

# IODP Science Planning Committee

6<sup>th</sup> Meeting, 25-28 October 2005

Campus Plaza Kyoto  
Kyoto, Japan

## *Science Planning Committee - SPC*

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Keir Becker (chair)	Rosenstiel School of Marine & Atmospheric Science, University of Miami, USA
Barbara Bekins	U.S. Geological Survey, USA
Hans Brumsack	Institute for Marine Chemistry and Biology (ICBM), University of Oldenburg, Germany
Tim Byrne	Department of Geology and Geophysics, University of Connecticut, USA
Mike Coffin*	Ocean Research Institute, University of Tokyo, Japan
Bob Duncan	College of Oceanic & Atmospheric Sciences, Oregon State University, USA
Patricia Fryer	Hawaii Institute of Geophysics, University of Hawaii, USA
Benoît Ildefonse	Laboratory of Tectonophysics, ISTEEM, University of Montpellier II, France
Hodaka Kawahata	Geological Survey of Japan, Japan
Hiroshi Kitazato	Institute for Research on Earth Evolution (IFREE), JAMSTEC, Japan
Chris MacLeod*	Department of Earth Sciences, Cardiff University, United Kingdom
Harue Masuda	Department of Geosciences, Osaka City University, Japan
James Mori (vice-chair)	Disaster Prevention Research Institute, Kyoto University, Japan
Greg Mountain	Department of Geological Sciences, Rutgers University, USA
Ritsuo Nomura	Faculty of Education, Shimane University, Japan
Julian Pearce <sup>a</sup>	Department of Earth Sciences, Cardiff University, United Kingdom
Rolf Pedersen	Department of Earth Science, University of Bergen, Norway
Terry Quinn	College of Marine Science, University of South Florida, USA
Tetsuro Tsuru <sup>b</sup>	Institute for Research on Earth Evolution (IFREE), JAMSTEC, Japan
Hiroyuki Yamamoto	Department of Marine Ecosystem Research, JAMSTEC, Japan
Zuyi Zhou	Department of Marine Geology and Geophysics, Tongji University, China

<sup>a</sup>Alternate for Chris MacLeod.

<sup>b</sup>Alternate for Mike Coffin.

\*Unable to attend.

## *Liaisons, Guests, and Observers*

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Naokazu Ahagon (J-DESC)	Department of Earth Science, Hokkaido University, Japan
Jamie Allan	National Science Foundation (NSF), USA
Jack Baldauf	JOI Alliance, Texas A&M University, USA
Donna Blackman (Ex 304/305)	Scripps Institution of Oceanography, University of California, San Diego, USA
Carl Ebeling	U.S. Science Support Program, Joint Oceanographic Institutions, Inc. (JOI), USA
Dan Evans	ECORD Science Operator (ESO), British Geological Survey, United Kingdom
Gabriel Filippelli (USAC)	Department of Geology, Indiana University–Purdue University Indianapolis, USA
Jun Fukutomi	Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Holly Given	U.S. Science Support Program, Joint Oceanographic Institutions, Inc. (JOI), USA
Hisao Ito	Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Tom Janecek	IODP Management International, Inc., Washington, D.C. Office, USA
Barry Katz (EPSP)	Energy Technology Company, Chevron, USA
Kenji Kimura	Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan
Shin'ichi Kuramoto	Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Hans Christian Larsen	IODP Management International, Inc., Sapporo Office, Japan
Federica Lenci	ESSAC Office, Department of Earth Sciences, Cardiff University, United Kingdom
Zhifei Liu (IODP-China)	Department of Marine Geology and Geophysics, Tongji University, China
Catherine Mevé	ECORD Managing Agency (EMA), Paris Geophysical Institute (IPGP), France
Makoto Okada (STP)	Department of Environmental Sciences, Ibaraki University, Japan
Yoichiro Otsuka	IODP Management International, Inc., Washington, D.C. Office, USA
Nick Pisias (SPPOC)	College of Oceanic & Atmospheric Sciences, Oregon State University, USA
Hajime Saga	Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Takehiro Sasayama	Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan
Jeff Schuffert	IODP Management International, Inc., Sapporo Office, Japan

Roger Searle (SSP)	Department of Earth Sciences, University of Durham, United Kingdom
Rüdiger Stein (SSEP)	Geosciences Research Division, Alfred Wegener Institute, Germany
Noriyuki Suzuki (J-DESC)	Department of Earth Science, Hokkaido University, Japan
Manik Talwani	IODP Management International, Inc., Washington, D.C. Office, USA
Yoshiyuki Tatsumi (SPPOC)	Institute for Research on Earth Evolution (IFREE), JAMSTEC, Japan
Mike Underwood (SSEP)	Department of Geological Sciences, University of Missouri, USA
Tetsuro Urabe (Ex 301)	Department of Earth and Planetary Science, University of Tokyo, Japan
John Walter	National Science Foundation (NSF), USA
Minoru Yamakawa	Advanced Earth Science and Technology Organization, Japan
Barry Zelt	IODP Management International, Inc., Sapporo Office, Japan

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## FINAL EXECUTIVE SUMMARY

### 1.2. Approve SPC meeting agenda – highlight action items

**SPC Consensus 0510-1:** The SPC approves the agenda of its sixth meeting on 25-28 October 2005 in Kyoto, Japan.

### 1.3. Approve last SPC meeting minutes

**SPC Consensus 0510-2:** The SPC approves the minutes of its fifth meeting on 14-17 March 2005 in Lisbon, Portugal.

### 1.4. Matters decided since March 2005 meeting

**SPC Motion 0505-2:** The SPC appoints Peter Flemings as the new chair of the Engineering Development Panel (EDP), effective immediately.

*Ildefonse moved, Kenter seconded; 17 in favor, none opposed, 2 non-voting (Pearce, Zhou)*

**SPC Motion 0508-1:** The SPC appoints Rüdiger Stein as a new co-chair of the Science Steering and Evaluation Panel (SSEP), effective immediately.

*Coffin moved, Bekins seconded; 14 in favor, none opposed, 3 absent (Byrne, Fryer, Masuda), 2 non-voting (Brumsack, Zhou)*

### 6.2. SPC discussion of IODP management forum report

**SPC Motion 0510-3:** The SPC convenes in an executive session to discuss the mission concept as presented in the IODP management forum report.

*Bekins moved, Brumsack seconded; 16 in favor, 1 abstained (Ildefonse), 2 non-voting (Pederson, Zhou).*

### 8.1.2. Site Survey Panel (SSP)

**SPC Consensus 0510-4:** The SPC accepts the proposal of the Site Survey Panel (SSP) to create a new category for classifying the adequacy of site characterization data.

### 8.1.4. Scientific Technology Panel (STP)

**SPC Consensus 0510-5:** The SPC accepts STP Recommendation 0507-1 on modifying the STP terms of reference to include the task of proposal review. The committee forwards the revised STP terms of reference to the Science Planning and Policy Oversight Committee (SPPOC) for approval.

**SPC Consensus 0510-6:** The SPC accepts STP Recommendation 0507-6 on proposal review and forwards it to the IODP-MI for implementation.

**SPC Consensus 0510-7:** The SPC receives STP Recommendation 0507-3 on quality assurance and quality control (QA/QC). The committee shares the concerns of the STP over cross-platform compatibility of measurements and asks the STP to provide the IODP-MI and the implementing organizations (IOs) with advice about QA/QC issues for data collected by the program. Recommended procedures should address questions of precision, accuracy, standardization, and instrumentation.

**SPC Consensus 0510-8:** The SPC receives STP Recommendation 0507-5 and recommends including two STP members on the Observatories Task Force.

**SPC Consensus 0510-9:** The SPC receives STP Recommendation 0507-8 on defining a biostratigraphic reference standard and completing taxonomic dictionaries. The committee asks the STP to clarify the involvement of the micropaleontology reference centers (MRCs) in these activities and return with a new recommendation.

**SPC Consensus 0510-10:** The SPC receives STP Consensus 0507-4 on the management forum report.

**SPC Consensus 0510-11:** The SPC accepts STP Consensus 0507-5 on a scheme for prioritizing STP recommendations, consensus statements, and action items.

**SPC Consensus 0510-12:** The SPC receives STP Consensus 0507-6 on magnetometer tool development and recognizes the scientific importance of developing a downhole tool that yields information about magnetic inclination and declination. The IODP should continue encouraging the development of these types of tools, and the Engineering Development Panel (EDP) should monitor closely the progress of such developments.

**SPC Motion 0510-13:** The SPC accepts STP Consensus 0507-7 and appoints Makoto Okada and Mike Lovell as the STP chair and vice chair, respectively, for the next two STP meetings. The committee anticipates that the STP vice chair will then replace the STP chair and serve for an additional two years.

*Duncan moved, Ildefonse seconded; 17 in favor, none opposed, 2 non-voting (Pederson, Zhou).*

#### **8.1.5. Engineering Development Panel (EDP)**

**SPC Consensus 0510-14:** The SPC accepts EDP Recommendation 0509-1 on modifying the EDP terms of reference with regard to prioritizing engineering developments for the IODP annual plan and on a longer term. The committee forwards the revised EDP terms of reference to the Science Planning and Policy Oversight Committee (SPPOC) for approval.

**SPC Consensus 0510-15:** The SPC accepts EDP Recommendation 0509-2 on choosing an EDP member to act as a liaison with the Scientific Technology Panel (STP).

**SPC Consensus 0510-16:** The SPC accepts EDP Consensus 0509-1 on adopting a four-stage classification system for engineering development projects and EDP Consensus 0509-2 on the EDP role in reviewing such projects. The committee forwards those consensus statements to the IODP-MI.

## **8.2. Industry-IODP Science Program Planning Group (IIS PPG)**

**SPC Consensus 0510-17:** The SPC appoints Harry Doust as temporary chair for one meeting of the Industry-IODP Science Program Planning Group (IIS PPG). The committee also appoints Ralph Stephen as vice chair of the PPG and expects him to take over as chair after the first meeting. The SPC will consult with the IIS PPG chair and vice chair before approving the remainder of the IIS PPG membership, in addition to those already appointed by the program members.

## **8.3. New PPGs and DPGs**

**SPC Consensus 0510-18:** The SPC accepts the SSEP advice to create a detailed planning group (DPG) for hotspot geodynamics to consider Proposals 620-Full3 Hotspot Seamounts, 636-Full2 Louisville Seamounts, and 669-Pre Walvis Ridge Hotspot, now at the SSEP level of review. These proposals address themes related to hotspot-generated volcanic lineaments, including hotspot motion, with implications for plate-motion reference frames, and secular variability of hotspot melting products, with implications for mantle plume models. The DPG should prepare a plan of drilling, logging, and post-cruise science for optimally addressing the global test of hotspot motion, ideally separating the effects of plume drift due to horizontal advection from those of true polar wander. The committee asks the SSEP to prepare a draft mandate for the DPG, specifying the overall goals, the recommended membership, a timeline, and the final product, before the March 2006 SPC meeting.

**SPC Consensus 0510-19:** The SPC receives the SSEP list of ten suggested program planning groups (PPGs) and requests the SSEP to provide better justification for establishing specific PPGs, including a draft mandate and recommendations for appointing a chair.

## **10. IODP policy development**

### **10.1. Third-party tools**

**SPC Consensus 0510-20:** The SPC receives the draft third-party tools policy. A small SPC working group (Becker and Bekins) will provide feedback to the Scientific Technology Panel (STP) on the draft third-party tools policy before the January 2006 STP meeting. The SPC requests the STP to complete the third-party tools policy before the March 2006 SPC meeting. The committee expects to forward the completed policy to the Science Planning and Policy Oversight Committee (SPPOC) for final approval by June 2006.

## **11. FY2007-2008 expedition schedule II**

### **11.1. Select scenarios to prioritize and approve**

#### **11.2. Prioritize/approve scenarios**

**SPC Motion 0510-21:** The SPC approves the FY2007-08 operations schedule for the *Chikyu* as proposed by the Operations Task Force and derived by the NanTroSEIZE Project Management Team from Proposals 603A-Full2 NanTroSEIZE Reference Sites, 603B-Full2 NanTroSEIZE Mega-Splay Faults, and 603C-Full NanTroSEIZE Phase 3: Plate Interface. The recommended expeditions will begin in September 2007 with NanTroSEIZE Stage 1 non-riser drilling and continue later in 2008 with NanTroSEIZE Stage 2 riser drilling following a period of annual maintenance and further testing. The committee recognizes that these planned operational stages do not correspond directly with the organizational scheme of the individual drilling proposals.

*Mori moved, Fryer seconded; 17 in favor, none opposed, 2 non-voting (Pederson, Zhou).*

**SPC Consensus 0510-22:** The SPC prefers inserting the NanTroSEIZE Stage 1 non-riser drilling option in model 1 for USIO operations in FY2007-08.

**SPC Motion 0510-23:** The SPC approves the FY2007-08 operations schedule of the U.S. scientific ocean drilling vessel (SODV) as proposed in model 2 of the Operations Task Force. The recommended expeditions will begin in August 2007 and proceed as follows:

- Equatorial Pacific Paleogene Transect (Proposal 626-Full2)
- NanTroSEIZE Stage 1 (Proposals 603A-Full2, 603B-Full2, 603C-Full)
- NanTroSEIZE Stage 1 continued (Proposals 603A-Full2, 603B-Full2, 603C-Full)
- Superfast Spreading Crust IV (Proposal 522-Full3) or another expedition identified later
- Juan de Fuca Flank Hydrogeology III (Proposal 545-Full3)

In addition, the committee intends to schedule further non-riser drilling operations in the Southern Ocean (i.e., Proposals 600-Full Canterbury Basin and 482-Full3 Wilkes Land Margin) and the Indian Ocean in the following fiscal year.

*Pearce moved, Ildefonse seconded; 15 in favor, 1 opposed (Quinn), 1 abstained (Mountain), 2 non-voting (Pederson, Zhou).*

**SPC Consensus 0510-24:** The SPC reaffirms the necessity of drilling a three-site transect (MAT-1, -2 and -3) on the New Jersey margin as a requirement to achieve the scientific objectives of Proposal 564-Full New Jersey Shallow Shelf. The drilling of fewer than three sites would compromise the scientific integrity of the project.

## **12. 664-APL Brazos-Trinity Source-To-Sink**

**SPC Consensus 0510-25:** The SPC returns Proposal 664-APL Brazos-Trinity Source-to-Sink to the Science Steering and Evaluation Panel (SSEP) for further nurturing and evaluation.

## **13. IODP long-range planning - action items from agenda items 5 and 6**

**SPC Consensus 0510-26:** The SPC recognizes some advantages associated with the mission team concept; however, the committee identified the following desirable aspects if the program implements this concept. (1) Science themes for compelling missions should be identified and refined by the SAS in consultation with national programs or submitted in unsolicited proposals. (2) The IODP-MI would issue a call for relatively short proposals for new missions with desirable themes that will provide a larger context for outreach on broad Earth science themes. (3) The SSEP will evaluate mission proposals and make recommendations to the SPC. (4) The SPC would evaluate the SSEP recommendations and designate the topics for mission teams. (5) To identify team members, a broad, inclusive, and open process is essential. (6) Mission teams will generate one or more drilling proposals to address the goals of the science theme, with technical assistance from the IOs and the SAS panels. Alternatively, the SAS could assist proponents to reorganize existing proposals into a coherent mission. (7) The program will evaluate mission-team drilling proposals in the same way as all other drilling proposals. Technical assistance may include formulating drilling strategies, locating drilling sites, assembling site survey data, and designing monitoring equipment. (8) A timeline to achieve the mission goals will be formulated. (9) The mission teams will be evaluated on a regular basis (annually).

It is important to note that some proposals created using this strategy will not succeed. In summary, the SPC wishes to make a final decision on this issue at its March 2006 meeting. The SPC looks forward to an ongoing dialogue in the community before the program

implements this concept. During this period, the SPC requests guidance from the SSEP on all aspects of the plan, including (a) the definition and desirable outcomes of a mission, (b) possible science topics, (c) the format of mission proposals, (d) the composition of mission teams, (e) a timeline for mission planning, and (f) clarifying how the mission concept relates to PPGs, DPGs, and CDPs and whether it should replace PPGs or DPGs. The SPC also requests information from the IODP-MI and the program member offices on plans for integrating community discussion and comments (e.g., town hall meeting at AGU), the resources available to mission teams, the number of simultaneous teams possible, and desirable outcomes.

#### **17. Review of motions and consensus items**

**SPC Consensus 0510-27:** The SPC thanks Jim Mori for his gracious hospitality in hosting this meeting in the historic city of Kyoto, with its intriguing blend of ancient and modern culture. From the beautiful gardens of the Imperial Palace to the hidden charms of Pontocho, everyone thoroughly enjoyed the experience. We also thank Katsura Nogawa of Kyoto University and Toru Nagahashi and Yui Masuda of AESTO for their concerted efforts to ensure an efficient and well-organized meeting.

# IODP Science Planning Committee

6<sup>th</sup> Meeting, 25-28 October 2005

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## FINAL MINUTES

Tuesday

25 October 2005

09:00-18:00

### 1. Introduction

#### 1.1. Welcome and meeting logistics

Jim Mori, the meeting host, welcomed everyone to Kyoto. He explained various logistical matters and reminded everyone about the reception at the hotel this evening. Becker asked the meeting participants to introduce themselves.

#### 1.2. Approve SPC meeting agenda – highlight action items

Keir Becker reviewed the agenda and highlighted several important items. He explained that he would give the reports under Agenda 8.1.5 and 9 because the EDP chair, Peter Flemings, could not attend the meeting. Becker asked for any comments on the agenda. The committee offered no further comments and approved the agenda by consensus.

**SPC Consensus 0510-1:** The SPC approves the agenda of its sixth meeting on 25-28 October 2005 in Kyoto, Japan.

#### 1.3. Approve last SPC meeting minutes

Becker asked for comments or suggested changes to the minutes of the previous SPC meeting, as included in the agenda book. Bekins inquired why the minutes indicated that she and Ildefonse had different types of conflict of interest regarding the ancillary project letters (APLs) reviewed at the meeting. Schuffert explained the difference, and Bekins accepted the statements as written. The committee offered no other comments and approved the minutes by consensus.

**SPC Consensus 0510-2:** The SPC approves the minutes of its fifth meeting on 14-17 March 2005 in Lisbon, Portugal.

#### 1.4. Matters decided since March 2005 meeting

Becker briefly reviewed several issues decided by e-mail immediately after the March 2005 SPC meeting, but that appeared in the minutes of that meeting. These included SPC Motion 0504-1 on accepting the temporary third-party tools policy, two declined motions concerning Proposals 664-APL Brazos–Trinity Source-to-Sink and 668-APL Ocean Core Complex Seismics, and SPC Consensus 0505-1 on prioritizing FY2006 engineering developments. Becker also briefly reviewed SPC Motion 0505-2 on appointing the EDP chair, and SPC Motion 0508-1 on appointing a new SSEP co-chair, as approved by e-mail later in May and August 2005, respectively, and included here.

**SPC Motion 0505-2:** The SPC appoints Peter Flemings as the new chair of the Engineering Development Panel (EDP), effective immediately.

*Ildefonse moved, Kenter seconded; 17 in favor, none opposed, 2 non-voting (Pearce, Zhou)*

**SPC Motion 0508-1:** The SPC appoints Rüdiger Stein as a new co-chair of the Science Steering and Evaluation Panel (SSEP), effective immediately.

*Coffin moved, Bekins seconded; 14 in favor, none opposed, 3 absent (Byrne, Fryer, Masuda), 2 non-voting (Brumsack, Zhou)*



## **1.5. SPC procedures and protocol**

### **1.5.1. Terms of reference, Robert's Rules, ranking/voting procedures**

Becker described various SPC procedures and protocols and briefly summarized some of the key points of Robert's Rules of Order. He promised that as chair he would merely try to facilitate discussion and not impose his own viewpoint. Becker declared that if time runs short, he would give SPC members higher priority to speak than liaisons and guests.

### **1.5.2. Conflict-of-interest policy and statements**

Becker reviewed the SAS conflict-of-interest policy, noting that it also applies to guests and liaisons. He then asked everyone to declare any potential conflicts of interest concerning the proposals currently residing with the Operations Task Force and possibly considered for scheduling at this meeting.

***Proponent of proposal currently residing with the Operations Task Force:*** Bekins (621-Full), Mountain (564-Full), Tsuru (477-Full4), Okada (477-Full4), Underwood (603-CDP3, 603A-Full2)

***Former proponent of proposal currently residing with the Operations Task Force:*** Becker (545-Full3).

***On sabbatical at same institution as lead proponent of proposal currently residing with the Operations Task Force:*** Quinn (600-Full).

Mori noted that several JAMSTEC personnel could have an institutional conflict for Proposal 603. Schuffert confirmed that the committee generally had not regarded such relationships as a conflict of interest in the past (e.g., SPC Consensus 0410-10). Ildefonse asked if the difference among drilling platforms would affect the handling of conflicts of interest. Becker anticipated discussing the scheduling scenarios separately by platform, depending on the report from the Operations Task Force (OTF). He indicated that he would not regard potential institutional conflicts such as that declared by Quinn as a true conflict of interest, consistent with SPC precedent, and that his own status as a former proponent would not constitute a conflict at this meeting, as previously ruled by the SPPOC chair. Becker stated that Filippelli would serve as a temporary alternate for Bekins or Mountain as necessary.

## **2. Agency reports**

### **2.1. Japan Ministry of Education, Culture, Sports, Science, and Technology (MEXT)**

Kenji Kimura reported on behalf of the two lead agencies. He said that they approved the FY2006 annual plan in September 2005, for \$22 million in science operating costs (SOCs) and \$25 million in platform operating costs (POCs), and they discussed the status and planning for FY2007 and beyond. Kimura noted that the lead agencies had entered the final stage of negotiations with South Korea as the facilitator of an Asian interim consortium, and they approved the procedure of engineering development proposed by the IODP-MI. He explained the classification for engineering development and engineering science support, as distinguished automatically at the \$500,000 level in total project costs, and with IODP-MI having the flexibility to make a distinction at lower costs. Kimura diagrammed the facilities planning schedule showing the operational schedule for all platforms.

Kimura also delivered a brief report from MEXT. He noted the completion of *Chikyu* construction in July 2005, using the final budget installment of about \$30 million in JPFY2005. Kimura mentioned the MEXT interim review committee established in July 2005 and referred to the university and museum promotional campaign by JAMSTEC and J-DESC.

Duncan asked what other countries belonged to the Asian consortium. Kimura answered only South Korea for now, but they would continue trying to recruit other countries during the three-year interim period.

## **2.2. U.S. National Science Foundation (NSF)**

Jamie Allan took the NSF report in the agenda book as read. He noted the recent retirement of Dave Epp from the Marine Geology and Geophysics Division.

Bekins asked if the U.S. federal budget problems would affect the IODP. Allan responded that the federal budget would remain under a continuing resolution through November, but the House and Senate appropriations bills include the full budget for the IODP, and the NSF so far had not heard anything negative. Pederson asked when the program would know the identity of the new non-riser drilling ship. Allan deferred answering until the report of the U.S. implementing organization (USIO).

## **2.3. ECORD Managing Agency (EMA)**

Catherine Mevél took the EMA report in the agenda book as read. She said that the ECORD Science Operator (ESO) had made progress with the tendering of a platform for the New Jersey Shallow Shelf expedition, though the budget remained very much in question. Mevél mentioned the positive response from ECORD on the mission-team concept, and she provided copies of the latest ECORD newsletter.

## **2.4. China Ministry of Science and Technology (MOST)**

Zuyi Zhou reported on IODP activities in China. He showed the new logo of IODP-China and the cover of the IODP-China newsletter. Zhou mentioned two Earth system summer school courses and noted that China hosted the May 2005 SSEP meeting at Tongji University in Shanghai. He listed the six participants from China so far on IODP expeditions and briefly mentioned the new drilling proposal submitted by China for a joint IODP-ICDP project on the China margin for understanding Tibetan uplift and monsoon evolution. Zhou also reported that the government had elevated the status of the Tongji marine geology lab from key ministry level to key state level.

## **3. IODP Management International, Inc. (IODP-MI) report**

Hans Christian Larsen outlined the management areas of the IODP-MI. He reported first on education and outreach efforts, noting the Web site portal launched in May 2005, new outreach publications, exhibits at science conferences, and town hall meetings. He also referred to a database of contacts for media relations and the underway production of an IODP documentary film. Larsen reviewed several past developments and actions in data management involving the site-survey data bank, the proposal database, and the information portal. He mentioned a February 2005 meeting of the Data Management Coordination Group in Edinburgh, a test of the J-CORES database system during the August-September 2005 transit leg of the *JOIDES Resolution*, and the curation management system currently under development. Larsen diagrammed a proposed solution for the IODP information portal and cited the successful establishment of the new site-survey data bank at the Scripps Institution of Oceanography, describing its continuing development through July 2006. He briefly outlined the scientific publications series, publication policies, and implementation plan, noting the electronic-only format of the proceedings volumes. Larsen also described the new journal, *Scientific Drilling*, reviewed the SAS meeting schedule, and reported some of the basic statistics of active proposals.

Mountain suggested also promoting or exhibiting the program at technology meetings. Larsen agreed on considering the possibility, though it probably would involve timing and manpower constraints. Becker noted the exhibit planned for the Offshore Technology Conference.

Duncan asked if the new data bank system applies only to active proposals or to all old legacy data. Larsen explained that the new data bank had received all of the data from the former data bank, but the plan called for digitizing the old analog data only as needed. Mountain asked if the system would provide only images or actual raw data. Larsen replied that it would focus initially on image files and later on all data.

Stein asked about the peer review of data reports. Larsen answered that the curatorial board would handle the review of such reports. Duncan offered compliments on the content, layout, and editing of the new journal.

Becker inquired about the status of new task forces. Janecek expected to finish populating a new observatories task force in the next few weeks and hold the first meeting soon. Talwani added that the establishment of an industry task force had proceeded at a slower pace than he had hoped.

Stein wondered about the definition of active proposals. Schuffert explained that proponents must submit a revised proposal, addendum, response letter, or site-survey data within a three-year period to keep a proposal on the active list. Bekins asked about the outcome of the previous SPC recommendation to deactivate proposals by this past deadline. Schuffert replied that the proponents of more than forty proposals had received a final notice concerning SPC Consensus 0503-5, and approximately half responded sufficiently to keep their proposals active for another three years.

#### **4. Implementing organization (IO) reports**

##### **4.1. Center for Deep Earth Exploration (CDEX)**

Shin'ichi Kuramoto reported that JAMSTEC received delivery of the *Chikyu* in late July 2005 and more than 25,000 people visited the ship during an open house. He updated the status of the shipboard laboratories and briefly described the DEXIS and J-CORES database systems, illustrating some of their tools and functions. Kuramoto noted the good international media exposure for the *Chikyu* and outlined its operations schedule before the first IODP expedition, including the first riser test drilling off Shimokita Peninsula beginning in August 2006 and the second test drilling beginning in May 2007.

##### **4.2. Joint Oceanographic Institutions (JOI) Alliance**

Jack Baldauf showed the schedule for the remaining Phase 1 operations of the *JOIDES Resolution*. He noted the potential changes of adding two days to return to Juan de Fuca, pending Canadian clearance, and demobilizing the ship only partially at the end of Phase 1 in the event of continuing operations outside the program. Baldauf reviewed the results of Expeditions 307, 308, and 309 and noted some of the initial results from the ongoing Expedition 311. He mentioned the IO collaboration on databases and information technology, including the transit testing of J-CORES on the *JOIDES Resolution*, and he explained the transit plans for education and outreach, known as the school of rock expedition, involving teachers, museums, and students. Baldauf briefly described the potential gas hydrate cruises off India and China that would commence after Phase I, using the *JOIDES Resolution* and involving a collaborative effort with Overseas Drilling, Ltd., Fugro, GEOTEK, and the U.S. Geological Survey. He cited the potential to bring India into the program and the possible impact on demobilization and offloading of the Expedition 312 science party. Baldauf noted several staff changes within the USIO and updated the status of the project for providing a new non-riser scientific ocean drilling vessel (SODV). He referred to ongoing negotiations with the potential drilling contractor, Overseas Drilling, Ltd., and the anticipated awarding of the contract in early November 2005. Baldauf noted that the vessel conversion funds would total approximately \$115 million over three years, with the first-year funds already allocated

and the remaining two years pending authorization. He also described the ongoing process for selecting a logging contractor. Baldauf charted the organizational structure of the SODV project. He listed the members of the independent and program oversight committees and the conversion design teams and presented a timeline for completing the project by July 2007.

Allan noted that this represented the first public announcement identifying the *JOIDES Resolution* as the new SODV, and he suggested describing the process for determining the ship. Baldauf explained that the USIO first reviewed the envisioned capabilities and then released a request for proposals to international drilling contractors. He said that three contractors attended the bidders conference and two expressed a serious intent of submitting a bid, but current market forces resulted in only one bidder. Baldauf called it fortunate to have any vessel at all because of the high demand within industry. He also noted the issue of booked shipyards and tightened suppliers, largely because of recent hurricanes in the Gulf of Mexico. Baldauf recognized the challenge now of delivering a significantly improved vessel that would meet community expectations.

Duncan wondered how the gas hydrate plans would affect the SODV schedule. Baldauf anticipated no interference and cited the advantage of keeping personnel together. Tsuru inquired about the planned site-survey capability of the new non-riser vessel. Baldauf expected that the USIO would probably take a minimalist approach in the ongoing process of identifying the desired seismic survey equipment. Mountain asked about addressing marine mammal concerns related to the vertical seismic profiles on the upcoming expedition schedule. Baldauf replied that those concerns had not curtailed any activities to date.

#### **4.3. ECORD Science Operator (ESO)**

Dan Evans provided an update on ESO activities. He described the outfitting and mobilization of the DP *Hunter* in Tampa, Florida for Expedition 310 Tahiti Sea Level, saying that the contractor supplied all of the drilling equipment. Evans diagrammed the three drilling transects targeted off Tahiti and described the challenging hole conditions encountered for drilling and logging, but with good results obtained so far, including encountering an unconsolidated volcanoclastic flow on the Taerei transect that prompted a request for approving new sites. He also described the education and outreach efforts, particularly to inform the local populace about expedition activities. Evans announced the approval of SOC funding for the New Jersey Shallow Shelf expedition but referred to the POC funding as still uncertain, currently insufficient, and awaiting lead agency decisions in November 2005. He also mentioned that the ICDP would re-review the proposal before deciding in January on guaranteeing the finances. Evans noted that ECORD had requested SPC and OTF input on the strategy of drilling only two sites instead of three. He also mentioned the safety survey conducted by an independent contractor and expected to present it to the EPSP in December 2005.

Kawahata asked about the core recovery in the coral sections off Tahiti. Evans called it highly variable but probably averaging about 50% recovery. Ildefonse added that they had obtained some good optical logging images. Mountain inquired about the nature of the volcanoclastic flow. Evans described the unexpected deposits as fluvial sands and debris. Larsen wondered about the possibility of installing borehole-monitoring equipment. Evans doubted it, particularly in the volcanoclastic deposits.

#### **5. SPPOC report and long-range planning workshops**

Nick Piasias described the mission and responsibilities of the Science Planning and Policy Oversight Committee (SPPOC) and reported on the efforts to organize workshops for long-range planning. He proposed that the SPPOC and the SPC must work together to ensure

that the program achieves the goals of the IODP Initial Science Plan, which was derived from scientific input provided over four years ago. Piasias listed eight topics that the SPPOC had discussed for potential workshops, including paleoceanography and paleoclimate, the deep biosphere, geohazards, continent–ocean transects, subsurface fluid flow, deep drilling, and observatories. He identified the goals of impacting long-range planning, identifying fundamental scientific contributions and major new questions, involving new scientific communities, and fostering new drilling proposals. Piasias noted a perceived lack of proposal pressure for using the riser drilling vessel and mission-specific platforms (MSPs), plus the long timeline required to prepare for riser drilling, and he identified several challenges for getting more drilling proposals. He noted that the FY2006 program plan names three workshops concerning the deep biosphere, the Mohole, and continental breakup and sedimentary basin formation. Piasias sought input from the SPC on identifying other workshop topics, key people for steering committees, and the expected products of the workshops.

Pearce referred to the Magellan workshop series that has many of the same goals as cited by the SPPOC, but in a European context, and he wondered if the IODP could provide commingled funds to assist the national communities in planning such workshops. Allan replied that program support for attendance at IODP workshops should follow the proportional contributions of program members. Becker asked whether the IODP could co-sponsor general workshops with broader communities or only use its funds specifically for IODP activities. Talwani preferred to respond after his presentation. Ildefonso wanted to use funds efficiently and avoid taking parallel approaches to the same problem. Pearce expressed concern about the lack of coordination between the efforts of various program members and perhaps at different levels within the same structure. Pederson questioned the overlap between the SPPOC and the SPC and wondered if it represented a cause for concern. Piasias did not view a little overlap as a bad thing in trying to expand the community and conduct long-range planning.

Byrne noted that the SSEP suggestions on forming new program planning groups (PPGs) overlapped considerably with the proposed workshop topics. Mountain worried that the program apparently still does not have enough funds to address topics such as continental breakup and sedimentary basin formation. Piasias said that the program should not restrict proposals to a narrow geographic range. Quinn suggested that the community might have waited to see proof of the MSP concept, and the positive results so far could reinvigorate matters. Yamamoto noted that although the program currently has only a few proposals dedicated directly to the deep biosphere, many proposals have a microbiology component. He also asserted that the subject required an interdisciplinary approach and integrated communication with the geology and geochemistry communities. Bekins questioned the propriety of promoting proposals for platforms rather than for science themes. She also thought it would help to have a summary of accomplishments so far, on the deep biosphere for example, before planning specific workshops. Becker suggested that the SPC should focus on defining the topics and products of workshops and discuss the matter again the next day.

## **6. IODP-MI Management Forum**

### **6.1. IODP-MI Management Forum report**

Manik Talwani identified the participants of the management forum retreat and explained that everyone submitted a position paper before the meeting, with remarkable coincidence on the issues to discuss. He listed the drivers for the discussion as a lack of proposals to satisfy all initiatives of the Initial Science Plan, a desire to act decisively in using program resources most effectively, and the recognition that different countries take different approaches toward initiating science. Talwani said that the IODP-MI board of governors approved the

management forum report, recommended seeking community input on how to implement it, and insisted that all proposals must receive equivalent treatment. He cited the community responses from USAC, J-DESC, and individual Japanese scientists and noted that ESSAC would discuss the report at its November 2005 meeting. He also mentioned the responses from the SAS panels but disagreed with the critical views expressed by certain SSEP members. Talwani identified the members of a small group that would evaluate the community and SAS responses and recommend future steps concerning the mission-team approach. He recognized that the SPC should play an important role in the process because the management forum report deals mainly with the submission and nurturing of proposals. Talwani thus asked the SPC to comment on the mission-team approach and, if favorable, indicate how to implement it and how it would affect the SAS structure.

Talwani also explained the process of including workshop planning in the FY2006 program plan and announced that the IODP-MI had hired a new staff member to assist the SPPOC in planning and conducting workshops. He suggested that the SPPOC should decide on the workshop topics by its January 2006 meeting, with input from the SPC, and stressed the importance of communicating with the program member offices to achieve a coherent approach.

Gabe Filippelli described the mission concept in greater detail, explaining that a mission could entail one or more expeditions and would receive program support at an earlier stage of planning, including for education and outreach. He said that only some IODP efforts would revolve around missions, targeting priorities identified by the scientific community and executing initiatives of the Initial Science Plan not currently addressed. Filippelli outlined an example of a potential mission for exploring the deep biosphere and identified several general questions that still needed clarifying, such as how to choose and evaluate missions, select mission teams, and coordinate the site surveys, and whether the program could implement missions faster than individual proposals.

## **6.2. SPC discussion of IODP management forum report**

Keir Becker summarized the main motivation of the forum report from his perspective and posed several questions that the SPC should consider. He noted the supportive responses from USAC and J-DESC as well as the more critical comments and concerns given by the SAS panels. Becker explained the SPC goal of deciding whether to endorse the mission approach or continue primarily with the current approach of unsolicited proposals and traditional fostering mechanisms. He stressed the principle that all proposals must undergo the same review process and said that if the committee supports the mission concept, then they must address how to implement it. Becker added that the SPC in any case should discuss ways to streamline the evaluation process for unsolicited proposals.

Searle suggested that if the mission concept has so many merits then it should apply to every proposal. Duncan agreed that anything done for one group of proposals should apply equally to all proposals. Piasias responded that the mission concept involved site surveys and thus could not apply to every proposal. Ildefonse commented that the two parallel systems illustrated in the management forum report did not seem consistent with the principle that all proposals would undergo the same review process. Byrne also found contradictory statements within the report and thought it seemed as if the mission teams would bypass the normal review process. Quinn recommended separating the ideas of the mission concept from the discussion of whether to implement it as diagrammed in the management forum report. Given confirmed that the management forum report and discussions centered on the mission concept rather than mission teams.

Kitazato inquired how long it would take from identifying a mission to naming a mission team. Filippelli thought it could happen within a few months. Zhou wondered about the size of mission teams, noting that small, elite teams probably would tend to exclude new community members, whereas larger teams would allow broader participation but might work less efficiently. Bekins also doubted that creating small exclusive mission teams would serve the main stated goal of involving new communities. Quinn believed that the NASA model for space missions still functioned as an insiders club. Taira asserted that Japanese scientists need a better mechanism for breaking into the system. Ildefonse remarked that missions would still need some kind of proposal at the beginning.

Pisias observed that the concept remained vague on who would write the proposals that follow the mission approach. He inquired if the former PPGs succeeded in producing proposals. Becker responded that some PPGs succeeded in fostering the development of proposals and others did not. Yamamoto wondered if workshops could provide an avenue for producing mission-type proposals. Ildefonse asked if the SPPOC working group produced a list of workshops already in the planning stages at national levels, as planned at the December 2004 SPPOC meeting. Pisias said no. Pearce suggested that the program could link missions more closely to the workshop series. Fryer wondered more fundamentally why certain aspects of the Initial Science Plan have not attracted many proposals. Underwood expressed serious concern that the main motivation for the mission concept stems from the false impression of a lack of proposal pressure for platform-specific drilling. He believed that the SPC does not possess enough information about all of the proposals currently in the system to properly evaluate that issue.

Brumsack could not see the difference between mission teams and current planning entities such as PPGs, DPGs, and project scoping groups. He expressed concern about installing a costly, parallel system that might not produce the desired results. Taira responded that mission teams would allow the IOs to enter the planning process at an earlier stage, unlike PPGs and DPGs. Quinn favored integrating the operational constraints at an earlier stage. Given stated that the USIO and the U.S. community recognized the need for more lead time in operational planning, and she did not see why the regular SAS could not handle the evaluation of missions. Mountain said that he understood the general goal as a matter of trying to accelerate the process of developing an idea into an implementation plan, and he wondered what would happen if the SAS and mission team disagreed on the plans. Becker reiterated that the issue of streamlining the process applied to all proposals. Taira stated that many projects require program-wide resources and continuous SAS advice to bring them to fruition. Searle foresaw a likely conflict of interest with SAS members belonging to a mission team and suggested instead having permanent liaisons from mission teams to the SAS panels.

Pearce still saw a problem in the concept with proposals on two tracks. He suggested that all proposals should first go to the SSEP, with some of them then directed toward mission teams. Mori favored the mission concept as good for the program, though he recognized its implicit element of unfairness. Tsuru favored having a dual approach and viewed teamwork as the key to success. Pederson stressed the need for doing something to improve the involvement of the Japanese community. Fryer wanted to ensure that all proponents have the same opportunity of receiving technical and operational advice for difficult aspects of developing proposals. Nomura wondered about the relative proportions of missions versus unsolicited proposals. Kawahata noted that the normal process moves too slowly to take advantage of studying timely topics such as the recent Sumatran earthquake, whereas perhaps the mission concept could help. Kitazato hoped that the mission concept would help to stimulate more proposals

for riser drilling. Larsen advised the committee to decide whether it favored missions as a way to address the initiatives in the Initial Science Plan.

Ildefonso remained very concerned about having a dual track and allowing certain proposals to receive a very different amount of programmatic support than others. He wondered where the initial proponents of a mission proposal would stand with respect to the mission team and where the boundary would lie between proponents and managers. Talwani believed that the board of governors had greater interest in ensuring an equal standard of excellence for implemented proposals and not necessarily giving the same amount of nurturing. Searle reported that the SSP raised serious concerns that proponents would perceive unsolicited proposals as a less favorable route to follow. He suggested again that if the program regards the mission concept favorably then it should apply to all proposals. Searle also asserted that the problem of acquiring site-survey data does not affect only one community or one type of science, and he strongly doubted that the mission concept would solve that problem anyway. Byrne wondered about the extent of financial commitment to missions and whether it would include site-survey funding. Larsen responded that the program could not use commingled funds for site surveys at the moment. Piasias suggested asking the funding agencies about the possibility of using commingled funds for site surveys. Allan expressed considerable doubt about that possibility and noted that program members have the responsibility to provide data for planning expeditions, as described in the IODP memoranda. Katz recommended that as a billion dollar program over its ten-year lifespan, the IODP should solicit proposals that would balance out the complexity of projects and the use of platforms. He proposed just issuing a request for certain types of proposals and forgetting the mission boxes in the structure diagram of the management forum report.

Becker could not discern a consensus opinion and asked the committee to return the next day able to state whether they favored the mission concept and indicate any conditions. Mountain preferred having a more open discussion of the implementation issues before deciding on the mission concept. Brumsack questioned the necessity of reaching a final decision at this meeting. He preferred waiting until after the European community had a chance to discuss the concept. Becker asked the committee to come forth at least with implementation questions.

The committee returned to the discussion late Wednesday afternoon. Becker inquired if the committee desired an executive session. Ildefonso wanted to have as much input as possible from the attendees of the forum. Bekins still hoped to have an executive session at some point before making a decision. Becker thought this might represent the only chance for an executive session. Mountain suggested receiving input first and then possibly having an executive session before adjourning for the day. Becker noted that the IODP-MI board of governors had requested the SPC to provide input as of this meeting, though ESSAC had not yet had a chance to discuss the document. Piasias advised that the SPC should request more time if necessary to address such an important issue for IODP planning. Becker accepted that advice and proposed letting each committee member ask one implementation question for the management forum participants to answer.

Quinn wondered why the program needed to do something different and questioned how the mission concept differed from project scoping groups and other components of the current planning structure. Filippelli replied that the mission concept integrates all aspects of planning and gives an opportunity to incorporate education and outreach and operational constraints at an earlier stage. Zhou asked again about the likely size of mission teams; he worried that having small teams would limit the number of participants from introductory program members. Janecek identified the main goal of accomplishing aspects of the Initial Science



Plan that the program might not accomplish otherwise. He added that the program managers need input from the SAS to produce an implementation plan and come back for approval, and the community could decide not to approve the plan after reviewing it. Pias asserted that part of the responsibility for implementing the mission concept rested with the SPC. He proposed giving a brief presentation to instruct the committee on the goals of the mission concept and what sort of input would help. Becker asked if the committee would accept such a report instead of asking questions, and the committee agreed.

Pias described the main goals of the mission concept and identified four possible types of missions as involving highly rated proposals with some deficiencies, complex projects requiring longevity of leadership, gaps in achieving the Initial Science Plan, and new emerging science. He expected that missions would derive from unsolicited proposals reviewed by the SAS or from solicited proposals developed through workshops, PPGs, or independent community members. Pias suggested that a mission proposal should include a strong scientific rationale, identify the scientific and technological requirements, and provide a detailed implementation strategy. He raised questions about the deadline for submitting proposals, the review and ranking procedures, and how to define a mission team. Pias stated that mission teams would revise the mission proposal and refine the implementation plans as needed, as well as coordinate the site survey efforts. He also suggested that SAS watchdogs should monitor the mission team activity and that the mission plans should undergo formal re-ranking on a regular basis.

Byrne still could not see how the mission concept differed from how things work now. He wanted to know who would decide how to define a mission. Pearce proposed defining a mission as having a clear, important, and achievable scientific goal that the public can understand. Duncan said that some proposals fail because the proponents do not have sufficient expertise to develop the entire project from concept to implementation plan. Tsuru stated that the current structure works well for non-riser and perhaps MSP drilling, but the program needs mission teams to create effective plans for riser drilling projects. Yamamoto supposed that some missions would originate through program promotion and some from unsolicited proposals, and each would involve a different timeframe depending on the project. Bekins imagined that missions would encompass a range of ideas, and she hoped to make them more inclusive while avoiding serious conflict of interest issues.

Brumsack worried about maintaining an independent and objective scientific evaluation process for proposals initiated largely by the program itself. He cautioned against letting the SSEP get too involved in mission teams because it could compromise the review process. Brumsack also recommended eliminating CDPs, PPGs, and DPGs for the sake of simplicity if the program adopts the mission concept. Pias agreed that the SSEP should only review missions and not develop them. Pederson asked if early ranking represented the key for mission proposals. Pias replied that the SAS could include mission proposals in a global ranking, but he did not know how the program would later rank the implementation plans. Mori thought that missions sounded very similar to CDPs and wondered how they differed. Becker agreed about the similarity and said that missions could ultimately replace CDPs. Byrne suggested that a mission proposal might equate with the umbrella proposal of a CDP. Ildefonse understood that a mission proposal would already have an implementation strategy. Pias responded that a mission proposal would not contain detailed site information, and CDPs could represent potential components of a mission. Taira definitely considered the NanTroSEIZE project a mission because it required a very long timeline for planning. Kitazato cited Cretaceous anoxic events as another example of a potential mission topic.

Becker now expressed uncertainty about the difference between missions and the initiatives of the Initial Science Plan.

Underwood remarked that everything described so far equated exactly with how the NanTroSEIZE project has proceeded, some of it within and some of it outside the IODP realm. He viewed the CDP concept as grossly underutilized by the community, with only two examples so far, and said that he would accept just revamping that concept and calling them missions if it would stimulate more proposals for such projects. Underwood reasoned, however, that the Initial Science Plan itself has always constituted a global call for proposals, and he wondered how much farther the program should go in pursuing those scientific goals if proponents have not yet responded satisfactorily. He nonetheless favored the idea of having a request for proposals and having the SSEP review them right away, but not identifying them as missions. Fryer recalled that the SAS originally envisioned conducting only a few CDPs during the life of the program because of the large commitment of program resources. She also still hoped to see the SSEP identify in some quantifiable way what aspects of the Initial Science Plan remained unrepresented among the existing proposals.

Quinn remained unconvinced that the current system needed fixing. He had an uncomfortable sense of sliding too easily toward a dramatic but unnecessary solution. Mori suggested looking at the goals and identifying which problems with the system really needed fixing, rather than overhauling the whole system. Ildefonse could not see any clear link between the two different goals of filling the scientific gaps among the active proposals and improving the implementation strategy or efficiency of the system. He thought that the mission team discussion related more to the latter goal, whereas the goal of merely fostering more proposals in certain areas probably did not require changing the system. Ildefonse understood that the program could not afford to apply the mission concept to all proposals, and he worried that it might actually cause fewer proposals to enter the system. Nomura stressed the importance of imparting societal relevance to studies of the deep sea, and he believed that such a goal required something beyond the scope of a PPG or DPG. Kawahata believed that the mission concept could provide much needed assistance to the biogeosciences community, for example, whose members have difficulty developing proposals without considerable help from geoscientists. Duncan suggested that perhaps the committee could contribute most fruitfully to the debate by drafting a carefully worded statement of what purpose a mission should fulfill.

Becker briefly summarized the discussion and asked if the committee still wanted to hold an executive session. Duncan asked what an executive session would achieve beyond making everyone more comfortable in discussing the matter. Bekins viewed that as the main reason. Byrne still wondered about the goal. Becker responded that the SPC must provide feedback to the IODP-MI board of governors and the small group. Pearce said that he could forego an executive session but would agree if others wanted to do it.

**SPC Motion 0510-3:** The SPC convenes in an executive session to discuss the mission concept as presented in the IODP management forum report.

*Bekins moved, Brumsack seconded; 16 in favor, 1 abstained (Ildefonse), 2 non-voting (Pederson, Zhou).*

## **7. FY2007-2008 expedition schedule I**

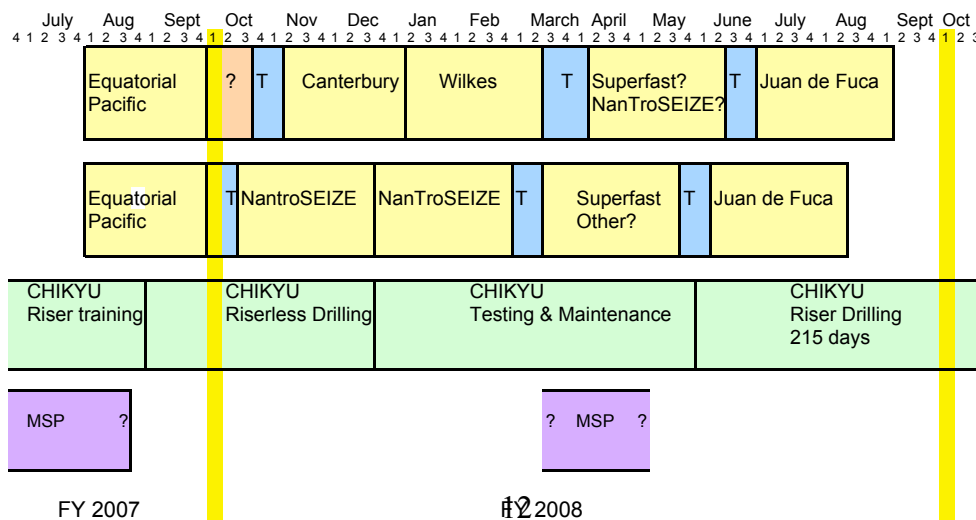
### **7.1. Presentation of OTF scheduling scenarios**

Tom Janecek showed the geographic distribution of the fourteen proposals residing with the OTF and listed them according to the required platforms. He noted that the OTF agreed that *Chikyu* operations in FY2007-08 should begin with the NanTroSEIZE Stage 1 non-riser

scenario and that those operations could be conducted by both the riser and non-riser drilling vessels. Janecek reviewed the operational details for each stage of the NanTroSEIZE project, listed the prioritized operations in Stage 1, totaling three years of operations, and presented a proposed drilling scenario from CDEX. He next identified various initial considerations for USIO operations, such as conducting a simple first expedition with the new non-riser vessel, utilizing the shakedown cruise to move the ship to the initial operating area, and possible operational starting times ranging from June 2007 to January 2008. Janecek explained that the OTF identified three alternate scheduling scenarios after determining the likely starting date of August 2007 and considering other issues such as transit times, weather windows, environmental constraints, and long-lead time procurements. He added that further considerations of transit times and clearance and permitting issues eventually led the OTF to eliminate one scenario and to exclude Monterey Borehole Observatory from all scheduling scenarios for now.

Allan provided additional insight on environmental clearance issues in the U.S. and the ongoing efforts to produce an umbrella environmental impact statement for operating the new SODV. He said that they had anticipated including specific details related to the Monterey Borehole Observatory but later learned of the likely necessity of submitting a separate statement for that particular project that would specify such things as the noise produced by the drilling ship, the amount of sediment deposited on the seafloor, and the effects of the thrusters on water-column salinity. Allan noted that the marine sanctuary officials wanted to know the full scope of the planned activities, from the borehole instruments to the possibility of returning to drill more holes. He added that NSF and USIO representatives would meet with those officials next week but could not yet answer questions about the long-term scope of the facility and who would manage it.

Janecek described the four potential MSP operations for FY2007. He identified (a) the New Jersey Shallow Shelf as a prime candidate if not conducted as currently scheduled in FY2006, (b) the Great Barrier Reef as unlikely for FY2007 because of the lack of site-survey data and potential permitting issues, (c) the Canterbury Basin as costly and inconvenient for an MSP expedition and probably better suited for the new SODV, and (d) the Monterey Borehole Observatory as incompatible for an MSP expedition because the environment permitting process conflicts with the time schedule for ECORD funding and vessel tendering. Janecek stated that given the lack of viable options the OTF did not put forward any MSP operations for FY2007 but would reevaluate the options after the March 2006 SPC ranking. He also asked the SPC to consider the two-hole versus three-hole scenario for New Jersey Shallow Shelf. Janecek presented the following FY2007-2008 operations models for the SPC to consider.



## 7.2. Discussion of scheduling scenarios and charge to the SPC

Keir Becker noted that the committee did not need to decide on an operations schedule today. He identified the question of whether to schedule another Superfast Spreading Crust expedition, given the projected outcome of penetrating gabbro. He also explained that the committee must recommend the best strategy for the New Jersey Shallow Shelf expedition from a purely scientific standpoint, regardless of the possibility for rolling over funds from FY2006 to FY2007. Becker proposed forming a working group of Quinn, Nomura, Zhou, and Underwood to examine this issue and report back later.

Ildefonse declared a potential conflict of interest because he submitted a sample request for Expedition 312, though not approved yet, and thus could become a member of the science party. Becker did not regard that as a conflict and the committee agreed. Ildefonse then commented that Expedition 312 could give a clearer idea of the projected depth to gabbro, implying that the committee should wait before deciding on scheduling another Superfast expedition. Duncan wondered whether the proponents should submit at least an addendum or else a new proposal for another Superfast expedition if Expedition 312 already achieves the proposed objectives, otherwise it might become a matter of scheduling an expedition without having any clearly defined scientific objectives. Ildefonse argued that the proponents originally chose the Superfast site as a potential site for a deep borehole.

Baldauf mentioned the other options of Cascadia Gas Hydrates and Bering and Okhotsk Seas, instead of Superfast and NanTroSEIZE, but noted that the weather window did not favor either one and Cascadia would involve complex operations. He also preferred not waiting until March 2006 to decide on Superfast because of the long lead-time requirements. Pearce asked about the consequences of a delay in the starting date for the SODV, given the weather windows. Baldauf could not answer the question of timing without a contract in place but said that a two-month delay would actually simplify the scheduling issues. Mountain asked if the USIO planned to reinstall anchoring capabilities on the SODV, suggesting that it could prove useful for the shallow sites in Canterbury Basin. Baldauf described it as still a possibility under discussion. Evans did not necessarily see such a capability as an advantage because of the difficulty of repositioning an anchored ship.

Brumsack proposed waiting for the new proposals coming forward to the SPC in March 2006 before scheduling anything beyond March 2008. Janecek responded that defining a full set of priorities now would help the USIO in planning. Quinn suggested that the SPC could still redefine certain higher priorities later. Byrne asked what happened to the Indus Fan and Murray Ridge proposal. Janecek explained that it would involve a long transit penalty because no other mature proposals currently exist for that area. Katz indicated that several of those sites could require a shallow hazard survey.

Quinn raised the question of whether the second scheduling model might pose any serious staffing issues, with two consecutive NanTroSEIZE expeditions on the SODV and simultaneous drilling with the *Chikyu*. Underwood expressed confidence in finding enough manpower for the initial expeditions and hoped the later ones would not prove more difficult. Taira worried about exhausting the manpower supply at the very beginning because the program would need a riser drilling plan for FY2009 and NanTroSEIZE represents the only project available at the moment. Allan cautioned against sending a message that the community cannot support riser and non-riser drilling at the same time after so much effort to put this program together. Given asked about the expected timing of changing staff on the riser ship. Taira replied that CDEX would exchange staff by helicopter or supply boat on a regular, four-week period.

## **8. IODP Science Advisory Structure**

### **8.1. Panel reports**

#### **8.1.1. Science Steering and Evaluation Panel (SSEP)**

Mike Underwood summarized the proposals reviewed at the May 2005 SSEP meeting, listed the watchdog assignments, identified the conflicts of interest, and showed the organization of proposals in the breakout sessions. He identified two proposals already forwarded to the SPC and eleven other externally reviewed proposals that could still reach the SPC by March 2006, pending the outcome of the November 2005 SSEP meeting. Underwood reported that the SSEP discussed PPGs and DPGs, ancillary project letters (APLs), project scoping groups, and SSEP–SSP interactions. He mentioned that the SSEP suggested either forming a DPG or convening an international workshop on hot spots and LIPs to prioritize objectives. He also listed the SSEP suggestions for PPGs on ten topics, with epicontinental seas identified as the top priority. Underwood presented SSEP Recommendation 0505-3 on appointing Rüdiger Stein as the next SSEP co-chair (see Agendum 1.4 above) and referred to a peripheral discussion on the balance of expertise among existing and forthcoming SSEP co-chairs. He also mentioned recent developments on community input concerning watchdog–proponent interaction and stalled proposals, comments via e-mail on the management forum report. Underwood said that the SSEP at its next meeting would discuss the management forum report and the mission concept in greater detail plus begin work on creating a primer for microbiology.

Becker asked if the SSEP would discuss the matter of rejecting proposals in a timelier manner, as called for in the management forum report. Underwood said yes, because sometimes the nurturing process runs its course without resulting in enough improvement of a proposal. He suggested that the SSEP might also forward some lower-rated proposals to the SPC. Byrne recognized that the act of rejecting proposals comprises part of the SSEP process and suggested that it probably should remain that way.

#### **8.1.2. Site Survey Panel (SSP)**

Roger Searle reported on the September 2009 SSP meeting at the new site-survey data bank. He said that the panel reviewed thirteen full proposals, one CDP proposal, and four preliminary proposals. Searle showed the number of proposals classified under each site-survey readiness category and announced that the SSP planned to add a new classification category on the adequacy of site characterization data. He described it as a measure of data quality rather than quantity and wondered if it needed formal approval by the SPC. He also described the typical site-survey package as not well organized and explained that the panel proposed creating an additional standardized, one-page, site-summary form that would include a seismic image, survey track map, and basic information on each drilling site. Searle said that the SSP reviewed the initial operations of the new site-survey data bank and advised on several improvements. He noted that the new data bank would accept only digital submissions and new graphical interfaces would allow easy Web-based browsing and uploading of data. He also hoped that the new system would alert proponents early about the data requirements for their proposals. Searle reported that in response to previous recommendations on improving procedures for working together with other panels, the SSP concluded that it should assign three permanent liaisons to the SSEP to cover all of the breakout groups at SSEP meetings, and he wondered if the SPC needed to revise the SSP mandate accordingly. He also recommended making a watchdog list available for all proposals.

Searle reported that the SSP reviewed the IODP management forum report and recognized the value in the mission concept but believed that it should apply to all proposals. He explained that the panel saw a danger that the community would perceive unsolicited proposals as less valuable than solicited mission proposals, and they seriously doubted that forming mission teams would help to address the common difficulty of obtaining funding for site surveys. Searle stated that the SSP thus strongly recommended that the program consider using commingled funds for supporting site surveys, and they recommend that mission teams, if implemented, should include one member responsible for interacting with the SSP.

Mountain noted that the Web site of the new Site Survey Data Bank requires users to login. He referred to the past policy of open access and wondered how scientists preparing a drilling proposal could learn about the holdings of the data bank. Zelt explained the process for registering and getting different levels of access for reviewing and uploading data. Larsen added that the data bank still adheres to the policy of open access. Ildefonse commented that having permanent panel liaisons could cause concerns for some national program in terms of providing the necessary travel support. Becker suggested that the SSP should also name alternate liaisons. Byrne asked if the SSP had started reviewing proposals earlier in the process, in parallel with the SSEP. Searle said yes. Bekins suggested that it might prove more efficient for the SSEP and the SSP watchdogs to communicate directly with each other. Searle asked if the proposal history files could list all of the assigned watchdogs. Schuffert confirmed that the prospectus of proposals provided for review at each meeting could easily include a list of all previous watchdogs in the proposal history files. Mountain asked if the SPC somehow could take an earlier look at proposals likely to come forward soon. Becker referred to the SSEP as the gatekeeper for sending proposals to the SPC. Ildefonse noted the availability of proposal abstracts on the IODP Web site. Piasis wondered what the SPC would do with the new site-survey classification information. Becker replied that the SPC would certainly take it into account, and the information also might influence the SSEP in deciding whether to forward a proposal to the SPC.

<p><b>SPC Consensus 0510-4:</b> The SPC accepts the proposal of the Site Survey Panel (SSP) to create a new category for classifying the adequacy of site characterization data.</p>
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### **8.1.3. Environmental Protection and Safety Panel (EPSP)**

Barry Katz reported that the EPSP discussed the issue of marine protected areas, expressed concerns about self-imposed restrictions based on the absence of long-term studies, and recommended modifying proposals and site-survey packages to highlight unusual environmental conditions. He said that the panel previewed Proposals 595-Full3 Indus Fan and Murray Ridge and 618-Full3 East Asia Margin, and they reviewed Proposal 477-Full4 Bering and Okhotsk Seas but the data in the safety package only proved sufficient to approve five of the eighteen planned sites. Katz indicated that the increasing need for third-party assessments of shallow hazards would impact the timing of when the EPSP can approve drilling sites. He gave a satisfactory review of the *Chikyu* shakedown cruise plans and expected to review the deep section at the next EPSP meeting. Katz reported that the panel decided to assign proposal watchdogs who would work with the science coordinator to try to ensure the completeness of safety packages up for review. He also recommended that the EPSP should review the operational protocols for complex expeditions such as Gulf of Mexico Overpressures and Cascadia Margin Gas Hydrates.

Katz expressed dismay over the recent rotations of several EPSP members and the consequent loss of particular proposal watchdogs. He explained the status of the effort to recommend a vice-chair candidate and hoped to resolve the matter at the next meeting. Katz reported that

the panel reviewed the LWD and MWD results of Expedition 308 Gulf of Mexico and concluded that everything worked well from a safety standpoint, but some individuals viewed the guidelines as too rigid from an operational standpoint. He added that the combination of real-time lithologic assessment and pressure monitoring proved acceptable as a monitoring tool. Katz reported that the panel also conducted a special review of Proposal 553-Full3 Cascadia Margin Gas Hydrates, scheduled in part as Expedition 311, and decided that the LWD approach could prove more effective than traditional geochemical sampling and analyses for hydrocarbon monitoring. Katz previewed the December 2005 EPSP meeting agenda and noted that the panel recently had to review safety packages three or four times before giving final approval. He also relayed panel concerns about the added pressure and stress of increased activities such as special meetings, supplemental e-mail reviews, and lengthened meetings.

Bekins observed that many of the proposals now with the OTF have problems that preclude scheduling. She suggested that if the SPC could have recognized those problems earlier then perhaps they could have forwarded more proposals to the OTF. Byrne agreed and wondered whether the EPSP, or else improved communication between the SSEP and the SSP, could help to identify problems earlier with specific proposals. Katz could not see how the EPSP could review proposals any earlier in the necessary detail. Becker noted that the SPC chair serves as a liaison to the SSEP, and the SSP can recommend proposals to the EPSP for possible previews. Bekins asked if the SPC has any policy on forwarding proposals to the OTF in the event of identified problems with the readiness of safety packages. Becker responded that the committee has the right to decide at each meeting on *ad hoc* basis what proposals to forward to the OTF, and not necessarily all those above a certain ranking line. Katz added that the program could still drill parts of a proposal despite some complications.

Tsuru asked about predictions of free gas at the Cascadia drilling sites. Katz confirmed the possibility and said that the panel had gained confidence in the new approach and just wanted to monitor the activities. Baldauf explained that the USIO had initiated the concept of generating protocols because of the increased complexity of operations, and he called it advantageous to get a sense from the SPC of high-priority projects farther in advance. Mountain asked if the LWD and MWD approach could mitigate the need for shallow hazard surveys. Katz thought that LWD and MWD perhaps could substitute for standard shipboard safety measurements of headspace gases but not for choosing site locations. Kawahata asked if the EPSP had any concerns about discharging chemicals from vessels. Katz replied that the platform operator has the responsibility to follow all regulations within the jurisdiction of the drilling area. Allan added that the IOs have the responsibility to conduct shallow hazard surveys, but he suggested that the SPC could identify this as a high-priority issue that the IOs and the funding agencies should know about. Becker saw it as more of an OTF issue.

#### **8.1.4. Scientific Technology Panel (STP)**

Makoto Okada reported on the outcome of the July 2005 STP meeting and explained the new procedure for directing recommendations to either the SPC or the IODP-MI. He presented STP Recommendation 0507-1 on revising the STP mandate to encompass proposal reviews and the related STP Recommendation 0507-6 on the procedure for proposal reviews.

STP Recommendation 0507-01: The STP recommends the following addition (underlined text) to its mandate:

STP recommendations shall be sent to the SPC. The STP shall provide advice on scientific measurements made onboard IODP platforms, within and around boreholes, and on samples collected by the IODP and associated programs. The STP shall develop guidelines concerning

said measurements and shall furnish advice about scientific measurements, equipment, and on certain policies and procedures in the IODP. Specific responsibilities for the panel shall be advice on databases, sample handling, curation, computers, shipboard equipment usage and needs, as well as borehole and observatory measurements, equipment, usage, and needs. In addition, STP will give advice to the SSEP regarding specific proposals on an as needed basis as part of the proposal nurturing process.

**STP Recommendation 0507-06:** The STP recommends that proposals forwarded to this panel be accompanied by the SSEP review, which specifies why the proposal has been referred to the STP. In addition, the proposals should be forwarded to the chair at least two weeks prior to STP meetings so that the entire panel can properly discuss them.

Becker asked if the committee could accept both of these STP recommendations now. Duncan favored adding the statement on proposal review to the STP mandate, and no one objected to either recommendation.

**SPC Consensus 0510-5:** The SPC accepts STP Recommendation 0507-1 on modifying the STP terms of reference to include the task of proposal review. The committee forwards the revised STP terms of reference to the Science Planning and Policy Oversight Committee (SPPOC) for approval.

**SPC Consensus 0510-6:** The SPC accepts STP Recommendation 0507-6 on proposal review and forwards it to the IODP-MI for implementation.

Okada presented STP Recommendation 0507-3 on creating a task force to develop protocols for data quality assurance and quality control (QA/QC).

**STP Recommendation 0507-03:** The STP recommends that an evaluation of QA/QC issues for all measurements across all IODP platforms and shore-based laboratories be conducted through the creation of a task force or other appropriate mechanism. Task force progress will be regularly reviewed by the STP. Task force duties should include, but not be limited to, quality assurance and control on short (daily) and long (monthly) timescales, integration of QA/QC protocols across all IODP laboratories, and assembling these protocols into the IODP databases.

Baldauf asked to clarify the role of the STP versus the IOs in establishing and implementing such policy. Okada responded that the STP could certainly clarify matters with the IOs if the SPC accepts the broad concept. Becker asked if the recommendation referred to an IODP-MI task force or to some type of SAS working group. Okada replied that the panel had no strong preference either way but just wanted to see the issue addressed. Larsen saw a lot of room for interpreting how to implement such a recommendation and wondered about the intent of assembling the protocols into a database. Okada identified the main intent of providing access to the protocols for everyone. Allan recognized that the panel wanted to establish a policy for ensuring uniform quality control across all platforms. He added that the IODP-MI would have responsibility to determine how best to do it and could give progress reports back to the panel, but it would not necessarily have to involve a task force. Kuramoto worried that the process for planning and addressing these issues would get bogged down if it involved too many panel liaisons or other scientists from the community. Piasias remarked that different scientific disciplines would have different requirements for QA/QC.



Duncan asserted that the STP wanted to address this issue before the program starts generating the tremendous amounts of data expected from operating several platforms at once. He proposed that the SPC should at least recognize that concern, though perhaps not fully endorse this recommendation. Brumsack cited the difficulty of imposing uniform standards now in very rapidly developing fields such as microbiology. He also recognized the value of establishing routine protocols for onboard technicians because the science party does not always include suitable experts in every discipline on every expedition. Bekins suggested that the committee could just ask for regular briefings from the IOs. She supposed that they probably had made some progress already but still had some room for improvement. Baldauf noted that the STP had already established a set of minimum measurements and the IOs have started a dialog on how to coordinate those measurements across the platforms. Larsen added that the IODP-MI would appreciate further advice on how to conform with international standards and not only on the cross-platform consistency of measurements.

Becker asked Duncan and Brumsack to draft a statement directing the STP to continue pursuing the QA/QC matter. Brumsack later presented a draft statement to the committee. Larsen suggested including a reference to the IODP-MI, and the committee agreed on the following statement.

**SPC Consensus 0510-7:** The SPC receives STP Recommendation 0507-3 on quality assurance and quality control (QA/QC). The committee shares the concerns of the STP over cross-platform compatibility of measurements and asks the STP to provide the IODP-MI and the implementing organizations (IOs) with advice about QA/QC issues for data collected by the program. Recommended procedures should address questions of precision, accuracy, standardization, and instrumentation.

Okada presented STP Recommendation 0507-5 on assigning STP members to the new Observatory Task Force.

**STP Recommendation 0507-05:** The STP recommends that it have four representatives assigned to the Observatory Task Force. The STP recognizes that all representatives may not be able to attend each meeting, so by having a pool of four representatives, at least two may attend each task force meeting. STP representatives = Villinger, Wheat, Kasahara, and Sreaton.

Becker suggested ignoring the specified names and saying instead that the SPC supports including two representatives from the STP on the task force. Janecek confirmed that he had already done so.

**SPC Consensus 0510-8:** The SPC receives STP Recommendation 0507-5 and recommends including two STP members on the Observatories Task Force.

Okada presented STP Recommendation 0507-8 on completing taxonomic dictionaries for use on IODP platforms and said that it relates to the micropaleontology reference centers (MRCs), though not indicated explicitly in the recommendation. He noted that the MRCs submitted a report to the STP that provided a cost estimate of approximately \$60,000 over a two-year period for completing the project.

STP Recommendation 0507-08: To ensure continued effective use of DSDP-ODP legacy sites, as well as to improve IODP's own paleo data resolution and reproducibility, a paleontologic taxonomic/stratigraphic reference standard is required across all platforms. This should include digital taxonomic dictionaries for microfossil taxa, linking DSDP-ODP and current taxonomic concepts. The STP recognizes that without IODP involvement, these dictionaries will not be completed, which will adversely impact IODP science. The STP recommends that appropriate assistance be given to ensure that such dictionaries are available.

Becker viewed it essentially as recommending that the IODP-MI support this project through SOCs. Nomura recognized the importance of having such dictionaries for use inside and outside of the IODP. Fryer recalled that the original agreement for distributing sample collections to the MRCs depended on them providing the necessary continuing support to do this type of work. She asked if this recommendation now asked for the support for the MRCs to do this task. Okada said yes, but in this case just to support the MRCs to do this specific project. Allan commented that the CHRONOS database had previously received a lot of support and might already contain these data. Becker sensed that the committee did not understand enough about the background and implications to decide clearly whether to accept this recommendation or modify it in some way. Mori preferred sending the recommendation back to the STP for clarification. Becker concluded that the STP should clearly state if they specifically recommended that the MRCs should receive funding for this project. The committee agreed.

**SPC Consensus 0510-9:** The SPC receives STP Recommendation 0507-8 on defining a biostratigraphic reference standard and completing taxonomic dictionaries. The committee asks the STP to clarify the involvement of the micropaleontology reference centers (MRCs) in these activities and return with a new recommendation.

Okada presented STP Consensus 0507-4 on the management forum report. He explained that the panel accepted the general concept but had some significant specific concerns as noted in the consensus statement.

STP Consensus 0507-04: The STP applauds the efforts of the management group to investigate mechanisms to ensure that the IODP initial science plan goals are accomplished and to expand the membership of IODP. The mission style strategy to fulfill thematic needs of the program is intriguing; however, the panel is concerned on issues of site surveys funded purely by IODP, the likely increase in bureaucracy, whether the result will be more inclusiveness or divisiveness, who makes decisions on which missions go forward, who decides what scientists get to be a part of the missions, and the difficulties of getting the program financing and national financing to go completely towards the same goals. One thought from the panel is to bring more bottom-up into the mission idea by issuing RFPs for identified missing thematic areas and develop missions from some of the resulting proposals. Lastly, the STP suggests that to move the program in novel directions, create more funding opportunities, and generate more public interest, we need to use novel technologies operated by highly trained specialists.

Becker stated that the SPC had essentially received the STP recommendation as providing the requested input and would consider it as part of the wider discussion.

**SPC Consensus 0510-10:** The SPC receives STP Consensus 0507-4 on the management forum report.

Okada presented STP Consensus 0507-5 on prioritizing its own recommendations. He explained that the panel had conducted a trial effort at its previous meeting just for action items and would extend the concept to all of its recommendations and consensus statements if the SPC approved.

STP Consensus 0507-05: Two indicators will, where appropriate, be used on all STP recommendations, consensus statements, and action items: 1) a target date for the item to be handled by IODP; and 2) the priority for IODP as concluded by STP from low to high.

Becker thought the idea seemed worthwhile and the committee agreed.

**SPC Consensus 0510-11:** The SPC accepts STP Consensus 0507-5 on a scheme for prioritizing STP recommendations, consensus statements, and action items.

Okada presented STP Consensus 0507-6 on the development of a magnetometer tool for IODP usage and identified the question of how to support the development of such tools.

STP Consensus 0507-06: The STP wishes to thank Dr. Johannes Stoll for his presentation on the long-term prospects of magnetometer tool usage in IODP. The development of a downhole tool that yields information about magnetic inclination and declination is important for IODP science and STP suggests continued IODP support of these types of tools. As part of this we also suggest that the EDP closely follows the progress of such a tool's development.

Becker asked what the STP meant by continued IODP support. Duncan described it as a third-party tool effort that does not receive program support now. Okada clarified that the panel meant just encouragement but not financial support. Becker sought a consensus for accepting the recommendation after changing the wording to say encourage rather than support the tool development.

**SPC Consensus 0510-12:** The SPC receives STP Consensus 0507-6 on magnetometer tool development and recognizes the scientific importance of developing a downhole tool that yields information about magnetic inclination and declination. The IODP should continue encouraging the development of these types of tools, and the Engineering Development Panel (EDP) should monitor closely the progress of such developments.

Okada presented STP Consensus 0507-7 on appointing the current STP co-chairs, himself and Mike Lovell, as chair and vice chair, respectively, for the next two meetings of the panel, with Lovell stepping up to the chair position for the following two years.

STP Consensus 0507-07: The STP nominates Okada as chair for the next two meetings, with Lovell as vice-chair. After that time, STP nominates Lovell to be chair for two years. A new vice-chair will be nominated at the summer 2006 STP meeting.

Becker noted that the SPC has the authority of approval over panel chairs and vice chairs.

**SPC Motion 0510-13:** The SPC accepts STP Consensus 0507-7 and appoints Makoto Okada and Mike Lovell as the STP chair and vice chair, respectively, for the next two STP meetings. The committee anticipates that the STP vice chair will then replace the STP chair and serve for an additional two years.

*Duncan moved, Ildefonse seconded; 17 in favor, none opposed, 2 non voting (Pederson, Zhou).*

### 8.1.5. Engineering Development Panel (EDP)

In the absence of the EDP chair, Keir Becker reported on the outcome of the September 2005 EDP meeting. He outlined the topics of discussion and presented EDP Recommendation 0509-1 on revising the EDP mandate and Recommendation 0509-2 on naming a liaison to the STP.

EDP Recommendation 0509-1: The EDP recommends the following modification to its mandate (*italicized*).

The EDP shall identify long-term (two to five year lead time) technological needs determined from active IODP proposals and the ISP, and recommend priorities for engineering developments to meet those needs, *both for the annual IODP engineering plan and on a longer term*. Appropriate topics shall include...

EDP Recommendation 05-09-02: The EDP recommends that the EDP choose a member to act as a liaison with the STP.

Becker recognized the need for close cooperation between the EDP and the STP, and the committee accepted the two recommendations without discussion.

**SPC Consensus 0510-14:** The SPC accepts EDP Recommendation 0509-1 on modifying the EDP terms of reference with regard to prioritizing engineering developments for the IODP annual plan and on a longer term. The committee forwards the revised EDP terms of reference to the Science Planning and Policy Oversight Committee (SPPOC) for approval.

**SPC Consensus 0510-15:** The SPC accepts EDP Recommendation 0509-2 on choosing an EDP member to act as a liaison with the Scientific Technology Panel (STP).

Becker presented EDP Consensus 0509-1 on classifying engineering development projects and Consensus 0509-2 on the EDP role in reviewing such projects.

EDP Consensus 0509-1: The EDP recommends that the IODP-MI adopt a four-stage classification system for the concept, design, fabrication, and implementation of engineering development projects. The requirements for each stage of such developments would be as follows.

1. Concept
  - a. Functional requirements/specifications
  - b. Rough cost
  - c. What problem will be addressed/benefits
  - d. Rough schedule
  - e. Fit with the ISP objectives
  - f. Probability of success
2. Design
  - a. Drawings and schematics
  - b. Testing of unproven components
  - c. Cost +/-15%
  - d. GAANT chart schedule or equivalent
  - e. Work breakdown structure
  - f. Physical mockup if needed
  - g. Testing plan

3. Fabrication
  - a. Product
  - b. Test results (component, performance, field)
  - c. Comparison of results with testing plan
  - d. Draft operations manual, shipboard procedures
  - e. Training materials
  - f. Sea trial or field test results, if needed
4. Implementation
  - a. Evaluation of performance versus requirements

EDP Consensus 0509-2: The EDP recommends that a review is performed at the end of each of the 4 stages of an engineering development project (EDP Consensus 0509-1). EDP is not the reviewer, but would like to see a summary of the review. EDP would like to give advice at the concept stage, and by exception give advice later in project life. EDP would like a summary of project status including project review results, at biannual meetings. EDP may have advice on projects deviating from plan or no longer have strategic fit.

The committee accepted the two EDP consensus statements without discussion.

**SPC Consensus 0510-16:** The SPC accepts EDP Consensus 0509-1 on adopting a four-stage classification system for engineering development projects and EDP Consensus 0509-2 on the EDP role in reviewing such projects. The committee forwards those consensus statements to the IODP-MI.

Becker presented a conceptual EDP schedule for typical July and January meetings and a draft agenda for the next EDP meeting in January 2006. He identified some of the challenges facing the EDP and noted that they had not yet recommended any engineering priorities, primarily because the IOs had not presented any proposed developments at the first EDP meeting. Becker thus concluded that the committee had nothing to discuss under Agendum 9.

Bekins inquired if the SPC could send proposals to the EDP and the STP if they had already reached the SPC. Becker replied that the SPC could ask those panels to assess proposals in January and forward their comments to the SPC in time for the March ranking. Schuffert noted the need to coordinate the meeting schedule to allow the exchange of liaisons between the EDP and the STP. Allan suggested having joint meetings. Schuffert recalled that the TAP and the SciMP once met jointly, but the outcome proved less worthwhile than expected, as the panels did not find much common ground. Baldauf still expressed interest in having a joint STP and EDP meeting.

### **8.2. Industry-IODP Science Program Planning Group (IIS PPG)**

Becker explained the SPC task of approving a chair and the supplemental membership of the IIS PPG, as well as the alternative of allowing the PPG to nominate a vice-chair after its first meeting. He identified one potential chair willing to do the job only for the first six months and one other candidate nominated by the U.S. who could step in immediately as a full-term chair. Ildefonse suggested naming a short-term interim chair who could provide some continuity with the former Industry Liaison Panel (ILP). Pearce agreed on naming a transitional chair and proposed also naming the vice-chair, who would then take over as the new chair. The committee agreed by consensus on the two proposed candidates.

Becker asked if the committee wanted to proceed now with approving the rest of the PPG membership. Ildefonse doubted that everyone had examined all of the CVs. Becker suggested

working with chair and vice chair to select the remaining members and returning to the SPC for approval by e-mail. The committee agreed by consensus.

**SPC Consensus 0510-17:** The SPC appoints Harry Doust as temporary chair for one meeting of the Industry-IODP Science Program Planning Group (IIS PPG). The committee also appoints Ralph Stephen as vice chair of the PPG and expects him to take over as chair after the first meeting. The SPC will consult with the IIS PPG chair and vice chair before approving the remainder of the IIS PPG membership, in addition to those already appointed by the program members.

### **8.3. New PPGs and DPGs**

Becker inquired about the SSEP position on the recommended DPG for hot spots and LIPs. Underwood reiterated that the SSEP does not want to prioritize proposals and thus it requires either a DPG or community workshop to do it. Given noted that one of the proponents had already approached the USSSP for workshop support, but this does not really fit the concept of what they normally support, though possibly they could support a small working group meeting. Duncan hesitated asking the proponents to pare down their own goals and set priorities. Bekins believed that a workshop or DPG could lay out a global strategy for addressing the questions. Piasias indicated that the program originally conceived of DPGs as way to develop a sound strategy and not necessarily set priorities or focus objectives. Underwood confirmed that the SSEP sought to define a global strategy for expeditions and perhaps identify priorities, but not to pare down the objectives. Byrne wondered if the normal SPC ranking procedure would set suitable priorities without any advance efforts through a DPG or workshop.

Becker proposed forming a working group to define a DPG mandate and setting a one-year timeline for the DPG to address this issue. He expected that the DPG would have a proponent as the chair and ten to twelve total members that could include non-proponents. Blackman recommended including geodynamic modelers on the DPG. Schuffert wondered how an SPC working group could draft a mandate for the DPG without having seen the relevant proposals. Becker responded that the working group could at least consider the publicly available abstracts from the Web. Bekins suggested waiting until after discussing the mission concept further the next day, though she recognized that the hotspot proposals probably had already developed beyond the starting point of missions. Pederson believed that it would take some time to agree on the mission concept and suggested proceeding with the DPG in the meantime. Duncan and Pearce volunteered to draft a recommendation. Becker recommended consulting with Underwood and returning to the DPG issue on Friday morning. Duncan later presented a draft recommendation on establishing a hot-spot DPG (see Agendum 17). Pearce suggested asking the SSEP to draft a mandate for the DPG because they have a better sense of the requirements. Becker agreed that the committee should ask the SSEP to draft a mandate for the DPG that would specify the required expertise for the membership, a timeline, and the final product.

**SPC Consensus 0510-18:** The SPC accepts the SSEP advice to create a detailed planning group (DPG) for hotspot geodynamics to consider Proposals 620-Full3 Hotspot Seamounts, 636-Full2 Louisville Seamounts, and 669-Pre Walvis Ridge Hotspot, now at the SSEP level of review. These proposals address themes related to hotspot-generated volcanic lineaments, including hotspot motion, with implications for plate-motion reference frames, and secular variability of hotspot melting products, with implications for mantle plume models. The DPG should prepare a plan of drilling, logging, and post-cruise science for optimally addressing the global test of hotspot motion, ideally separating the effects of plume drift due to horizontal advection from those of true polar wander. The committee asks the SSEP to prepare a draft mandate for the DPG, specifying the overall goals, the recommended membership, a timeline, and the final product, before the March 2006 SPC meeting.

Becker addressed the SSEP suggestions for ten possible PPGs, with one for epicontinental seas highlighted as a priority. Given noted that the proponents of the epicontinental seas proposals recently received support from the USSSP for a small group meeting in early November 2005 to discuss the reviews of their proposals, and she hoped that would settle the matter. Becker then saw it as perhaps premature to set up a PPG for this topic. Pearce inquired whether the proposed study would have any global scientific significance. Underwood described the basic scientific concept as a modern analog for the ancient stratigraphic record. He explained that the nurturing efforts so far had not succeeded in significantly improving the proposals, but the SSEP remained enthusiastic about the concept and hence recommended forming a PPG.

Mountain fully supported the idea of creating a PPG for epicontinental seas because he saw it as a great opportunity to drill into a modern analog of pervasive examples in the rock record. Brumsack also recalled considerable enthusiasm among the SSEP members regarding this very valuable and important topic, and he suggested that it could relate to proposals in other areas such as the Baltic and North Seas. Mevel noted a European-funded workshop for the Baltic Sea proposals. Bekins preferred waiting to see the results of the upcoming proponent group meeting and perhaps asking that group to submit a proposal for a PPG. She also suggested discussing all of the recommended PPGs before deciding on any. Becker remarked that the SSEP already listed this topic as the top priority. Underwood added that the SSEP also highlighted three others as interesting. Schuffert cautioned against asking the proponents to submit a proposal for an epicontinental seas PPG because they had already requested to form such a PPG four years ago, but the interim Planning Committee decided against it at that time and instead advised the proponents to submit a drilling proposal.

Pearce still preferred seeing a more substantial proposal for a PPG. Quinn thought that the list recommended by the SSEP needed focusing and better-justified priorities. Becker proposed asking the SSEP to justify and prioritize better the list of recommended PPGs. Stein stated that the SSEP strongly advocated the epicontinental seas PPG, whereas the other nine received only limited e-mail discussion after the meeting, and he agreed that the SSEP should reconsider the issue. Brumsack suggested asking the SSEP to provide a mandate since they have access to the relevant proposals. Ildefonse suggested naming a chair to write a proposal and a mandate for the PPG. Becker agreed that the SPC needed a better description of what the PPG should do, plus suggestions for a potential chair. Underwood responded that the SSEP certainly could have proceeded that way, but the SPC had only asked for a list of topics. Becker sought a consensus and the committee agreed.

**SPC Consensus 0510-19:** The SPC receives the SSEP list of ten suggested program planning groups (PPGs) and requests the SSEP to provide better justification for establishing specific PPGs, including a draft mandate and recommendations for appointing a chair.

### **9. Initial planning for FY2007 engineering development**

The committee did not receive any report on engineering developments because the IOs had not presented any proposed developments at the first EDP meeting, as noted under Agendum 8.1.5.

### **10. IODP policy development**

#### **10.1. Third-party tools**

Keir Becker explained the expected procedure for approving the final third-party tools policy. He and Bekins volunteered to comprise a working group that would examine the current version of the policy and return comments to the STP without involving the entire SPC. Becker noted that the STP could finalize the policy in January 2006, forward it to the SPC by the following March, and then the SPC could send it to the SPPOC for final approval in June 2006.

**SPC Consensus 0510-20:** The SPC receives the draft third-party tools policy. A small SPC working group (Becker and Bekins) will provide feedback to the Scientific Technology Panel (STP) on the draft third-party tools policy before the January 2006 STP meeting. The SPC requests the STP to complete the third-party tools policy before the March 2006 SPC meeting. The committee expects to forward the completed policy to the Science Planning and Policy Oversight Committee (SPPOC) for final approval by June 2006.

#### **10.2. Proposal guidelines (handling, length, and format)**

Becker explained that this topic related primarily to the question of whether the program should place stricter limits on the timeline for submitting and evaluating ancillary project letters (APLs). He suggested not accepting any APLs for scheduled expeditions after the SPPOC has approved the relevant annual science plan. He also suggested having separate APL guidelines for the different drilling platforms. Becker proposed working with Larsen to revise the APL guidelines and return to the SPC for approval by e-mail after the meeting.

Fryer supposed that an APL might involve just additional measurement that would not affect operations significantly and thus not require early scheduling. Ildefonse understood the constraints but also preferred keeping an option for enough flexibility to accept last-minute ideas. Bekins noted that the introductory section of the guidelines on deadlines does not apply to proponent response letters (PRLs). Becker agreed to consider that matter.

#### **10.3. Post-expedition access to samples and data**

Becker explained that the former SPC chair had requested placing this topic on the agenda. He identified the question of whether the sample policy should state explicitly that anyone could obtain samples and not just IODP members. Becker noted that the current policy does not exclude it now, and he wondered if many investigators from outside the program had received samples in the past.

Allan stated that the NSF owns the DSDP, ODP, and non-riser IODP cores and has obligated the program to provide access to them to anyone. Pederson asked if the IODP Web site could indicate somewhere that anyone can request samples. Larsen replied that he could certainly look into doing that. Piasis recommended not changing the policy if unnecessary. Becker concluded that the policy did not need modifying.



#### **10.4. Environmental protection and biodiversity issues**

Hiroshi Kitazato reported on environmental protection and biodiversity issues. He described various human activities and their potential disturbances of the seafloor and cited the question of how long it takes to recover from such disturbances. Kitazato emphasized the lack of experimental data and noted, for example, that the typical lifetime of a hydrothermal vent remains unknown, though estimated at 30-50 years, and cold seeps have slower activities and longer lives. He mentioned the World Summit for Sustainable Development held in Johannesburg, South Africa in 2002 and a series of scientific and political workshops in 2001-2005 to establish marine protected areas. Kitazato cited the Rainbow Hydrothermal Field case study and warned that certain non-governmental organizations wished to establish very strict regulation codes for marine protected areas that would make it almost impossible to conduct scientific research in those areas. He described the idea of establishing unique science priority areas to protect them from commercial activities and suggested that the IODP should establish a code of conduct as far as possible. Kitazato noted that InterRidge had begun drafting such a code for hydrothermal areas and suggested that it could serve as a possible model for the IODP. He also suggested that the IODP should establish an environmental advisory group and that long-term monitoring of drilling sites before during and after drilling could provide an avenue for involving other marine science communities.

Becker characterized this as an important issue that might need to go all the way up to the SPPOC for policy consideration. He noted that the SPC had already made a statement and now it seems entirely like a SPPOC issue. Becker felt content with the previous SPC actions but wanted to stay prepared for future actions if necessary. Piasis wondered what else the SPC or any SAS panel could do about this issue. He identified the concern of whether the SPC decides not to drill somewhere because of environmental concerns, or whether the managers and the funding agencies make those decisions. Becker replied that the SPC had already decided not to drill on a live mound in the Porcupine Basin.

Allan commented that liability issues make it difficult for the IODP-MI and the science advisory structure to get involved, and he cautioned that some non-governmental organizations have no interest in compromising on any issues. He added that the IODP already has an environmental policy statement, as drafted by the SPC and endorsed by the SPPOC in December 2004. Ildefonse noted that the IODP already has a proposal in the system for drilling at Rainbow Hydrothermal Field. Mevél recalled that representatives of a non-governmental organization attended the MOMAR meeting; hence, it comes as no surprise that they used Rainbow Hydrothermal Field as a case example. Searle attended the MOMAR meeting and said that the non-governmental organization later made a presentation to a governmental group. He thought that scientists probably prefer to share information than keep it secret, and the program must make the case that it intends to help protect the environment through its activities.

Mountain supported the suggestion for monitoring drilling sites before, during, and after drilling. Katz called it a major undertaking for industry on every borehole and remarked that the surveys probably do more damage than the drilling. Taira stated that CDEX would conduct before and after surveys of the seafloor for the shakedown cruises of the *Chikyu*. Yamamoto characterized biodiversity assessments as not so easy and highly variable depending on local conditions. He advised keeping the channels open for communicating with the marine biology community to get information. Piasis said that the program would need all available data to argue its case. Katz noted that information exists but the requirements differ from place to place. He stated that the EPSP believes that the program can operate safely in any almost any environment, and they purposely drafted a very short statement about

adopting best environmental practices so as not to preclude operations because of liability issues. Evans recommended putting the environmental policy on the IODP Web site to show that the program takes it very seriously.

**Thursday**

**27 October 2005**

**09:00-18:00**

## **11. FY2007-2008 expedition schedule II**

### **11.1. Select scenarios to prioritize and approve**

### **11.2. Prioritize and approve scenarios**

### **11.3. Presentation of results**

Tom Janecek outlined a generic model for a long-term scheduling timetable and emphasized the goal of planning farther in advance than during the first few years of the program. Mori inferred that it would require more homework by the SPC to keep better track of decisions made at previous meetings. Mountain wondered how the program could respond more rapidly to matters of great societal importance that might arise. Janecek replied that the model allows some room to handle that sort of project, but the program does have a limit on how quickly it can move.

Becker proceeded to discuss the specific scheduling scenarios for FY2007-2008 as presented under Agendum 7.1. He proposed first considering the *Chikyu* and SODV scheduling and then the MSP scheduling separately. Becker characterized the main decision as basically involving a choice between two models for the SODV schedule. Pederson wondered if the second model might give rise to any staffing problems with so many NanTroSEIZE expeditions scheduled in such a short timeframe. Janecek acknowledged the challenge but said that all signs indicated that it should work. Byrne asked if the second model would involve only Stage 1 of NanTroSEIZE. Janecek replied that it would accomplish most of Stage 1, but perhaps not all, and possibly some of Stage 2, whereas the first model would definitely not allow for completing Stage 1. Mountain worried about devoting so much time in one year to NanTroSEIZE without having a backup plan in case something unexpected happens. He expressed concern, for example, about the unpredictability of the Kuroshio Current, which could possibly prevent any drilling by either ship. Kuramoto replied that CDEX has done considerable modeling and testing of the ship capabilities and has a good idea of the limits. Baldauf added that non-riser mode probably allows more flexibility, and the USIO has drilled previously in that area in currents of 2-3 knots, though such conditions might limit some logging operations. Katz noted that some of the initial NanTroSEIZE drilling would involve LWD in the reference holes, and he wondered whether strong currents would degrade the data quality. Baldauf replied that operations would just have to shift to coring if LWD could not proceed.

Byrne commented that each of the NanTroSEIZE proposals ranked highly and could stand alone. Quinn recognized the high ranking of NanTroSEIZE but noted that other proposals, such as Wilkes Land, also ranked highly, plus the first model still gives three slots instead of four to NanTroSEIZE. Mori wondered how long the Southern Ocean proposals would have to wait until they fit in the schedule again. Janecek responded that it would depend on the other proposals available and the science priorities established by the committee. Byrne suggested that the Southern Ocean sites could link with moving into the Indian Ocean. Baldauf indicated that other options could involve the Southern Ocean. Bekins understood that safety concerns might preclude Canterbury Basin as a viable option in early FY2008. Katz responded that the EPSP would preview Canterbury Basin in December 2005, and it might require two phases of drilling anyway. Piasis suggested considering Canterbury Basin as an option for the *Chikyu* after the first riser drilling. He also remarked that having two ships on site at Nankai for an

extended period could provide greater flexibility that would help in avoiding the variable currents. Kawahata inquired about considering the Bering and Okhotsk Seas in the available window. Janecek responded that such a plan would involve significant downtime because of weather conditions. Becker wanted to limit further discussions to determining scientific priorities.

Brumsack questioned whether the committee absolutely needed to decide on the FY2008 schedule at this meeting, especially given the significant uncertainties shown in both models for the SODV. He nonetheless argued strongly in favor of conducting as much of the NanTroSEIZE project as possible. Janecek emphasized again the importance of getting out of reactionary mode in planning. Bekins remained concerned about the staffing issue in the second model and wanted to consider reprioritizing the drilling of NanTroSEIZE objectives in the first model. She sensed some disconnect among the priorities of the project management team and cautioned against assuming that the *Chikyu* non-riser drilling would accomplish the highest priorities of Stage 1. Mountain agreed that the committee should reconsider the prioritization of the NanTroSEIZE non-riser drilling operations. Becker proposed first approving the *Chikyu* schedule and then considering the SODV schedule.

**SPC Motion 0510-21:** The SPC approves the FY2007-08 operations schedule for the *Chikyu* as proposed by the Operations Task Force and derived by the NanTroSEIZE Project Management Team from Proposals 603A-Full2 NanTroSEIZE Reference Sites, 603B-Full2 NanTroSEIZE Mega-Splay Faults, and 603C-Full NanTroSEIZE Phase 3: Plate Interface. The recommended expeditions will begin in September 2007 with NanTroSEIZE Stage 1 non-riser drilling and continue later in 2008 with NanTroSEIZE Stage 2 riser drilling following a period of annual maintenance and further testing. The committee recognizes that these planned operational stages do not correspond directly with the organizational scheme of the individual drilling proposals.

*Mori moved Fryer seconded; 17 in favor, none opposed, 2 non-voting (Pederson, Zhou).*

Quinn proposed including the NanTroSEIZE option in the April-May slot of the first model for USIO operations of the SODV. The committee agreed by consensus.

**SPC Consensus 0510-22:** The SPC prefers inserting the NanTroSEIZE Stage 1 non-riser drilling option in model 1 for USIO operations in FY2007-08.

Becker proposed that the committee could either conduct a straw vote on the two models for the SODV or just take a motion to approve one or the other. Mountain moved to approve the first model and Quinn seconded the motion. Mori planned to vote against the motion because he preferred conducting a straw vote first to hear all of the opinions. Pearce wanted to hear more information on the NanTroSEIZE priorities. Mountain and Quinn agreed to withdraw the motion to approve the first model. Becker then called for a straw vote. Eleven committee members preferred the first model and six preferred the second model, not quite enough for a two-thirds majority.

Ildefonse emphasized the importance placed on the NanTroSEIZE project over the last several years of development and noted that the possibility remained to schedule Wilkes Land and Canterbury Basin in the near future depending on the other proposals forthcoming. Brumsack wanted to prepare well for riser drilling with the *Chikyu* and cited the high potential for education and outreach efforts. Duncan also wanted to capitalize on the momentum and readiness of the highly ranked Nankai objectives and set the stage properly for the first riser drilling. Byrne reiterated that NanTroSEIZE represented three proposals that all ranked in the top three, whereas Wilkes Land and Canterbury Basin ranked sixth and

seventh. Pearce cited the huge investment into NanTroSEIZE and favored doing it properly. Bekins asked if another NanTroSEIZE expedition could replace the first expedition in the first model. Baldauf answered that it would occur during typhoon season. Mountain asked about the possibility of reprioritizing the initial *Chikyu* non-riser drilling objectives to provide the necessary information to support the first riser drilling. Janecek answered that a reprioritized schedule would not include the seaward reference sites. Several committee members appreciated the arguments and shifted their support to the second model, recognizing the unique opportunity for operating two platforms in the same area at the same time.

Pearce wondered if the committee would consider approving the second model with a stated intent to follow through by directing the ship into the Southern Ocean and perhaps the Indian Ocean. Searle asked what else could fill the uncertain slot in the second model. Becker said the committee would have to wait and see what comes up in March. Pearce moved to adopt the second model with the intent to schedule Canterbury Basin, Wilkes Land, and Indian Ocean operations in the following fiscal year. Ildefonse seconded the motion. Bekins asked about the level of staffing required for NanTroSEIZE. Janecek said that it would compare with the back-to-back Oceanic Core Complex expeditions. Blackman described the staffing efforts for those expeditions as very hard work but certainly possible with enough lead-time and perhaps some overlapping personnel. She also thought that NanTroSEIZE would probably draw from a larger community. Bekins supposed that the two models would not differ that much in staffing load because the first Nankai expedition would involve LWD and require fewer staff than usual.

**SPC Motion 0510-23:** The SPC approves the FY2007-08 operations schedule of the U.S. scientific ocean drilling vessel (SODV) as proposed in model 2 of the Operations Task Force. The recommended expeditions will begin in August 2007 and proceed as follows:

- Equatorial Pacific Paleogene Transect (Proposal 626-Full2)
- NanTroSEIZE Stage 1 (Proposals 603A-Full2, 603B-Full2, 603C-Full)
- NanTroSEIZE Stage 1 continued (Proposals 603A-Full2, 603B-Full2, 603C-Full)
- Superfast Spreading Crust IV (Proposal 522-Full3) or another expedition identified later
- Juan de Fuca Flank Hydrogeology III (Proposal 545-Full3)

In addition, the committee intends to schedule further non-riser drilling operations in the Southern Ocean (i.e., Proposals 600-Full Canterbury Basin and 482-Full3 Wilkes Land Margin) and the Indian Ocean in the following fiscal year.

*Pearce moved, Ildefonse seconded; 15 in favor, 1 opposed (Quinn), 1 abstained (Mountain), 2 non-voting (Pederson, Zhou).*

Janecek stressed the need to start planning and wanted to clarify whether Superfast Spreading Crust IV represented a viable option or just one of several that the committee would consider again in March 2006. Ildefonse stated that the decision should depend on the outcome of Expedition 312. Baldauf could accept waiting until this December to decide but regarded the following March as too late for acquiring the long lead-time items. Becker said that the committee could decide by e-mail. Bekins thought it would help to know the other available options. Becker responded that no other options would exist until the March ranking. Pearce said that the Equatorial Pacific expedition could represent another option in case of a delay in delivering the SODV.

Becker noted that Mountain had a conflict of interest concerning the MSP discussion. Mountain left the room and Filippelli stepped in as a temporary replacement. Quinn reported on the efforts of the working group on the two- versus three-hole strategy for Proposal

564-Full. He summarized that the group reached an easy agreement on the necessity of three holes to accomplish the proposed scientific objectives. Quinn presented a draft recommendation, and the committee agreed by consensus.

**SPC Consensus 0510-24:** The SPC reaffirms the necessity of drilling a three-site transect (MAT-1, -2 and -3) on the New Jersey margin as a requirement to achieve the scientific objectives of Proposal 564-Full New Jersey Shallow Shelf. The drilling of fewer than three sites would compromise the scientific integrity of the project.

Mevél thanked the committee for giving such a clear recommendation because it would help the ECORD Council in reaching a decision on the POC budget for FY2006. She expected a decision by late November 2005 and noted the possibility of combining funds for FY2006 and FY2007 in case enough funds do not come through for FY2006, but that consequently would delay the project. Becker regarded this recommendation as consistent with the previous SPC Consensus 0503-4. He asked whether the FY2007 science plan for MSP expeditions could wait until March 2006 if the New Jersey expedition happens in FY2006. Evans answered yes.

#### **11.4. Nomination of co-chief scientists**

Mountain rejoined the meeting. Becker explained that the SPC had already nominated potential co-chief scientists at its previous meeting and forwarded that information to the IOs. He noted that the NanTroSEIZE project management team had since nominated two new potential co-chiefs for the NanTroSEIZE expeditions, one from Japan and one from ECORD, and he asked if the SPC could endorse those additional nominees. No one objected. Mevél asked about the possibility of renaming the NanTroSEIZE project to something more understandable to the public. Becker suggested that project management team could consider that issue.

#### **12. 664-APL Brazos-Trinity Source-To-Sink**

Becker reviewed a previous decision from the March 2005 SPC meeting not to include Proposal 664-APL Brazos–Trinity Source-to-Sink as a contingency option for FY2005 operations. He noted that the proponents had since submitted a response letter, but the status of the APL beyond FY2006 remained unclear. Becker proposed returning this APL to the SSEP, and the committee agreed by consensus without further discussion.

**SPC Consensus 0510-25:** The SPC returns Proposal 664-APL Brazos-Trinity Source-to-Sink to the Science Steering and Evaluation Panel (SSEP) for further nurturing and evaluation.

#### **13. IODP long-range planning - action items from agenda items 5 and 6**

Barbara Bekins presented a draft recommendation from the working group on the mission concept, listing various desirable characteristics that the plan should encompass if implemented. She said that the group recommended requesting additional input from the SSEP, the IODP-MI, and the PMOs and deferring a final decision until the March 2006 SPC meeting. Bekins also noted a lack of consensus on identifying the primary reasons for adopting the mission concept.

Quinn questioned who made the judgment about missing pieces from the Initial Science Plan, when did it happen, and whether the SPC should have done it. Ildefonse noted that the SPPOC discussed it at their last two meetings, though he regarded the SSEP as the group best positioned to evaluate this issue. Becker added that the SPPOC mandate now includes long-term assessment of scientific achievements. Byrne commented that the SSEP also evaluated how well existing proposals address the Initial Science Plan and recommended forming PPGs to fill in the gaps. Mountain shared the concerns about the origin of the mission

concept and thought it seemed premature to judge program accomplishments versus the Initial Science Plan after conducting only twelve expeditions so far.

Larsen asked if the working group had excluded workshops from the plan on purpose. Bekins answered no, not on purpose. Brumsack wanted to clarify whether this new mission structure would replace any components of the current structure, such as PPGs and DPGs. Pederson could not clearly see at what stage something becomes a mission. Ildefonse understood the mission concept as intended to focus program resources and produce faster results. He believed that a mission team would differ from the CDP process in that it encompasses an implementation scheme as well as education and outreach. Pearce inferred that a mission team would lie above the CDP level because a mission could include more than one CDP. Becker identified the need to clarify what constitutes a mission team. Zhou asked if SAS panel members could participate as members of a mission team. Bekins supposed so, in the same way that SAS members can now serve as proponents of unsolicited proposals. She also suggested that SAS liaisons would contribute to the mission teams. Brumsack cautioned against letting the SAS get too involved in generating the proposals. Stein wondered who would review the proposals generated by the mission teams. Becker stated that the SSEP must nurture mission proposals to the same extent as other proposals. Pearce suggested modifying the recommendation to include unsolicited proposals in the purview of mission teams, in case the SSEP receives unsolicited proposals that might fit into a mission.

Mountain inquired if any plans existed to present the mission concept at the AGU town hall meeting. Filippelli confirmed that the town hall meeting would include an introduction to the mission concept. Byrne recalled the previous town hall discussion for developing CDPs and noted that it took three years to develop the CDP concept. Mountain asked if any creative ideas for CDPs arose from the town hall meeting. Byrne said yes. Mountain suggested encouraging the IODP-MI to seek advice from the community at the town hall meeting. Quinn still had major reservations about the mission concept and feared that it would create larger problem than those it supposedly would solve. He also expressed surprise at the idea of presenting this unfinished plan to the public only six weeks from now and urged proceeding with caution. Filippelli recommended voicing that caution to the IODP-MI so they could plan accordingly.

Becker reported that he had volunteered among the small group to draft an implementation plan in two weeks, just in time for the November SSEP meeting. Pearce added that the small group planned to consider the draft plan in mid December, just after the AGU meeting. Underwood said that although the SSEP would have a busy agenda they would certainly debate in their own way these same issues discussed here. He wanted to know the deadline for the SSEP to deliver the requested input. Pearce responded that the SSEP should not worry about the details but just identify their concerns for the small group to consider in December. Becker suggested that the SSEP should ask for more time if they really need it.

Bekins summarized the suggested changes to the recommendation so far. Becker suggested returning after lunch with a final revised recommendation for approval. Bekins presented a revised recommendation after lunch incorporating the comments from the earlier discussion. Becker described the response as well formulated, and the committee agreed by consensus to adopt it.

**SPC Consensus 0510-26:** The SPC recognizes some advantages associated with the mission team concept; however, the committee identified the following desirable aspects if the program implements this concept. (1) Science themes for compelling missions should be identified and refined by the SAS in consultation with national programs or submitted in unsolicited proposals. (2) The IODP-MI would issue a call for relatively short proposals for new missions with desirable themes that will provide a larger context for outreach on broad Earth science themes. (3) The SSEP will evaluate mission proposals and make recommendations to the SPC. (4) The SPC would evaluate the SSEP recommendations and designate the topics for mission teams. (5) To identify team members, a broad, inclusive, and open process is essential. (6) Mission teams will generate one or more drilling proposals to address the goals of the science theme, with technical assistance from the IOs and the SAS panels. Alternatively, the SAS could assist proponents to reorganize existing proposals into a coherent mission. (7) The program will evaluate mission-team drilling proposals in the same way as all other drilling proposals. Technical assistance may include formulating drilling strategies, locating drilling sites, assembling site survey data, and designing monitoring equipment. (8) A timeline to achieve the mission goals will be formulated. (9) The mission teams will be evaluated on a regular basis (annually).

It is important to note that some proposals created using this strategy will not succeed. In summary, the SPC wishes to make a final decision on this issue at its March 2006 meeting. The SPC looks forward to an ongoing dialogue in the community before the program implements this concept. During this period, the SPC requests guidance from the SSEP on all aspects of the plan, including (a) the definition and desirable outcomes of a mission, (b) possible science topics, (c) the format of mission proposals, (d) the composition of mission teams, (e) a timeline for mission planning, and (f) clarifying how the mission concept relates to PPGs, DPGs, and CDPs and whether it should replace PPGs or DPGs. The SPC also requests information from the IODP-MI and the program member offices on plans for integrating community discussion and comments (e.g., town hall meeting at AGU), the resources available to mission teams, the number of simultaneous teams possible, and desirable outcomes.

## **14. IODP expedition reports and SPC assessments**

### **14.1 Summary of SPC assessments**

Keir Becker summarized the intended process for conducting expedition assessments and noted that this would represent the first SPC attempt at doing so. He explained that the assessments should focus on science and not operations, and the SPC assessors should produce a one- to two-page written summary (see Appendices A and B for the SPC reviews of Expedition 301 and Expeditions 304 and 305, respectively). Becker defined the basis for the assessment as the proposal forwarded by the SSEP and ranked by the SPC. He noted that the committee would hear from two presenters for Expedition 301, and he cautioned against getting too concerned about operational aspects of the dual Expeditions 304 and 305.

Hans Christian Larsen also outlined the stages of scientific assessment, including the preliminary report written by the co-chiefs shortly after disembarking, the co-chief presentations to the SPC, and written reviews by the SPC watchdogs. He noted that the expedition prospectus of actual drilling plans might include some undocumented changes from the proposal. Larsen suggested that the assessment might require an external review in some cases and would eventually go forward to the SPPOC for their considerations in the longer-term reviews.

Duncan regarded the one-year, post-expedition timing as somewhat arbitrary, given that much expedition science comes out considerably later. He wondered about the appropriate place for the SPC review to stop and the longer-term effort to begin. Becker said that the SPPOC had considered that question and concluded that the SPC should proceed with a one-year timeframe. Ildefonse inquired if the new assessment process would apply to Expedition 302 since the SPC already received a report from the co-chiefs. Becker suggested that the SPC could ask for another presentation on Expedition 302 because the first one focused mostly on operational details and did not really provide the necessary information to assess the science.

#### **14.2 Expedition 301 Juan de Fuca Hydrogeology**

Tetsuro Urabe reported on the initial scientific results of Expedition 301 Juan de Fuca Hydrogeology, the first part of a proposed two-part project. He identified the drilling sites, summarized the operational plans, and characterized the expedition as operationally conventional, with much of the science expected to come from the second expedition. Urabe showed temperature and geochemical profiles of Hole 1301C and a hydrologic model of the eastern ridge flank. He also mentioned the inconclusive microbiology results obtained for basement samples.

Keir Becker reported on the results from the CORK experiments. He explained the features and multiple purposes of the CORK system and said that some of the downhole data would not be obtained until five years later when they recover the tool strings by ROV, though the osmosamplers connected to the wellhead would allow the withdrawal of fluid sample at shorter intervals, also by ROV. Becker outlined the differences between the prospectus plan and actual operations, such as installing only three CORKs instead of four. He reported that they returned to the sites within three weeks to install or exchange instruments and components with the ROV *ROPOS* and found strong evidence of a cross-hole pressure response between Hole 1027C and Site 1301, located 2.4 km apart. Becker said that they returned to the site again in September 2005 for further servicing operations with the *Alvin* and found that the seafloor and upper casing seals in Holes 1301A and 1301B seemed incomplete, but the downhole packers appeared okay. He noted that the pressure response at Hole 1027C showed a signal of distant earthquake swarms. Becker described the plan to fix the leaks at Site 1301 and outlined the plans for the remaining operations related to Proposal 545-Full3.

Becker asked Mori to moderate the discussion. Ildefonse asked for a summary of the basement geology. Urabe explained that Expedition 301 drilled deeper than during ODP Leg 168 and penetrated pillow basalts on the top and at the bottom of the section and massive flows in between, but found nothing remarkably different from the earlier results. Duncan asked if the results so far suggested any possible changes in the remaining drilling plan. Becker indicated that the upcoming servicing operation might provide better insight on the cementing plan, but the science plan would remain the same. Mountain asked whether the pressure anomalies associated with earthquake swarms follow or precede the seismic activity. Becker said they were not precursors.

Kitazato inquired about the microbiology results. Urabe responded that they had to develop a new sampling protocol for this first attempt at doing microbiology studies in igneous basement. He explained that they took whole-round samples on the catwalk and tested for contamination, but cell counting did not work well in the crustal rocks because of the natural fluorescence of the substrate. Urabe said that they recovered only one sulfur-utilizing microbe and at least determined that the number of cells is low. Pederson recalled that Leg 187 actually extracted microbes from glass, and he wondered if they used different techniques this



time. Urabe answered that they tried to conduct incubation experiments. Yamamoto asked if the microbiological colonization instrument in the CORKs had shown any results. Becker explained that they would not see any results until the recovery of the osmosamplers in 2009. Bekins asked if they measured nitrate at the base of sediment column. Urabe did not know for sure but thought probably yes. Brumsack said that he would expect higher microbiological activity at the transition zone to anaerobic methane oxidation.

Kawahata asked if the borehole fluid chemistry evolved during the experiment. Becker replied that those results also would have to wait for the recovery of the osmosamplers in 2009. Mori asked if they observed a higher or lower circulation rate than expected. Becker said that they did not conduct a circulation experiment but only measured the pressure response at the distal hole. Mori referred to the multidisciplinary research plan involving microbiology, hydrogeology, and geochemistry and wondered how best to package the results to show that nature. Urabe thought the collaboration went quite well despite having to share time because of the CORK difficulties. Becker identified the large-scale fluid-flow regime as the unifying theme. Ildefonse cited this expedition as a good example of one that required maximum integration between the science party and the IO. He thought the results looked good so far for this first expedition, given the operational difficulties, though the sealing problem could potentially compromise some of the main objectives. Larsen saw it as important to identify the consequences and timing of the sealing problem. Becker asserted that they could still obtain some reasonable qualitative results without perfect seals, and he characterized 1301A as probably more problematic than 1301B because of open-hole seals deep in 1301B. Bekins asked if the watchdogs could have access to the initial reports before writing the review, as she thought they should not base the review solely on the material presented here. (See Appendix A for the SPC review of Expedition 301.)

### **14.3 Expeditions 304 and 305**

Donna Blackman reported on the initial scientific results of Expeditions 304 and 305 Oceanic Core Complex Formation I and II. She reviewed the proposed scientific objectives and identified those that succeeded and those that did not. Blackman explained the different models of core complex formation, described the evidence for predicting the presence of mantle peridotite at Atlantis Massif, and showed multi-channel seismic reflection images of the study area. She explained that drilling attempts failed at the hanging wall site but succeeded at the footwall site, where the lithology consisted largely of gabbro. Blackman showed photomicrographs of gabbroic textures, deformation, and alteration and presented bulk-rock geochemical data. She also showed structural, paleomagnetic, downhole logging, and VSP data for Hole 1309D and inferred the presence of rotational blocks, but could not easily quantify or constrain the amount of rotation. Blackman briefly outlined some of the initial conclusions and described the plans for post-cruise research and future experiments in the study area.

Pearce appreciated the clear and honest statement of the achievements versus the objectives. He wondered about a comparison with the results from Hole 735B. Ildefonse called the difference between the two sites spectacular, despite recovering predominantly gabbroic rocks from both holes. He described the far more primitive material recovered here as olivine-rich troctolite, a type of rock never before recovered anywhere else by ocean drilling or dredging. He also cited the near absence of high-temperature alteration at this site, with less than 3% of the rock affected. Pearce suggested alternatively that the results could reflect the presence of gabbro lenses in serpentinized peridotite instead of a traditional layered crust. Pederson inquired about small-scale layering. Blackman said they found some indication of subtle layering in narrow zones, but the lower gabbro section appeared very homogeneous. Pearce

asked if they found any evidence for intrusion of olivine troctolites. Blackman thought the opposite scenario seemed more likely, but later geochemical analyses might indicate more.

Duncan asked what additional geophysical data would have made it possible to sail persons with the appropriate expertise. Blackman replied that a broader suite of analyses with the existing geophysical data and perhaps 3-D multi-channel seismic would have helped, plus almost all of the assumptions in processing and interpreting the data involved flat-lying geometry. Tsuru suggested that a site characterization study using core-log-seismic integration and attenuation ratios could have aided in judging anisotropy. Larsen asked if an offset VSP experiment, perhaps in 3-D mode, would have helped elucidate the anisotropy. Blackman said possibly, if done with the wireline reentry system and optimal source guns. Mori wondered why the P-wave velocity decreased below 1000 m and whether they could correlate the coring results with any faults seen beforehand in the seismic cross-sections. Blackman suggested that the decrease in P-wave velocity might reflect a pressure effect because density showed no increase through that section. She expressed some doubt about the seismic models beforehand and said they at least saw fewer faults compared to ophiolite exposures.

Duncan asked if the loss of the hanging wall site compromised the objectives. Blackman answered that they always expected better results from the footwall, but now they lack information on the rotation of the hanging wall. Ildefonse added that, unlike the previous interpretations of this ridge segment, they definitely encountered magmatic rocks. Pearce wondered about the nature of the fault at 1100 m and its coincidental occurrence at the same point as the troctolite. Mori asked what makes slow-spreading ridges special in terms of the observations made. Ildefonse replied that previous studies of fast-spreading ridges have only ever reached the base of the sheeted dikes and never seen any gabbro.

Kitazato recalled that one or two microbiologists participated on the expeditions. Blackman reported that they sampled all rock types for microbiology and some samples showed positive results, despite the recurring problem of fluorescence interference. She supposed that more opportunities for collaborating with the microbiologists would have resulted if the drilling had penetrated into peridotite and the zone of higher fluid flow. Ildefonse added that the microbiologists would also work with the petrologists on alteration. (See Appendix B for the SPC review of Expeditions 304 and 305.)

**Friday**

**28 October 2005**

**09:00-13:00**

### **15. Other business**

The committee did not bring forth any other business.

### **16. Future meetings**

#### **16.1. Liaisons to other panels and programs**

The committee identified its liaisons for each of the SAS panels as follows.

SSEP: Becker, Mori, Kawahata, MacLeod (Pearce), Quinn, Byrne

EPSP: Becker, Mori

SSP: Mountain, Mori

STP: Brumsack, Duncan, Nomura

EDP: Becker, Mori, Ildefonse

#### **16.2. 7<sup>th</sup> and 8<sup>th</sup> SPC meetings**

##### **16.2.1. Week of 6-10 March 2006; St. Petersburg, Florida**

Terry Quinn reported that he would host the next SPC meeting on 6-9 March 2006 in downtown St. Petersburg, Florida, and he briefly described some of the local amenities.

### **16.2.2. August or Sept 2006, in Europe or elsewhere**

Becker announced that Rolf Pederson had volunteered to host the August 2006 SPC meeting in Bergen, Norway. Nomura noted that he already had a cruise scheduled for the dates of 14-26 August. The committee later decided by e-mail to hold the meeting on the dates of 28-31 August 2006.

### **17. Review of motions and consensus items**

Brumsack presented a draft recommendation in response to STP Recommendation 0507-3 on QA/QC issues, and the committee responded favorably, as documented under Agendum 8.1.4. Duncan presented a draft recommendation on establishing a DPG for hot-spot proposals, and the committee modified it as documented under Agendum 8.3. Becker closed the meeting by thanking the hosts from Kyoto University and AESTO.

<p><b>SPC Consensus 0510-27:</b> The SPC thanks Jim Mori for his gracious hospitality in hosting this meeting in the historic city of Kyoto, with its intriguing blend of ancient and modern culture. From the beautiful gardens of the Imperial Palace to the hidden charms of Pontocho, everyone thoroughly enjoyed the experience. We also thank Katsura Nogawa of Kyoto University and Toru Nagahashi and Yui Masuda of AESTO for their concerted efforts to ensure an efficient and well-organized meeting.</p>
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## **Appendix A: SPC Scientific Assessment of IODP Expedition 301**

### **Juan de Fuca Hydrogeology**

(by Barbara Bekins, Benoit Ildefonse, and Hiroshi Kitazato)

Expedition 301 was the first of a two-expedition program to investigate the hydrogeological properties of the oceanic crust by conducting three-dimensional cross-hole experiments within an active hydrothermal system in young seafloor basalt on the eastern flank of the Juan de Fuca Ridge. This first stage had mostly operational objectives (drilling of two new observatory boreholes, deployment of CORKs), in preparation for the cross-hole experiments, now on the program schedule for 2008. The remainder of the observatory array (new CORK in Hole 1027B, and two new multi-level, sub-seafloor observatories at a new site located between Hole 1026B and Site U1301) will be installed during that second future expedition.

The shipboard geological study of sediments and basaltic basement cored at Site U1301 essentially confirm previous results at Site 1026 (ODP Leg 168). No unexpected/new result is reported. The sediment lithology is virtually the same, and the geochemistry and alteration characteristics of the basalts are similar. At this point we can only report on the progress of microbiological investigations and on the status of the observatories and the implications for achieving the hydrogeology science goals at the end of the second expedition.

From the microbiological point of view, Expedition 301 appears generally successful. Subsurface microbial biomass and diversity were measured with different standard procedures. Direct counts showed a general decrease with depth in sediments except for a significant increase just above the basaltic basement. These results substantiate those of Leg 201, indicating that microbial activity in the sediments is stimulated by pore water circulating by hydrothermal convection in the underlying basement. In addition to Expedition 301 shipboard sampling, microbiological colonization instruments were deployed within the CORK observatories. These instruments are either passive or active (fluid flow generated by OsmoSamplers).

Attempts at total cell counts in samples from basalt cores proved to be inadequate because of the inability to distinguish fluorescing microorganisms from fluorescing lithic micro-fragments. This seems to be a common problem in hard-rock microbiological investigations, as similar non-conclusive observations were more recently reported during Expeditions 304 and 305. This question may require further evaluation by the appropriate IODP bodies (IOs, Scientific Technology Panel) in coordination with the microbiology community involved in hard-rock drilling expeditions. Cultivation experiments were initiated on board, but full assessment will only be possible after post-cruise, shore-based full characterization studies will be completed.

The planned series of observations are perceived as an adequate, integrated approach for further understanding microbial activities beneath the sea floor. However, to improve the microbiology plan a few issues could be improved in the time interval before the 2008 cruise begins.

First, the pore water analysis plan could be expanded to include key chemical species postulated to be important in microbial reactions. These include nitrate, formate, acetate, hydrogen, and oxygen. These sediment pore water geochemical data will facilitate complete understanding of the role of microbial communities in hydrological/ biogeochemical circulation systems around hydrothermal vent areas.

The second point we should stress is to develop *in situ* technologies, such as electro-chemical sensors, DNA microtip analyzers and *in situ* experimental devices, for monitoring changes in

borehole environments and to relate changes in subsurface microbial activities to fluid chemistry variations.

The main hydrologic objective of Expedition 301 is to characterize the 3-D permeability distribution in young seafloor basalt. This is to be achieved by installing an array of five boreholes and conducting a long-term cross-hole pressure perturbation test. During Expedition 301, a CORK at an existing site 1026B was successfully replaced, and two adjacent borehole observatories U1301A and U1301B were installed 36 m apart. In each of these two new observatories a casing seal required at the top of the borehole is missing. A recent *Alvin* cruise to retrieve pressure records showed that one or more monitoring depths in each hole are open to the seafloor as a result of the missing seals. The deep site U1301B extends through 265 m of sediment and 318 m of basement. This borehole observatory was designed to isolate three depth intervals. Two of the planned intervals were adequately isolated as indicated by pore pressures in excess of hydrostatic. The shallowest depth interval shows pore pressure less than hydrostatic indicating that this zone is not adequately sealed from the seafloor. The shallow borehole, U1301A extends through 262 m of sediment and 108 m of basement. It was designed to have two isolated intervals, but both intervals are now recording pressure lower than hydrostatic, indicating that they are not adequately isolated from the seafloor. Additional science goals of Expedition 301 include long term monitoring of pressures, temperatures, and chemistry in the boreholes.

To achieve the science goals of the hydrologic tests and the long-term monitoring the single open interval in U1301B and both intervals in U1301A need to be sealed. Plans for remedial cementing at the seafloor have been formulated, but the timing, availability of suitable platforms, funding, and cementing strategies are under debate. In U1301A planned cementing may succeed in sealing both intervals from the seafloor but leave the two intervals connected to each other. This situation needs to be analyzed to determine if it is adequate to carry out the planned tests.

Data from borehole observatory 1227C recovered during the recent cruise indicate that the pressure perturbation from Expedition 301 operations at Site U1301 rapidly propagated a distance of over 2 km perpendicular to the strike of the ridge axis. These data indicate high permeability and good connection between the two sites. The pressure perturbation persisted through the end of the pressure data record, thus lasting hundreds of days. The reason for the persistence is not clear but suggests that either recovery from perturbations is surprisingly slow, or the basement circulation pattern has been changed as a result of the new borehole installations. The implication for the science goals is that remedial cementing to seal the boreholes should be completed as soon as possible. Sealing the boreholes is necessary to begin monitoring of natural conditions and allow the formation pressures to recover to normal pressure levels before the borehole tests begin after the second expedition in 2008.

Expedition 301 was the first IODP expedition, and the first stage to the first IODP sub-seafloor long-term observatory. It is highly relevant to the overall multidisciplinary IODP approach to further understand dynamic interactions between life, the ocean, and the earth. In spite of the operational difficulties of Expedition 301, essentially related to the lack of appropriate lead-time, Expedition 301 and subsequent servicing cruises in 2004 and 2005 were globally successful, and the work completed and data collected to date demonstrate that the planned experiments can work. The lack of seafloor seals at sites U1301A and B remain a problem that could have a significant impact the scientific return of the project. From the science point of view, it is desirable that these operations be carried out as soon as possible.

Ideally in the future IODP will be able to respond as efficiently as feasible to short-term operational needs such as the cementing of Holes U1301A and U1301B.

The SPC remains strongly supportive of this project, and looks forward to seeing the results of the second-stage expedition.

## Appendix B: SPC Scientific Assessment of IODP Expeditions 304 and 305 Oceanic Core Complex Formation I and II

(by SPC members Bob Duncan, Jim Mori and Julian Pearce)

The main scientific objectives of Expeditions 304 and 305 Oceanic Core Complex I and II were (1) to document the structural and lithologic properties associated with formation of oceanic core complexes, especially the interplay between magmatism and tectonism at slow spreading ridges, and (2) to verify the observed increase in seismic velocity at depth, determine the role of seawater alteration in controlling this change, and obtain unaltered peridotite. These objectives were not modified substantially between the proposal and the prospectus.

Specific hypotheses (with potential for their successful testing from the collected data given in parentheses) are:

- A major detachment fault system controlled the evolution of Atlantis Massif (*Weak*).
- Significant unroofing occurred during formation of this OCC (*Strong*).
- Plate flexure (rolling hinge model) is the dominant mechanism of footwall uplift (*Strong*).
- The nature of melting and/or magma supply contributes to episodes of long-lived lithospheric faulting (*Strong*).
- Expansion associated with serpentinitization contributes significantly to core uplift (*Weak*).
- Positive gravity anomalies at Atlantis Massif indicate relatively fresh peridotite (*Weak*).
- The Moho at Atlantis Massif is a hydration front (*No*).

Drilling was carried out at two locations, in the footwall (Site 1309) and hanging wall (Sites 1310 and 1311) of the proposed detachment fault. The goal for penetration at Site 1309 (proposed AMFW-01A) was far surpassed. Average recovery rates were well above the average for all prior hard rock expeditions, although they were in line with rates from ODP Hole 735B, the only place deep penetration in a reentry hole can be compared. The sequence of intrusive rocks cored at this site and the high recovery rates will provide important information on petrologic, alteration, and structural processes that characterize the magmatic construction of young oceanic crust at slow-spreading ridges. A major surprise, however, was the lack of significant peridotitic compositions, which had been predicted on the basis of geophysical surveys.

Drilling in the hanging wall (Sites 1310 and 1311) was not successful because of unstable conditions (no more than ~20 m penetration and poor recovery). The operational strategies employed, which were restricted because of loss of gear while setting the reentry system at the footwall site, were not adequate. The minimal amount of rock recovered during a series of failed attempts to start a reentry hole here provides an intriguing glimpse of a compositional aspect of those rocks, but not a conclusive test of the nature of the eastern volcanic block. Without significant recovery from the hanging wall, the petrogenetic relationships between hanging wall and footwall rocks, and the magnitude of hanging wall rotation relative to the footwall, cannot be determined. In retrospect, this aspect of hanging wall studies might have been better served by simply attempting a series of single-bit holes, some of which might have been successful at achieving a few tens of meters penetration and partial recovery. The goal of penetrating an unexposed portion of the detachment fault beneath the hanging wall was always a high-risk endeavor for this expedition.

The extraordinary penetration (over 3 times that planned), the excellent recovery (average

~75%), the unusually fresh rock and the compositional variability at Site 1309 provide an exciting and extremely promising basis for testing many of the hypotheses posed to address the expedition scientific objectives. It is already clear that the structural and paleomagnetic data from Holes U1309B and U1309D will provide key constraints on the evolution of the footwall during formation of the OCC. Petrologic and geochemical data for fresh and altered rocks offer a picture of a lower crustal section of gabbro-dominated, irregular intrusions that contrasts with the few other sections sampled (e.g., Site 735). An immediate conclusion is that OCCs (and the development of large, low-angle detachment faults) need not form only at magma-starved, slow-spreading ridges.

There were a number of other important features of the core. For example, there were good recoveries of fault rocks (ultra-cataclastites) from several zones in the cores. Analyses of these rocks should help in understanding the structure and faulting history of the massif. In addition, the gabbro section contains two major olivine-rich zones (mostly troctolites), which will provide a means of testing the various hypotheses for the formation of the lower oceanic crust.

The relatively high proportion of gabbroic rocks recovered at Site 1309 on the central dome contrasts with recovery by dredge and submersible dives on the south wall of Atlantis Massif: these are dominated by serpentinized peridotite with gabbro making up only ~30% of those samples. This discrepancy may simply reflect the difficulty of seafloor sampling from massive, undeformed exposures of gabbro. Alternatively, it is possible that there are differences in the overall structure/composition between the southern ridge and the central dome, in which case the drill core provides important comparative data. However, the prediction, from interpretation of gravity, seismic refraction, and multi-channel reflection data, of fresh peridotitic compositions as shallow as 1 km at the central dome, were not borne out. Hence, hypotheses about serpentinization controlling the change in velocity cannot be tested here. Given that the prediction of intersecting mantle peridotite provided a strong impetus to scheduling the two expeditions, as well as influencing the staffing of shipboard scientists, a lesson to be learned is that interpretation of seismic and other geophysical data in complex, irregular crustal structures are difficult and may need more than simple 2-D analyses.

The downhole measurement program during the expedition was generally successful. For the first time, logging in lower crustal rocks, to ~1400 mbsf, was accomplished. This, together with the high recovery, offers a unique opportunity to establish the core–logging structural integration. Unfortunately, the failure of the sonic and VSP tools, and, eventually, the rough sea conditions, did not allow acquisition of downhole seismic data during the last stages of logging operations (below 850 mbsf). The extraordinary penetration, recovery and logging results are important enough that several post-cruise field experiments (bottom drill to sample the detachment fault surface; 3-D multi-channel seismic reflection, wireline VSP) are now being planned to extend the information from Site 1309 to the Atlantis Massif, with the intent of addressing more of the hypotheses.