendas, preparation of meeting agenda books, editing of material produced during the meetings, and minutes of SPC meetings. IODP-MI also provides coordination of all other SAS meetings including confirmation and distribution of meeting rosters and logistics, support at meetings for panel chairs and panelist and updates of the IODP web site with all SAS related information. For two panels, SSEP and SSP, IODP-MI edits panel reviews, secured external reviewers, prepared and distributed proposal and site survey data packages in advance of meetings. The IODP-MI Sapporo office also oversaw data submission to the SSDB, received 76 drilling proposals submitted at the October 1<sup>st</sup> and April 1<sup>st</sup> deadlines, reviewed proposals for completeness and adherence to IODP rules, corresponded with proponents, and secured and edited 48 external reviews applying to 11 proposals. The numbers of proposal packages distributed at each SAS meeting are as follows.

Meeting	Num.
#5 SSEP (Nov. 2005)	40
#5 EPSP (Dec. 2005)	6
#5 SSP (Feb. 2006)	22
#7 SPC (March 2006)	35
#6 SSEP (May 2006)	28
#3 STP (June 2006)	1
#6 EPSP (June 2006)	5
#6 SSP (July 2006)	29

The numbers of the documents submitted to SSDB in FY2006 were 821 in total.

## FY2006 IODP WORKSHOPS

The FY2006 Annual Program Plan allocated \$300,000 to implement four international workshops in FY2006 to encourage long-range planning for the program and to engage the scientific community during the drilling hiatus. Four topics of relevance to the IODP Initial Science Plan were selected for the inaugural series of workshops: Fault Zone Drilling; Mission Moho; Continental Breakup and Sedimentary Basin Formation; and Subseafloor Life. An Executive Program Associate was hired in November 2006 to assist the selected Steering Committees implement the four workshops.

## **Fault Zone Drilling Workshop**

Steering Committee:

Harold Tobin, Chair, New Mexico Tech, USA

Stephen Hickman, USGS, USA

Hisao Ito, JAMSTEC, Japan

Gaku Kimura, University of Tokyo, Japan

Jan Behrmann, Freiburg University, Germany

The Fault Zone Drilling Workshop convened May 23-26, 2006 in Miyazaki, Japan and was equally supported by IODP-MI (\$75,000) and ICDP (\$75,000). The workshop included a one day field trip to an exposed fault plane. The workshop received 136 applications from 15 countries. IODP supported 14 Americans, 13 Japanese (one no-show, no reason provided), and 6 Europeans (2 France, 3 Germany, 1 Spain). No applications were received from China. Participants from 7 IODP member countries attended the workshop (Canada, France, Germany, Italy, Japan, Spain, and USA). ICDP funds were used to support scientists from non-IODP countries including, New Zealand, Singapore, and Taiwan. A total of 80 participants attended the workshop. The workshop agenda is available on the workshop website ([www.iodp.org/fault-zone-drilling](http://www.iodp.org/fault-zone-drilling)).

## **Mission Moho: Understanding the Formation and Evolution of the Oceanic Lithosphere**

Steering Committee:

David Christie, Co-Chair, University of Alaska, Fairbanks, USA

Benoit Ildefonse, Co-Chair, CNRS/Universite Montpellier 2, France

Natsue Abe, JAMSTEC, Japan

Shoji Arai, Kanazawa University, Japan

Wolfgang Bach, Universitat Bremen, Germany

Donna Blackman, Scripps Institution of Oceanography, USA

Robert Duncan, Oregon State University, USA

Emilie Hooft, University of Oregon, USA

Susan Humphris, Woods Hole Oceanographic Institution, USA

Jay Miller, Texas A&M University, USA

The Mission Moho Workshop convened September 7-9, 2006 in Portland, Oregon, USA. IODP-MI contributed \$75,000 to the workshop, JOI/USSSP contributed ~\$30,000, Ridge2000 contributed \$20,000, and InterRidge contributed \$2,000 for the workshop reception. The workshop received 132 applications from 16 countries. Of 98 total participants, IODP-MI supported 14 Americans, 16 Japanese, 6 Europeans (1 Canada, 1 France, 1 Italy, 3 UK), and 2 Chinese. Participants from 11 IODP member countries attended the workshop (Canada, China, France, Germany, Iceland, Italy, Japan, Norway, Switzerland, United Kingdom, and USA). One Russian engineer attended the workshop as a self-funded participant. The workshop agenda is available on the workshop website ([www.iodp.org/ocean-lithosphere](http://www.iodp.org/ocean-lithosphere)).

## **Continental Breakup and Sedimentary Basin Formation**

Steering Committee:

Mike Coffin, Co-Chair, University of Tokyo, Japan

Dale Sawyer, Co-Chair, Rice University, USA

Tim Reston, University of Birmingham, UK (formerly at GEOMAR, Germany)

Joann Stock, California Institute of Technology, USA

The Continental Breakup Workshop convened September 15-18, 2006 in Pontresina, Switzerland and included a one-day field trip relevant to the workshop topic. In addition to the \$75,000 from IODP-MI, the workshop Steering Committee successfully procured \$10,000 from InterMARGINS to support workshop participants from non-IODP member countries. The workshop received 80 applications from 24 countries. Of 53 total participants, IODP-MI supported 11 Americans, 3 Japanese (plus one no-show due to medical emergency), 9 Europeans (2 France, 2 Germany, 3 Norway, 1 Spain, 1 UK), 1 Chinese, and 1 South Korean. In addition, one scientist from Belgium was invited to attend but was unable to attend due to a medical emergency. Participants from 10 IODP member countries attended the workshop (France, Germany, China, Japan, Norway, South Korea, Spain, Switzerland, United Kingdom, and USA). InterMARGINS funds were used to support scientists from Australia, New Zealand, Brazil, Ethiopia, and Luxemburg. The workshop agenda is available on the workshop website ([www.iodp.org/continental-breakup](http://www.iodp.org/continental-breakup)).

### **Exploring Subseafloor Life with the Integrated Ocean Drilling Program**

Steering Committee:

Steven D'Hondt, Co-Chair, University of Rhode Island, USA

Fumio Inagaki, Co-Chair, JAMSTEC, Japan

Bo Barker Joergensen, Max-Planck Institute – Bremen, Germany

Kenji Kato, Shizuoka University, Japan

Paul Kemp, SUNY Stony Brook, USA

Patricia Sobecky, Georgia Institute of Technology, USA

Mitchell Sogin, Marine Biological Laboratory, USA

Ken Takai, JAMSTEC, Japan

The Subseafloor Life Workshop convened October 3-5, 2006 in Vancouver, British Columbia, Canada. JOI contributed \$100,000 to the workshop, IODP-MI contributed \$75,000, and NSF contributed an additional \$5,000 (through JOI) to encourage additional scientists from China to attend. The workshop received 98 applications from 16 countries. Of 89 total participants, IODP-MI supported 15 Americans, 18 Japanese, 6 Europeans (1 Denmark, 1 France, 2 Germany, 1 The Netherlands, and 1 United Kingdom), 1 Chinese, and 1 Indian. Participants from 10 IODP member countries attended the workshop (Canada, China, Denmark, France, Germany, Japan, Sweden, The Netherlands, United Kingdom, and USA). The workshop agenda is available on the workshop website ([www.iodp.org/subseafloor-life](http://www.iodp.org/subseafloor-life)).

### **Summary, Conclusions, and Lessons Learned**

In an ideal scenario, the final ratio of IODP-MI supported workshop participants would have been 56 Americans: 56 Japanese: 24 Europeans: 4 Chinese: 1 South Korean. In reality the final ratio was 54 Americans: 50 Japanese: 27 Europeans: 4 Chinese: 1 South Korean. Two invited Japanese participants were unable to attend the workshops, which changes the ratio slightly. In addition, due to lack of applications from Japan for the Continental Breakup workshop, additional spaces were offered to the Europeans thereby increasing their total number beyond the recommended ratio.

Feedback provided by the workshop steering committee universally recommended that the workshop funds provided by IODP-MI not be used to exclusively fund participants from IODP member countries. They also recommended that there be some flexibility allowed in the participant ratio so that scientists with merit would not be turned down in favor of fulfilling a quota with scientists from member countries without as much merit. IODP-MI supports both of these recommendations and would like the latitude to invite as many as 5 scientists from

non-member countries to each of the 2007 workshops. In addition, IODP-MI will strive to achieve an optimal national balance in the 2007 workshops, but would like to populate the workshops with the most qualified applicants even if the national balance is not maintained. Finally, IODP-MI intends to enforce a general policy that between 10-15% of all future workshop be comprised of young professionals, including graduate students, post-doctoral fellows, and recent hires.

## **TECHNICAL, ENGINEERING AND SCIENCE SUPPORT**

### **IODP-MI**

#### **Technical, Engineering and Science Support**

##### Operations Planning

The Operations Task Force continued planning for FY08-FY09 platform operations. During the annual OTF scheduling meeting (June 5<sup>th</sup>-6<sup>th</sup>, 2006; Edinburgh), the OTF examined 22 proposals and developed a preferred FY08 operational schedule for SODV, *Chikyu* and MSP operations.

Proposed FY08 SODV operations included Equatorial Pacific I and II, NanTroSEIZE Subduction Inputs, Bering, Sea, and Juan de Fuca II. Proposed FY08 *Chikyu* operations included three NanTroSEIZE riserless operations (LWD; NT2-03 Mega Splay riser prep; and NT1-03/NT2-01) and 1 Riser operation (NT2-03). The Great Barrier Reef expedition was proposed for FY08 MSP operation. These schedules were ultimately approved (with minor modifications) at the August, 2006 SPC meeting (see meeting reports for both OTF [<http://www.iodp.org/meeting-reports/>] and SPC [<http://www.iodp.org/spc/>] for further details).

In addition, the OTF developed a series of options for SPC to consider for FY09 platform operations, with SPC recommending a “clockwise” shiptrack through the North Pacific for the SODV. No specific recommendations were made by SPC for the FY09 shiptracks for *Chikyu* or MSP operations.

##### Operations Review

During FY2006, the Operations Review Task Force (ORTF) held four separate reviews, including those for Expeditions 303/306/307 (North Atlantic Climate 1 and 2 and Porcupine Carbonate Mounds), 308 (Gulf of Mexico), 309/312 (Superfast Spreading Crust, and 310 (Tahiti Sea Level). The reports and recommendations from these reviews are posted on the IODP web site (<http://www.iodp.org/ortf/>)

#### **Engineering Development**

In close conjunction with the SAS, the IODP-MI has taken a proactive role in facilitating, encouraging, and implementing engineering development projects to improve and expand science capabilities while improving operations and technology success rates. IODP-MI has established a coordinated, multi-tiered strategy to accomplish these goals. Highlights of these activities include:

Engineering Task Force - The Engineering Task Force (ETF) was created to assist IODP-MI in its effort to conduct safe, reliable and cutting edge engineering development. The ETF provides assistance in evaluating engineering development proposals submitted by the IOs and/or other subcontractors and considers how to implement projects included in the Annual

Program Plan. The panel consists of a group of experts selected for their relevant experience to developments to be evaluated or implemented.

Engineering Development Web Page - The Engineering Development web page ([www.iodp.org/eng](http://www.iodp.org/eng)) was created and added to the IODP web portal. The webpage is home to the IODP Engineering Development mission statement, IODP key technologies – including an interactive guide to the three drilling platforms, electronic proposal submission, proposal development and submission guidance, IODP Technology Roadmap, third-party tool webpage, key dates, an overview of current developments, and additional links relevant to engineering development within the IODP. The website is an ongoing effort that will grow and respond to the needs of the IODP community during FY2007.

Engineering Development Proposal Process - A formal Engineering Development Proposal Process was created jointly by IODP-MI and SAS to guide IOs and/or subcontractors through the steps of submitting an Engineering Development proposal - from initial concept to implementation. A draft of the document, including guidelines, process details, and proposal templates is posted on the Engineering Development website ([www.iodp.org/eng](http://www.iodp.org/eng)). Refinements to the document are expected through FY2007 as IODP-MI executes each step of the annual cycle of proposal submission, review, and funding using the newly implemented process.

Third-party Tool Policy Implementation: IODP-MI, SAS, and the Implementing Organizations (IO), has created a guide to implement the Third Party Tool policy to provide consistent oversight of third party tool development activity and to provide guidance to all proponents with tool technology or developments new to the IODP. In FY2006, IODP-MI expanded upon the Third Party Tool policy by providing additional contextual and timing elements to assist proponents, Implementing Organizations, and the SAS in executing this policy. The draft document, “Third Party Tool Policy Implementation Guidelines” is posted on the Engineering Development website. The document will continue to be refined in the upcoming year, incorporating comments as they are received.

## **CDEX**

### **Technical, Engineering and Science Support**

D/V CHIKYU Status - Chikyu's first implementation of riser drilling occurred last August during the Shimokita shakedown cruise in preparation for the launch of the Chikyu's international operations for the Integrated Ocean Drilling Program (IODP). Prior to the cruise, guarantee maintenance for D/V CHIKYU was completed. As part of the cruise objectives, Phases 1 and 2 of the Chikyu System Integration Test (SIT) were completed. This involved: running the riser and blow out preventer (BOP) to the seafloor, conducting Emergency Disconnect Sequence (EDS), installing the casing using the jetting-method and executing cementing procedures, and testing the coring systems in riserless operations mode.

The Shimokita shakedown cruise was also an opportunity for training and for international collaboration. A number of scientists were invited to serve as advisors onboard the Chikyu to provide their comments on laboratory set up and laboratory procedures in order to improve the laboratory conditions and data quality on the ship. Although the scientists stayed on board for a short time, they interacted closely with laboratory staff to advise them while they were handling samples, instruments and data.

## NanTroSEIZE

Planning for the NanTroSEIZE expeditions continued through FY2006. Planning meetings were held in Yokohama and in Seattle, Washington where the Stage 1 schedules for Expeditions 1, 2 and 3 were presented and discussed, updated and sent the OTF for review.

Specific progress made during FY2006 includes:

- Designation of coordinators to define correlation samples among expeditions.
- Call for onboard scientists for all Stage 1 expeditions.
- Publication of an overarching scientific prospectus.
- Completion of the Post-Stack 3D Time Migration (PSTM) processing with 3D Seismic data acquired in the Kumanonada area.

## **Engineering Development**

Long Term Borehole Monitoring System (LTBMS) - The subcontract between IODP-MI and CDEX for the Feasibility Phase of the Long Term Borehole Monitoring System was signed on March 17, 2006. The System Architecture document, part of the feasibility study, was submitted to IODP-MI for external peer review; the EDP reviewed this document during its summer meeting. Responses from the reviewers were sent to CDEX and the System Architecture document was revised accordingly. The High-Level Design document will be finalized in time for the first Engineering Task Force meeting in early October for an additional peer review.

CDEX has included a proposal in IODP-MI's FY07 APP for design and fabrication of the LTBMS. Execution of the design and fabrication stages in FY07 requires successful demonstration of the LTBMS feasibility.

## **ESO (BGS)**

### **Technical, Engineering and Science Support**

#### Arctic Coring Expedition (ACEX), #302

ESO have assisted Texas A&M University as required with finalizing the publication of the ACEX Expedition Results volume.

#### Tahiti Sea Level Expedition, #310

Tahiti Sea Level Expedition cruise lasted 42 days, drilling 1100 m from 37 holes at 26 sites. The total length of core recovered was 632 m. The use of split steel corer without liner improved quality and quantity of recovery.

The Onshore Science Party was successfully held at the University of Bremen IODP Core Repository (BCR) and laboratories. All cores were split, described and sampled, and all minimum and some standard measurements were acquired. All report writing was completed.

All required reports relating to the expedition were submitted, including a report to the Operational Task Force that met last August in Washington, DC, attended by ESO representatives. The Task Force concluded that the expedition was a considerable success and anticipated that the scientific objectives of the expedition will be fully met.

### New Jersey Margin

Planning for New Jersey has continued, and was boosted by the ECORD Council motion in late November encouraging ESO to proceed with tendering as sufficient funds were available. Several responses were received in reply to the tender. At the ESO Management meeting it was decided in view of the responses to the tenders that it was in the best interests of the expedition to postpone the offshore operation until FY2007 for contractual, technical, financial and permitting reasons.

Following further tender assessment, a contract meeting was arranged with the preferred contractor, DOSECC, in July. Substantial agreement was reached on contract details, but, as well as a number of minor issues, three major aspects need to be finalized before a contract can be signed:

- A geotechnical survey needs to be carried out that will satisfy the platform's insurers. It has since been established that this will be performed with cone penetrometer test equipment; additional magnetometer and probably environmental surveys will be carried out at the same time.
- Permits need to be obtained. It has been established that the Minerals Management Service does not need to issue a permit. Work continues to establish any other requirements.
- The platform owners need to confirm the availability of the lift boat. This will not be known until November/December.

In September, Ali Skinner and Iain Pheasant, together with Co-chief Greg Mountain and prospective contractor Dennis Nielson visited a lift boat of the type proposed for New Jersey. The visit was instructive and confirmed the suitability of the platform, with sufficient deck space for all necessary containers, although the accommodation is not ideal. Platform availability has yet to be confirmed. In the meantime planning is progressing on the assumption that drilling will start in May 2007 and continue for up to 90 days.

An independent shallow gas hazard assessment based on existing high-resolution seismic data, safety survey of the site area conducted by Gardline Surveys Ltd, was presented in detail to the EPSP in December. The locations of 2 sites were approved; a third site has been reassessed and awaits final approval.

The two co-chiefs have been confirmed: Greg Mountain (USA) and Stephen Hesselbo (UK). A pre-cruise meeting was held with the co-chiefs in late September; progress was made and a provisional Scientific Prospectus will soon be available

Science Party applications were received from PMOs and invitations have been prepared.

### Other Expeditions

At the June OTF meeting it was agreed that planning should continue for the Great Barrier Reef Expedition with the prospect of scheduling the expedition in the 2008 optimum weather window of September-November. Planning has begun; including an arrangement to meet with relevant permitting authorities in Australia.

### **Engineering Development**

At the third meeting of the EDP in June, ESO was requested to provide its own individual roadmap and to submit development proposals to IODP-MI that will then be reviewed by

EDP. A proposal for a Downpipe Camera system has been submitted to IODP-MI and approval for a feasibility study has now been given by SPC. This feasibility study will start in October with results to IODP-MI by March 2007.

## **USIO (JOI)**

### **Technical, Engineering and Science Support**

Two Integrated Ocean Drilling Program (IODP)-U.S. Implementing Organization expeditions were completed during FY2006: Expedition 311, Cascadia Margin Gas Hydrates, and Expedition 312, Superfast Spreading Rate Crust 3. Expedition 311 provided insight into the formation of gas hydrate deposits, and Expedition 312 achieved a drilling goal long held by scientists. Further research regarding the findings from these expeditions promises even greater understanding of plate tectonics and the formation of ocean crust.

#### **Expedition #311: Cascadia Margin Gas Hydrates**

Building on work completed during Ocean Drilling Program Legs 146 and 204 off the coast of Oregon, the primary objective of IODP Expedition 311 (28 August–28 October 2005) was to constrain geologic models for gas hydrate formation in subduction zone accretionary prisms. A transect of four sites (U1325, U1326, U1327, and U1329) representing different stages in the evolution of gas hydrate across the northern Cascadia margin was cored to study gas hydrate occurrences and formation models for accretionary complexes. In addition to the transect sites, a fifth site (U1328), representing a cold vent with active fluid and gas flow, was investigated. A related objective of Expedition 311 was to characterize the deep origin of methane in the region, its upward transport and incorporation in gas hydrate, and its subsequent loss to the seafloor.

Throughout Expedition 311, special efforts were made to better define the depth of the base of gas hydrate stability. The occurrence of gas hydrate has historically been inferred from the presence of a bottom-simulating reflector (BSR) in seismic images, and gas hydrate occurrence can be documented by a variety of methods. The most obvious and fundamental method is by direct visual observation of cores; however, because gas hydrate, especially disseminated gas hydrate, begins to dissociate and may completely decompose during core recovery, direct visual observation may not be possible. Therefore, indirect or proxy methods related to the physical and chemical consequences of dissociation were used to define this boundary and to compare it to the predicted BSR depth.

During Expedition 311, indirect evidence of the presence of gas hydrate included increased electrical resistivities and *P*-wave velocities on downhole logs and low-salinity interstitial water anomalies, numerous infrared cold spots, decreases in void gas  $C_1/C_2$  ratios, and gas hydrate–related sedimentological moussy/soupy textures in recovered cores. Gas hydrate was also observed directly in the recovered cores, and more than 31 gas hydrate samples were preserved in liquid nitrogen for shore-based studies.

Contrary to established expectations of how gas hydrate deposits form, anomalous occurrences of gas hydrate in high concentrations were found at relatively shallow depths, 50–120 meters below the seafloor. In addition, repeated recovery of high concentrations of gas hydrate in sand-rich sediment layers provides strong support for sediment grain size as a controlling factor in gas hydrate formation. The Expedition 311 science party, supported by IODP, published their peer-reviewed findings, “Gas Hydrate Transect across Northern Cascadia Margin,” in the 15 August 2006 edition of *Eos, Transactions of the American Geophysical Union*.

During Expedition 311, the standard downhole wireline logging program was augmented with a precoring measurement-while-drilling (MWD)/logging-while-drilling (LWD) dedicated logging program, which 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 HYACE Rotary Corer) in addition to providing high-quality downhole measurements used to identify and characterize gas hydrate concentrations. Infrared imaging and some of the pressure coring of hydrate-bearing cores were supported by external funding to Joint Oceanographic Institutions, Inc., from the U.S. Department of Energy's National Energy Technology Laboratory.

In addition to MWD/LWD safety protocols, new health, safety, and environmental protocols were established for specific procedures undertaken during Expedition 311. Recovery of core in hydrocarbon-rich areas required refinement of new data collection and tool string combinations, as well as new approaches to ensure both safe handling and preservation of gas hydrate samples.

Expedition 311 provided, for the first time, direct insight into the evolution of a gas hydrate system along an active continental margin by coring a transect of four sites through the entire region of gas hydrate occurrence in the northern Cascadia margin. Acquired data have yielded a better understanding of the geologic controls, evolution, and ultimate fate of gas hydrate in an accretionary prism as an important contribution to the role of gas hydrate methane gas in climate change and slope stability.

#### Expedition #312: Superfast Spreading Rate Crust 3

IODP Expedition 312 (28 October–28 December 2005) was the third cruise in the multiphase drilling project that began with Ocean Drilling Program Leg 206 and continued with IODP Expedition 309. 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 as a joint science program to deepen the hole by rotary core barrel coring to the maximum depth possible. The primary objective was to drill, for the first time, a complete section of the upper oceanic crust from the extrusive lavas, through the dikes, and into the underlying gabbros. This was the first time gabbros were recovered from intact ocean crust. With the achievement of this objective during Expedition 312, a goal that scientists have pursued for more than 40 years was finally attained. The section of crust drilled during this expedition will provide previously unavailable knowledge about the geological, geochemical, and geophysical structure of the oceanic crust and the processes responsible for its accretion and evolution. The Expedition 309/312 science party, with the support of IODP, published their peer-reviewed findings, "Drilling to Gabbro in Intact Ocean Crust," in the 20 April 2006 edition of *Science*.

Other goals were also met: scientists determined the lithology and structure of the upper oceanic crust for the superfast-spreading end-member, investigated interactions between magmatic and alteration processes, and studied the nature of the melt lens. The presence of granoblastic textures resulting from contact metamorphism of the lowermost ~50 meters of dikes by intrusion of underlying gabbros evidences a type of metamorphism that has previously been described only locally in ophiolites; this discovery constitutes an important new finding.

Expedition 312 results, coming from the structural heart of Pacific crust, confirm ideas from seismologic interpretation about how fast-spreading oceanic crust is built, refine scientists' understanding of the relationship between seismic velocity and crustal rock composition, and

open new perspectives for investigating the origin of lower oceanic crust. IODP scientists believe that drilling deeper into the unearthed magma chamber will bring additional revelations.

#### Other Expeditions

**Expedition #307 - Porcupine Carbonate Mounds** - A core description party was held at the BCR in to describe cores from Holes U1317B, U1317C, and U1317E that had been frozen and split. The sampling party immediately followed.

**Equatorial Pacific 1 and 2** - Interaction was initiated with the primary proposal proponent for development of a science and operation summary to accompany a call for applications. A proposed timeline for staffing was submitted to the IODP-MI and the Program Member Offices (PMOs) for comments, with a call for applications to be released in the first quarter of FY2007.

**NanTroSEIZE 1 and 2** - Operational and engineering planning and preparations are under way. A call for applications was released on 4 August 2006, with nominations due to the USIO by 1 November 2006.

**Juan de Fuca Hydrogeology 2** – Preliminary design work is under way on a CORK II to be deployed on the Juan de Fuca Hydrogeology 2 Expedition. The casing seal design was completed and put out for bid and a test fixture for the casing seal was designed; parts for both were put on order, with delivery expected in the first quarter of FY2007.

### **Engineering Development**

During FY2006, the USIO participated in the development of the IODP engineering technology roadmap while continuing to work on engineering and analytical developments in support of Phase 1 and Phase 2 operations.

Expedition-Related Tools - Development of several tools in support of FY2006 USIO expeditions was undertaken by the USIO. Work in support of Expedition 311 included installing two temporary laboratory vans on the *JOIDES Resolution*, as well as making special adaptations for pressure coring tools to meet the expedition's science objectives, including design and implementation of a 3 meter vertical ice bath mounted in the moonpool to stow pressurized core barrels after recovery, fabrication and use of aluminum core barrels and pressure housings for the pressure core sampler to allow X-ray logging under pressure, and deployment of a special boom crane to quickly and safely lift pressurized cores from the rig floor to the refrigerated van on top of the lab stack.

In addition, the USIO began design work on engineering developments for USIO Phase 2 expeditions, including a stacked advanced circulation obviation retrofit kit (CORK)/CORK II to be installed in a single borehole on the NanTroSEIZE 2 expedition and on a CORK II to be deployed on the Juan de Fuca Hydrology 2 expedition.

### Measurements and Testing

*Simulated Borehole Test Facility* - The Simulated Borehole Test Facility at Texas A&M University was relocated and refurbished, and research, design work, and testing of the consolidation chamber were accomplished. The Borehole Test Facility at Lamont-Doherty Earth Observatory was enhanced in preparation for Phase 2 with the purchase of shock testing capabilities, a supplement to existing temperature and pressure autoclave testing

capabilities, to simulate stresses that most wireline and core-mounted downhole tools endure during deployment at sea.

*Natural Gamma Measurement System* - A new natural gamma measurement system was designed that will meet shipboard measurement requirements despite time constraints and provide data needed for the correlation of core and downhole measurement data. In addition, a conceptual plan was created for development of multiple core loggers that will use the same Common Instrument Interface, motion control hardware, and software architecture. The loggers currently being constructed or refurbished include an enhanced whole-round multisensor logger that will implement the existing gamma ray attenuation, magnetic susceptibility, *P*-wave velocity, and resistivity sensors; a new section-half visual light line scan imager; and an upgraded section-half multisensor logger that will allow simultaneous use of a reflectance spectrometer and a point magnetic susceptibility sensor.

*Modular High-Temperature Tool* - The modular high-temperature tool (MTT) development progressed well during FY2006. The tool was assembled and subjected to 250° C temperatures at the LDEO facility for six hours and it is expected that the tool will be able to handle even higher temperatures or longer durations. All components successfully pressure tested to 10,000 psi in the LDEO pressure vessel. The first field test of the modular high-temperature tool (MTT) was completed. The memory version of the tool was assembled and tested in the LDEO test borehole to 250 meters below the land surface. The sensors and data acquisition subsystem performed very well, with all data being recorded and reasonable measurements made. Battery life for the MTT was empirically verified to be between 24 and 36 hours, more than enough for 1–2 standard logging runs. Two MTT interface modules have been manufactured. Testing and modifications are ongoing.

*Downhole Sensor Sub* - A meeting was held at APS Technology in Connecticut to determine the go-forward plan for the Downhole Sensor Sub (DSS). APS Technology will repair the tools and make them ready for IODP-USIO acceptance testing. APS Technology repaired the DSS tools but had some setbacks while trying to make the tools ready for testing. The bond between the strain gauges and the tool body had deteriorated and the strain gauges needed to be reset. APS has selected a new epoxy and is in the process of repairing the tools, which are scheduled for delivery to IODP in mid-November 2006. A new test date at Schlumberger's Genesis rig has not yet been scheduled.

*Common Downhole Data Logger* - Preliminary design of the common downhole data logger was completed in FY2007. Evaluation boards for critical components were purchased, and testing began. Evaluation of the feasibility of using existing Persistor software architecture is in progress.

*Common Bottom-Hole Assembly* – Resources were not available for the development of this technology; allocated funds for FY2006 common bottom-hole assembly development were returned to the funding agency.

*Pulsed-Telemetry Module* – It was decided that the appropriate path forward to advance this technology is to perform a feasibility study to be completed in FY2007; allocated funds for FY2006 PTM development were returned to the funding agency.

## **CORE CURATION**

### **IODP-MI**

IODP-MI personnel worked with representatives from the USIO and CDEX to develop shipboard and shore-based curatorial training plans for new Kochi Core Center curatorial personnel (see USIO - Curatorial Training)

### **DSDP/ODP Core Redistribution Project**

IODP-MI personnel worked with curators from the USIO, Bremen, and CDEX to refine timelines for the DSDP/ODP Core Redistribution Project. These timelines are posted on the IODP website with regular core movement updates (provided by the curators) posted on the IODP website (<http://www.iodp.org/core-redistribution-plan/>).

### **Bremen Core Repository**

Bremen Core Repository (BCR) experienced a very busy year, with activities including one “traditional” sampling party (Exp. 307, 10-15 Oct. 2005 – 10,347 samples), and the second IODP MSP Onshore Science Party (Exp. 310 – Tahiti Sea-level, 13 Feb. - 3 Mar. 2006 – 11,882 samples). A total number of almost 55,000 samples were taken at the BCR for more than 240 requests during this fiscal year, including standard operations and the sample/science parties. The work involved with the Expedition 307 cores was somewhat more intensive than usual sample parties. Around 20 sections of core were sent to Erlangen unsplit for CT scanning as whole-rounds. They were forwarded to BCR before the sample party began; they were then frozen (due to abundant presence of large coral pieces) and split at BCR. This process destroyed the liners, so the material had to be carefully transferred to new liners before sampling could be carried out. The Tahiti Science Party was also unusually work-intensive because all the coral samples had to be sawed.

### **DSDP/ODP Core Redistribution Project**

The DSDP/ODP Core Redistribution project began during FY 2006; BCR received the first cores from the ECR on 16 August, 2006. To date BCR has received three containers of core and one container of residues. The cores have all been racked, but the thousands of residue samples require extensive work involving organization by leg and adaptation and input into our existing residues database system.

A summary of BCR activities for FY 2006 is included as Appendix 2.

### **USIO**

### **DSDP/ODP Core Redistribution Project**

The DSDP/ODP Core Redistribution Project ensures that the entire collection will be housed at the following IODP core repositories: the Bremen Core Repository (BCR) at University of Bremen, Germany; the Kochi Core Center (KCC) at Kochi University, Japan; and the Gulf Coast Repository (GCR) at Texas A&M University, United States. In the IODP geographic distribution model, the BCR will house 135 kilometers of DSDP and ODP core and all IODP core collected in the Atlantic and Arctic Oceans north of the Bering Strait; the KCC will house

83 kilometers of DSDP and ODP core and all IODP core collected from the Pacific Ocean (west of the western boundary of the Pacific plate), the Indian Ocean (north of 60°S), and all of the Kerguelan Plateau; and the GCR will house 106 kilometers of DSDP and ODP core and all IODP core collected from the Pacific Ocean (Pacific plate east of western boundary), the Caribbean Sea and Gulf of Mexico, and the Southern Oceans (south of 60°S except the Kerguelan Plateau). The plan calls for closure of the ODP East Coast Repository (ECR) at Lamont-Doherty Earth Observatory of Columbia University and the West Coast Repository (WCR) at Scripps Institution of Oceanography, University of California, San Diego.

The DSDP/ODP Core Redistribution Project is divided into four main projects:

- Purchasing supplies and equipment and securing labor at all repositories;
- Redistributing core to the BCR;
- Redistributing core to the KCC; and
- Redistributing core to the GCR.

The USIO worked with the other implementing organizations to refine the proposed schedule for execution of the DSDP/ODP Core Redistribution Project. Because the BCR was fully staffed and equipped to receive core, after project approval the USIO first undertook the tasks of packing and shipping cores from the ECR to the BCR.

At the initiation of the project, the original schedule for shipping core containers from the ECR to the BCR was posted on the IODP-MI Web site in order to keep the IODP science community informed of the availability of cores for sampling. Information on current and upcoming activity for the repositories that are closing, cores that are currently being packed or in transit, and cores that are ready for sampling at their new location is routinely updated.

### **Curatorial Training**

Because standardized training of curatorial staff on IODP curation procedures is critical to the successful operation of the three IODP repositories, the USIO worked with representatives from IODP Management International, Inc. (IODP-MI), and the Center for Deep Earth Exploration (CDEX) to develop a training plan for new KCC curatorial staff in preparation for the next task in the DSDP/ODP Core Redistribution Project timeline: the transfer of legacy cores to the KCC.

The USIO developed training requirements and details of the implementation plan and hosted CDEX staff at the GCR and WCR for one week at each repository, providing training in curatorial procedures, policy, and repository management. USIO curatorial staff also sailed on the *CHIKYU* shake-down cruises in the summer of 2006 to provide shipboard advice on core flow and curatorial techniques and procedures and visited the KCC.

## DATA MANAGEMENT

IODP-MI data management expanded in FY2006 to include a number of important activities. The first half of the year dealt with the continued development of the new SSDB and the request for proposal (RFP) for Phase I of the Scientific Earth Drilling Information Service (SEDIS).

A Data Management Task Force composed of external data management experts was created to help (by e-mail) refine the SEDIS Phase I requirements. Following the RFP and proposal assessment procedure, the MARUM Group was selected in late FY2006 (out of four competitive proposals) as the subcontractor to develop Phase I during FY2007.

IODP-MI worked with the IOs in developing common terminology for all the scientific measurements taking place during an expedition. IODP-MI finalized the IODP Measurement document and chaired 3 meetings at the end of the FY at TAMU dealing with terminology related to Depth Scales, Lithology and Paleontology.

IODP-MI presentations at two major international conferences (AGU in December 2005 and EGU in April 2006) provided the geoscience community with information about IODP-MI's plan regarding data management and more particularly about SEDIS Phase I.

IODP-MI also initiated the creation of a new proposal database that will provide more advanced tools for IODP-MI to manage and track drilling proposals and link them to site survey data. The proposal data base will be ready in FY2007. An associated feature, the MATRIX, aimed at helping proponents to determine the need for site survey data, is also planned for FY2007 delivery.

IODP-MI is preparing an RFP for SEDIS Phase II (Publications catalog) in FY2007 and to complete requirements for SEDIS Phase III (advanced distributed data search and visualization tools).

In summary, IODP-MI has been involved in following projects /activities:

- IODP-MI chaired a second J-CORES test (Kochi, January 2006)
  - <http://www.iodp.org/data-management-coordination-group/>
- Data Management Coordination Group meeting (Kochi, February 2006)
  - <http://www.iodp.org/data-management-coordination-group/>
- Creation of the Sample Materials Curation System (SMCS) requirements with all the IOs. The USIO is currently developing the system
  - [http://millstone.iodp.tamu.edu/wiki/index.php/SMCS\\_project](http://millstone.iodp.tamu.edu/wiki/index.php/SMCS_project)
- Creation of a Data Management Task Force (DMTF) consisting of external expert members and IODP-MI staff with IOs liaisons. The DMTF provides advice about data management issues to IODP-MI projects
  - <http://www.iodp.org/data-management-task-force/>
- Creation of the Scientific Earth Drilling Information Service (SEDIS) Phase I

- <http://sedis.iodp.org>
- Creation of the IODP metadata draft profile (ISO 19115 and 19139 compliant) and IODP metadata guide
  - <http://sedis.iodp.org/metadata/index.html>
- Creation of the IODP measurements in collaboration with STP
  - [http://www.iodp.org/index.php?option=com\\_docman&task=doc\\_download&gid=1195](http://www.iodp.org/index.php?option=com_docman&task=doc_download&gid=1195)
- Creation of the draft SEDIS Phase II and III requirements
- Creation of the IODP user registry
- Creation of the new proposal database requirements. First version being tested now.
- Creation of the MATRIX prototype and requirements for site survey data expectation with site characterization.
- Maintenance of a database of all DSDP, ODP, IODP drilled hole locations and IODP proposed drilled sites and link to their respective data and publications. Display results using Google Earth
  - [http://campanian.iodp-mi-sapporo.org/google/iodp\\_doc.kml](http://campanian.iodp-mi-sapporo.org/google/iodp_doc.kml)
- Participation at the Corewall workshop (May 2006)
  - <http://www.evl.uic.edu/cavern/corewall/publications.php>

## PUBLICATIONS

IODP-MI Publications activities in FY2006 included:

- 1) Publication of the program journal *Scientific Drilling*;
- 2) Oversight and coordination of program reports and proceedings;
- 3) Implementation of publication policies and procedures, and;
- 4) Planning and preparation for further integration of publications and data management

The bi-annual journal *Scientific Drilling* that was launched jointly with the International Scientific Continental Drilling Program (ICDP) in September 2005 features articles about ongoing and finished drilling projects, as well as reports on technical developments and program outlook. In 2006 several smaller drilling projects have been featured with reports, including Shaldrill, Andrill and others. Over the course of the year Issues No. 2 and 3 were published.

6,500 copies were printed of No. 2; 7,200 copies were printed of No. 3. The distribution schema received a complete work over in 2006. It is now kept in a database, allowing IODP-MI as well as the subscribers to edit their data directly over the web. It is also prepared to tie in with an upcoming registry database being developed in 2007. Since Issue No. 3, the subscribers are required to update their addresses at least once every three years, otherwise their subscription expires. A part-time consultant is copy-editing *Scientific Drilling*.

Planning and preparation for the two regular issues of *Scientific Drilling* and one special issue in FY2007 were also conducted in FY2006. These issues will include workshop reports from IODP FY2006 workshops including a special issue with extended abstracts from the IODP/ICDP Fault Zone Workshop held in Miyazaki, Japan in May 2006. The regular No. 4 and 5 issues of *Scientific Drilling* will be printed in respectively March and September 2007.

Two preliminary reports and seven IODP Proceedings volumes have been published electronically on the Web in html and PDF formats in FY2006. In addition, seven IODP Proceedings DVDs have been produced covering a total of nine IODP expeditions. For all of these publications DOIs have been registered by IODP-MI with Crossref. The distribution of the DVDs has been clarified with the Lead Agencies, resulting in the decision to distribute the DVDs free of charge to public and institutional libraries. A distribution schema has been worked out in early 2006, ensuring broad coverage of IODP publications throughout as many relevant libraries as possible.

Also in FY2006 (ODP) TAMU decided to digitize legacy volumes from DSDP and ODP legs, to make them available online. IODP-MI has been working with TAMU, developing a simple Web interface, to enable registration of DOIs for these legacy publications.

During the year IODP-MI also took steps to coordinate production of program publications between the three IOs. Final production of IO-generated program publications will in IODP Phase 2 be done by the USIO TAMU publication department based on IO generated manuscripts. This production model implies that the post expedition meeting for all three IOs will take place at TAMU, at least until FY2009. Also, traditionally the publications in IODP had been made accessible on the webpage of the specific IO that conducted the expedition. However, for IODP Phase 2, IODP-MI in FY2006 decided to move all IODP publications to a generic web server, acting as a central publication repository effective from early 2007. This will simplify publication process and present the IODP publications in a uniform fashion.

IODP-MI is also coordinating preparation and production of publications among the IOs. To facilitate the above initiatives, several videoconferences and meetings were held to discuss and agree upon publication standards, and uniform handling of publication specific tasks among the IOs. This is in particular important as the upcoming NanTroSEIZE expeditions will produce material for common publication on different platforms, overseen by staff scientists trained at different institutions.

Finally, as IODP publications are almost exclusively electronic now, IODP-MI is planning to make better use of the possibilities this decision opens. In the future it is planned to offer enhanced search capabilities, improved links to references and related data. To facilitate this, it requires a better tie between publications and data management, with decisions about data storage, search engines, and indexing. IODP-MI is working on plans to store publications in standard XML format, to get a better handle on the publication as a data item. These plans will be continued and refined in 2007, and overlap in large parts with the development of SEDIS II outlined in the data management section.

Related to publication policies, IODP-MI in FY2006 created the Expedition Science Communication Task Force to address (by e-mail) issues of: (1) Publication during the expedition moratorium period of IODP findings in high impact, fast-tracking journals imposing temporary publication embargos on the program; (2) how to maximize the distribution and impact of scientific discoveries on the science community as well as on the broader public; and (3) integration of the scientists in the news release process.

## LOGGING

### ESO (BGS)

The Montpellier group of the EPC carried out the downhole logging for the Tahiti Expedition using slimhole equipment. The results have proved excellent, and the borehole imaging in particular was spectacular. The logging results from Tahiti were presented at the Bremen Onshore Science Party, where a range of petrophysical measurements were carried out on the cores. Post-cruise processing of the Tahiti logging data has continued, particularly linking drilling parameters to the logging results.

Planning for the New Jersey Sea Level Expedition has been continuing, and an advertisement is to be placed in the Official Journal of the European Union alerting potential contractors to this expedition.

### USIO

The USIO headed the Logging Consortium for riserless activities and worked with members to coordinate cross-platform logging activities and ensure the highest degree of compatibility among the platforms. In addition, the USIO and ESO began discussions regarding archiving logging data collected on mission-specific expeditions. ESO will provide data files and metadata that adhere as closely as possible to those used by the USIO, which will allow reuse of existing data management scripts and a common Web interface for both the USIO and ESO data sets.

### **Expedition 311: Cascadia Margin Gas Hydrates**

A transect of five sites across the northern Cascadia margin was cored during Expedition 311 (which commenced in the last quarter of FY05). Sites U1325, U1326, U1327, and U1329 represent 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 in shallower water on the margin (Site U1329).

Hole A at each site was drilled and logging while drilling/measurement while drilling (LWD/MWD) was conducted at the start of the expedition (prior to coring), which provided a set of measurements that guided subsequent coring and special tool deployments at all five sites. Additional wireline logging at each site and two vertical seismic profiles (VSPs) at Sites U1327 and U1328 were completed. A total of 1217.76 m of sediment core was recovered using the advanced piston corer (APC) and extended core barrel systems, interspersed with 24 (16 successful) pressure core sampler (PCS) runs for onboard degassing experiments and 19 Fugro piston corer (FPC)/Hydrate Autoclave Coring Equipment (HYACE) rotary corer (HRC) deployments. Four of the pressure cores were stored under in situ pressure for subsequent shore based studies.

Note: this expedition required special aluminum core barrels and pressure housings that were fabricated for the IODP PCS to allow X-ray logging under pressure.

### **Expedition 312: Superfast Spreading Rate Crust 3**

This was the third cruise in a multi-phase drilling project to ODP Site 1256 in the eastern equatorial Pacific. The main goal of recovering a complete section of upper oceanic crust from lavas through underlying dikes and into uppermost gabbros was successfully accomplished.

During the expedition, the logging operation plan was refined and scheduled to take place at the end of the expedition after drilling and coring were completed. A total of six tool strings were deployed and high-quality data were obtained during each run. The logged sequences represent sheeted dikes and gabbros, and the maximum depth reached 1440 mbsf, which was 67 m above the total cored depth of 1507 mbsf. Each tool string included a gamma ray tool to enable later depth matching between each logging run. In addition, the decision was made to use the air gun in “harmonic mode” for the check shot survey. This modification of the air gun and the deployment at 7 meters below sea level (mbsl) during the check shot survey enabled the collection of a high-quality VSP. The deepest station for the survey was at 1382 mbsf.

### Processed Logs

Logging data have been processed and put online under moratorium (with accompanying documentation) for the following holes: Hole 642E, Expedition 306 (temperature); Hole 1256D, Expedition 309 (temperature); Hole U1305C, Expedition 303 (temperature); Hole U1309D, Expedition 305 (temperature); Hole U1317D, Expedition 307 (temperature); Hole U1325C, Expedition 311 (standard data, temperature); Hole U1326C, Expedition 311 (standard data); Hole U1327D, Expedition 311 (standard data, temperature); Hole U1327E, Expedition 311 (standard data); Hole U1328C, Expedition 311 (standard and image data); Hole U1329D, Expedition 311 (standard and image data, temperature).

## EDUCATION AND OUTREACH

IODP-MI successfully completed initiatives during FY2006 in five areas: web development, outreach to scientists, video production, intra-program coordination, and media relations.

### Web Development

- Presented IODP web portal as exhibition booth centerpiece at AGU booth: provided “Top 10 IODP Online Destinations;” (see appendix) facilitated onsite subscriptions to *Scientific Drilling* and *IODP E-News*; provided tutorials on how to use the search engine, how to access the public work rooms, and how to navigate the site.
- Implemented new tracking/measurement device on IODP server to provide better monthly web statistics on visitation to the IODP web portal. New **monthly traffic data** revealed counts (as of Dec. 2005) of:
  - a. Total hits to the site: 84,113 (excluding back-end administration)
  - b. Hits to the home page: 14,058 (accounts for 31 percent of visits)
  - c. Average time the home page is viewed: 3 minutes and 47 seconds
  - d. Number of page views the ten most requested pages total: 44,853
  - e. Number of unique users: 4,494
  - f. Number of users who visited once: 3,164 (the biggest group of users)
  - g. Number of users who visited more than once: 1,330
  - h. Expeditions, ship/platforms, scientific publications and news releases retain highest percentages of visitation;
  - i. Most active day of the week: Tuesday
  - j. Number of hits on most active day (Dec. 20—post AGU 05): 18,319
  - k. Number of hits on least active day (Dec. 31): 3,351
  - l. Number of times Google referred users to the site: 551

- Pro forma work rooms were opened online for EDP and the Web Working Group.
- An ftp site was added to the IODP server, enabling IODP-MI to externally provide and/or exchange large graphic and data files.
- Contracted MadWolf Technologies to undertake IODP web site upgrade to implement new points of entry for targeted audiences, for implementation by late fall '06. Each doorway is to offer “clutter-free,” customized content to each target audience.
- Created and uploaded to web portal biographical summaries and photos for the Board of Governors.
- Wrote new integrated media request form for journalists that intakes deadline information and collateral needs, including requests for ship visits, interviews, program materials. Once coded on web portal, media requests will come to IODP-MI Communications and then be forwarded to respective IO(s) for action.

### **Outreach to Scientists**

- Produced and distributed six editions of *IODP E-News*, plus one special edition distributed on NanTroSEIZE.
- Distributed inaugural issue of *Scientific Drilling* to scientists and libraries in North America. Produced flyer to promote free subscription to journal, distributed at AGU and other large international science meetings.
- Cosponsored and mounted IODP exhibition booths at four venues: AGU, EGU, JPGU, and AOGS. Presented IODP expeditions, the *Chikyu*, the new drilling journal, and the web portal; the latter two as science resources.
- Coordinated and presented Town Hall Meeting at AGU for approximately 300 scientists. Co-promoted Town Hall Meeting at EGU.
- Provided IODP materials to additional groups of scientists: to USSSP, to 11th International Conference of Radiolarian Researchers held in New Zealand, to the EuroForum, and the UCSC Seymour Marine Discovery Center.
- Advertised IODP proposal submission deadlines, planning workshops, RFP for SEDIS development, and call for NanTroSEIZE applications in *Eos*.
- Produced video production of Tahiti Sea Level Expedition 310 shown at IODP booth at EGU. Video was also uploaded to IODP web portal, viewable at [www.iodp.org/audiovisual](http://www.iodp.org/audiovisual), (IODP Climate Research: Tahiti Sea Level Exp. 310). More than 100 DVDs were distributed to ESSAC and ECORD Council members.

### **Public Outreach/Video Production**

- Finalized written agreement with Smithsonian Institution National Museum of Natural History on specifications of video exhibition that IODP-MI would deliver to the museum for use in the Oceans Hall exhibition, to open on Sept. 29, 2008. The agreement includes production and delivery of four “IODP minutes” –three on science achievement and one an overview of the current IODP scientific ocean drilling program.
- Contracted with Richfield Productions for the following scope of work: creation of a push-button b-roll fulfillment center in response to the growing volume of requests for IODP footage from commercial television production networks; technical production of

the Smithsonian video “minutes.” Began the project by completing videotaping with two Ocean Hall interview subjects: Karen Bice of Woods Hole on black shales and extreme climates, and Jan Backman of Stockholm University on Arctic Coring Expedition and climate change; Planned third video production session with Robert Duncan at Oregon State University on large igneous provinces.

- Conducted videotaped interviews with key NanTroSEIZE scientists to amass archival footage for use in editing of future IODP feature-length video and NanTroSEIZE news video to be released/distributed in late FY07 and early FY08.

### **Intra-Program Communications**

- Produced, and distributed *IODP Brand Standards Guidelines* and *IODP Editorial Style Guide* to establish recognizable IODP “brand” and to improve graphic and editorial consistency among all IODP program partners who produce IODP materials for web sites and print.
- Convened E & O Task Force in Hachinohe, Japan, which included a visit to the *CHIKYU* for key outreach principals. Agenda emphasized E & O strategies and protocols to integrate program outreach. Also visited JAMSTEC in Tokyo and Yokohama to give presentations to scientists about IODP.
- Wrote discussion paper to support Education and Outreach discussion at Management Forum.
- Helped coordinate first IODP Day in Salt Lake City, providing support to IODP-MI president.
- Supported editorial team of *Scientific Drilling* with art direction and copy editing (inaugural issue).
- Drafted text and collected new photos and images for upcoming program brochure(s). Selected graphic designer; began text review process within IODP community.
- Wrote recommendations regarding future IODP international news release and circulated them to IO and PMO outreach specialists.
- Established exhibition loan program for IOs: Lent booth structure to USIO for exhibition at science teachers’ conference; lent booth structure to CDEX for use in Japan.
- Helped recruit second Program Assistant to IODP-MI Washington office.
- Planned third IODP-MI E & O Task Force meeting in Bremen; sent out logistics and meeting agenda to participants.
- Selected vendor to build updated exhibition booth for IODP.
- To fulfill E & O TF recommendation, consulted several external public relations agencies in connection with international promotion of NanTroSEIZE launch. Reviewed proposals from three companies.

### **Outreach to Media/Other Information Request Fulfillment**

- Provided informational responses to 66 requests generated through the web portal and *E-News* from scientists, teachers, students, and others for program material, including requests for slides, photos, DVDs, speech material, graphs, language for attribution, permissions to publish, the ISP, brand standard guidelines, posters, etc.

- Coordinated implementation of communications plan for Cascadia Margins Gas Hydrates Expedition: coordinated network of outreach specialists for collaboration; provided media information kits for press event during port call; coordinated release of final Cascadia Margins news release.
- Worked closely with ESO to implement communications plan for Tahiti Sea Level Expedition: provided input on plan, drafted news release, produced video b-roll of science party at Bremen for eventual use in outreach, distributed news worldwide in multiple languages, attended and helped coordinate news conference at Bremen.
- Released 11 news stories in coordination with IODP program partners:
  - a. “Frozen Natural Gas Discovered at Unexpectedly Shallow Depths Below Seafloor (8/21/06)
  - b. ACEX Continues to Yield New Clues about Climate Change (8/9/06)
  - c. South Korea Joins IODP (6/21/06)
  - d. Ocean-Drilling Scientists Cite History of Arctic climate Change (5/21/06)
  - e. Scientists Penetrate Fossil Magma Chamber Beneath Intact Ocean Crust—Achieving Scientific “First” (4/20/06)
  - f. IODP Scientists Acquire “Treasure Trove” of Climate Records off Tahiti Coast (3/2/06)
  - g. Revered Scientific Drilling Ship Gets Extreme Makeover (12/21/05)
  - h. Japan Reports First Coring Operations of CHIKYU (12/15/05)
  - i. IODP Announces NJ Margin Mission-Specific Expedition (12/06/05)
  - j. Scientists Gain New Insights Into “Frozen” Methane From Beneath Ocean Floor (10/31/05)
  - k. IODP Tahiti Sea Level Exp. Examines History of Global Sea Level Change, El Nino Events (10/07/05)
- Worked directly with major news outlets to place stories about IODP: Discovery TV (2 programs), History Channel, BBC, *Le Monde*, Pitch (Dutch monthly), Associated Press, Italian TV, *Popular Mechanics*, *GeoDrilling International*, *New York Times*/CBC TV, Danish TV, ABC News, *Science et Vie*, German TV, PBS, *GEOTimes*, National Public Radio, among others.
- Promoted new IODP/ICDP drilling journal: Sent 250 copies of new drilling journal (*Scientific Drilling*) to journalists (D.C.-based foreign press, science writers at magazines, daily newspapers, network broadcast outlets, radio and television) to introduce them to the new publication.
- Provided information kits to media at AGU, attracting new media representatives to IODP content.
- On a weekly basis, collated and posted a total of 231 news articles (i.e. News Update) about IODP activities and scientific ocean drilling to key IODP stakeholders; plus, gathered links to another 170 news articles in major media worldwide about ACEX. The latter material was collated and posted online at [www.iodp.org](http://www.iodp.org).

## IODP-MI ANNUAL REPORT DISTRIBUTION LIST

J. Allan, NSF                      R. Batiza, NSF  
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