FY05 Program Plan for the Integrated Ocean Drilling Program (IODP)

For Time Period
1 October 2004 through 30 September 2005

1 September 2004

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A) PREFACE

This document represents the Program Plan for the second operational year of the Integrated Ocean Drilling Program (IODP). The Plan contains the scientific rationale for non-riser vessel (*JOIDES Resolution*) operations, spanning from October 2004 to May 2005 and for the second Mission-Specific Platform (MSP) program during the summer of 2005, an expedition to offshore Tahiti to study the last deglacial sea-level rise in the South Pacific. The Program Plan also provides details of the ongoing outfitting of the Japanese riser vessel *Chikyu*, and a description of the preparation (e.g., engineering and hazards site surveys) for the inauguration of riser-based scientific operations in FY07.

The science presented in this Program Plan is the combined product of three ranking exercises by the IODP Science Advisory Structure. In August 2002, the five extant MSP programs were ranked by the interim Planning Committee of IODP at the request of the International Working Group (IWG). A second (global) ranking of all programs by the Science Planning Committee (SPC) occurred later in September 2003. At the March 2004 SPC meeting, the Tahiti component of the Last Glacial Sea Level Rise program was put forth to the IODP-MI Operations Committee (OPCOM) as an MSP operation to be conducted in FY05. The introduction of the Tahiti Sea Level Program is the most substantial addition to the FY05 Program Plan (over the provisional FY05 schedule set forth in the FY04 Program Plan). Minor modifications were made to the JOIDES Resolution schedule by OPCOM.

DOCUMENT STRUCTURE

The **Executive Summary** contains three sections: the first provides an overview of the IODP and explains its structure, entities and functions. The second section provides a description of the scientific operations and associated activities for the FY05 field programs. The third section provides summary budget information.

The **Program Plan** contains five major sections. The first outlines the organizational framework and entities of IODP describing the management and operational structure of IODP, and explains how the SAS provides advice and guidance to the program. The second section describes the planning process leading to the development of the FY05 operational schedule. The third section is a description of the scientific and operational FY05 expeditions. The fourth section summarizes the overall budget for FY05 (detailed budgets from the IOs are presented in the appendices). The fifth section summarizes the management and administration details and detailed budgets of the Central Management Office, IODP-MI.

Appendix A provides budget tables formatted to comply with Lead Agency Requests.

Appendix B provides detailed budgets for support of the Sapporo Office of IODP-Management International, Inc, submitted by AESTO.

Appendix C provides specific activities and detailed budgets for non-riser vessel operations, submitted by the JOI Alliance (JOI, Inc., TAMU, LDEO-Columbia).

Appendix D provides specific activities and detailed budgets in support of continued outfitting of the riser vessel *Chikyu* and long-range planning in preparation for international science operations by that vessel, submitted by the Center for Deep Earth Exploration (CDEX).

Appendix E provides specific activities and detailed budgets for the Tahiti Sea Level drilling program and advance planning for future MSP projects, submitted by the ECORD Science Operator (BGS, the European Petrophysics Consortium [Universities of Aachen, Leicester, GFZ/ICDP – Potsdam, Montpelier], University of Bremen).

Appendix F provides specific activities and detailed budgets for the operation of the IODP repository at the University of Bremen

Appendix G provides a list of commonly used acronyms and abbreviations.

B) FY05 PROGRAM PLAN -- EXECUTIVE SUMMARY

ORGANIZATIONAL FRAMEWORK

The Integrated Ocean Drilling Program (IODP) is an international partnership of scientists and research institutions organized to explore Earth's history and structure as recorded in the ocean basins. IODP will provide sediment and rock samples (cores), shipboard (i.e., platform-based) and shore-based facilities to study these samples, downhole geophysical and geochemical measurements (logging/petrophysics), and opportunities for special experiments (i.e., seafloor and sub-seafloor observatories) to determine *in situ* conditions beneath the seafloor. IODP studies will lead to a better understanding of plate tectonic processes, Earth's crustal structure and composition, environmental conditions and life in ancient oceans, and climate change.

IODP is sponsored by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the U.S. National Science Foundation (NSF) as Lead Agencies, by the European Consortium for Ocean Research Drilling (ECORD), and by the People's Republic of China. The Lead Agencies are currently in discussion with other potential IODP members. The IODP Council provides a forum for consultation among the countries or entities contributing to the support of the IODP.

IODP operation is based on three components:

The Central Management Office (CMO). IODP-MI has received a 10-year contract from the lead agencies to run the CMO.

The Implementing Organizations (IOs). There are three IOs:

- JOI Alliance, which is responsible for the non riser ship, the JOIDES *Resolution*
- Center for Deep Earth Exploration (CDEX) , which is responsible for the Riser ship, *Chikyu*, and
- ECORD Science Operator (ESO), which is responsible for Mission Specific Platforms (MSPs)

The Science Advisory Structure. The IODP Science Advisory Structure is composed of scientists, engineers and technologists designated by IODP member organizations, such as national or consortia organizations

The funds provided by the funding agencies are in two categories: Platform Operation Costs (POC)s, and Science Operation Costs (SOC)s. The POCs are provided directly by NSF to JOI Alliance for the operation of the JOIDES *Resolution*, by MEXT to CDEX for the operation of *Chikyu*, and by EMA to ESO for operation of MSPs. The SOC funds from the Lead Agencies and Members are commingled and are provided to IODP-MI. These funds are used for Management and Administration at IODP-MI Washington and Sapporo offices, and through subcontracts are provided by IODP-MI to the IOs and to third parties for various shipboard and shore-based science service costs. The relationships between the three components described above are summarized in **Figure ES-1**.

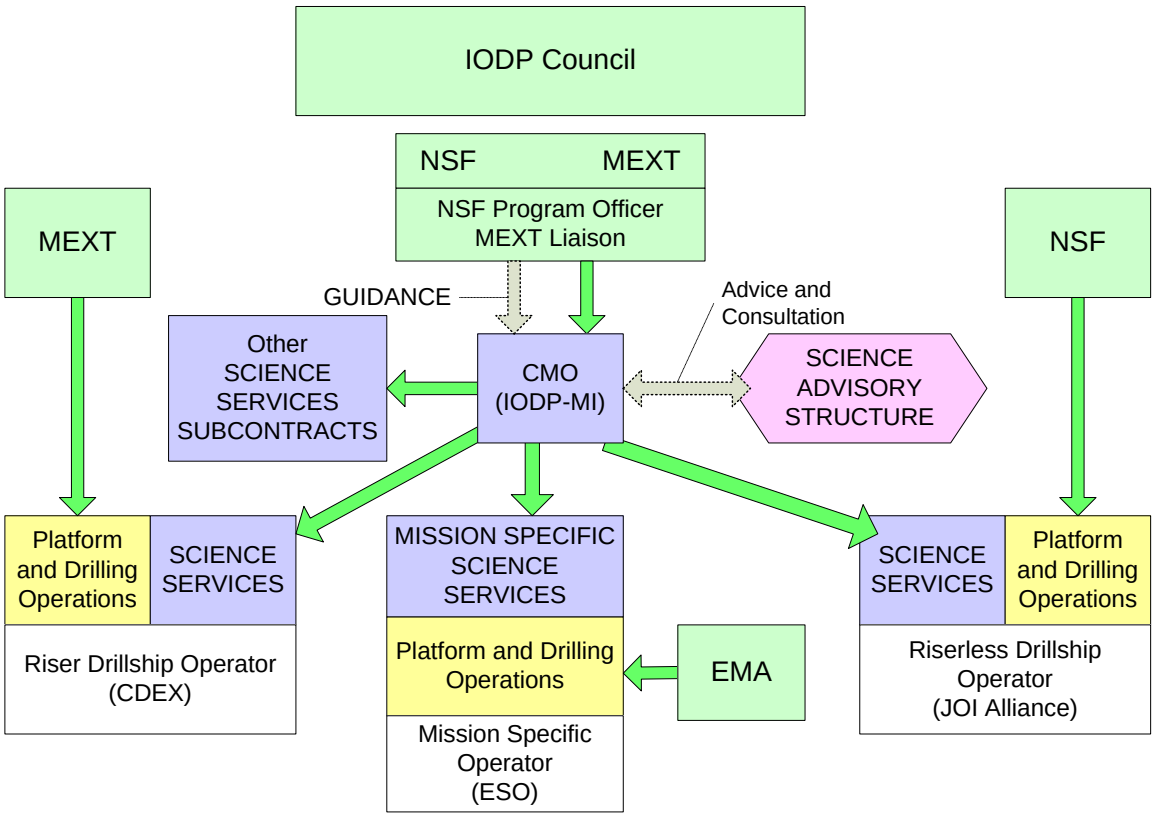

Figure ES- 1: *IODP Program Management Structure*

The funding agencies consist of NSF and MEXT (as the Lead Agencies), EMA as a contributing member, and MOST (the People's Republic of China) as an Associate Member. The lead agencies, on behalf of the IODP Council give guidance, not advice, to IODP-MI. Solid arrows indicate flow of funds. Dotted arrows indicate flow of guidance.

IODP-MI – The Central Management Organization

The wiring diagram for IODP-MI Management and administration for the Washington office and the Sapporo office (which is operated through a subcontract to AESTO) is given in **Figure ES-2**. Besides the President (Manik Talwani), there are three key personnel: Vice President for Science Operations (Thomas Janecek), who as chairman of OPCOM puts together the annual operational plan in conjunction with the IOs and the SAS Support, Vice President for Planning (Hans Christian Larsen) who has a major liaison function with the SAS Support and also supervises the SAS Support, located in Sapporo in addition to Data Management and Publication responsibilities there, and Senior Advisor to the President (Yoichiro Otsuka) who has a liaison function with the funding agencies. A Financial and Administrative Officer, a Contracts Officer, and a Director of Communications constitute the remaining senior personnel.

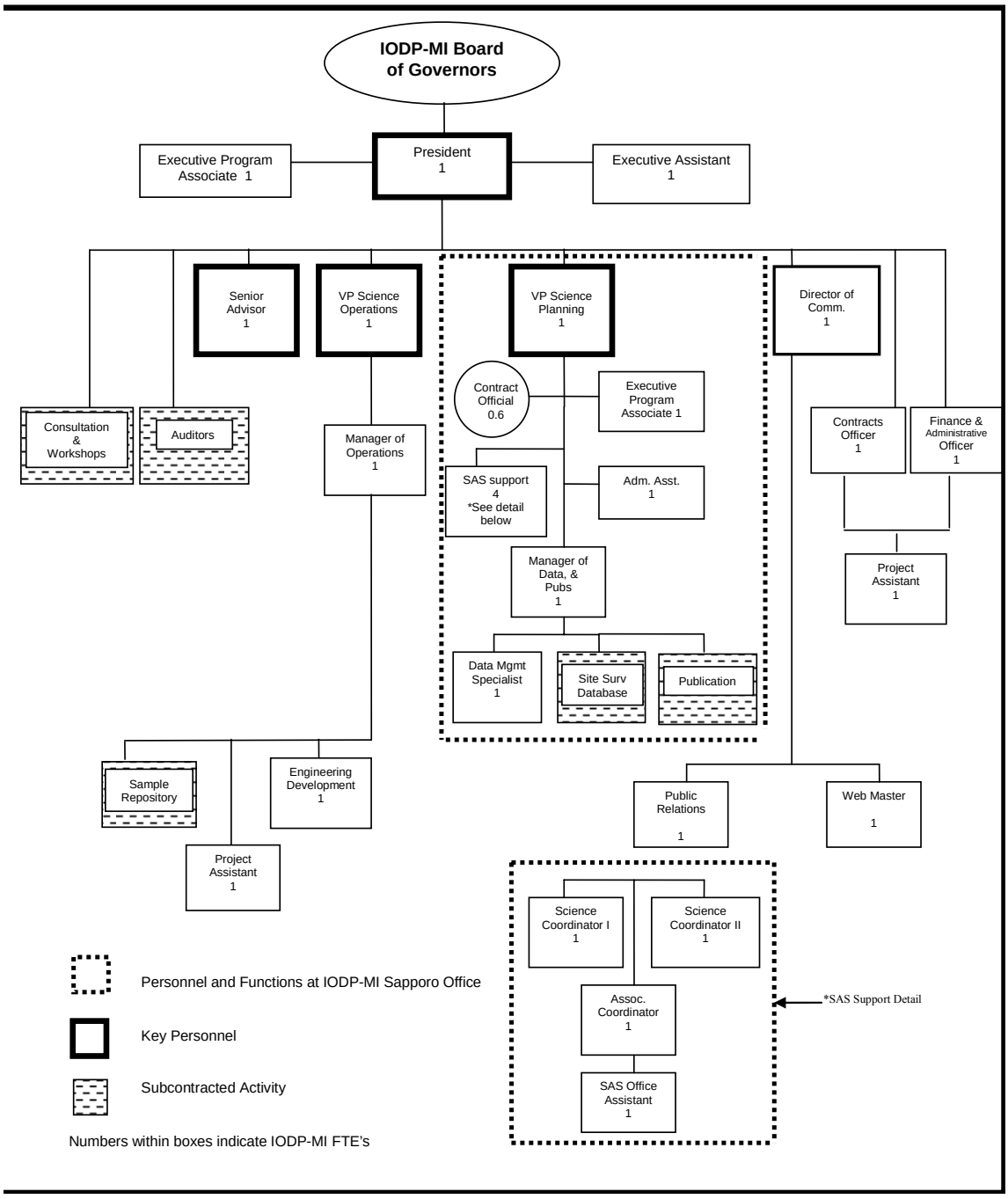

Figure ES- 2: *Organization of IODP Management International, Inc*.

Three positions (Manager of Operations, Executive Program Associate and Public Relations officer) will be hired halfway through FY05. Two positions (Engineering Development and a Project Assistant) will not be hired until FY06.

Implementing Organizations

IODP is the first scientific ocean drilling program to have more than one Implementing Organization (i.e., drilling operator). Riserless drilling capability will be supplied in FY05 by the JOI Alliance, a partnership of JOI, Inc., Texas A&M University (operation of the riserless drillship, the *JOIDES Resolution* in the first phase of IODP, and associated activities of expedition staffing, logistics, program-specific engineering development and operations, shipboard laboratories, curation and distribution of core samples and data) and Lamont-Doherty Earth Observatory of Columbia University (geophysical and geochemical logging services, involving acquisition, processing and interpretation of logging measurements). The ECORD Science Operator (ESO) will supply MSPs drilling and logging capabilities. The ESO is a consortium led by the British Geological Survey (MSP operations and program-specific engineering development), the European Petrophysics Consortium (logging services) and the University of Bremen (repository services). Riser drilling capability using the vessel *Chikyu* will be supplied by the Center for Deep Earth Exploration (CDEX) starting in FY07.

Science Advisory Structure

The IODP Science Advisory Structure provides long-term guidance on the scientific planning of the IODP, and recommends annual science and engineering plans based on proposals from the international science community. The SAS consists of the Science Planning and Policy Oversight Committee (SPPOC), the Science Planning Committee (SPC), as well as several advisory panels (**see Figure ES-3)** containing hundreds of scientists from the international geoscience community in IODP member countries and consortia.

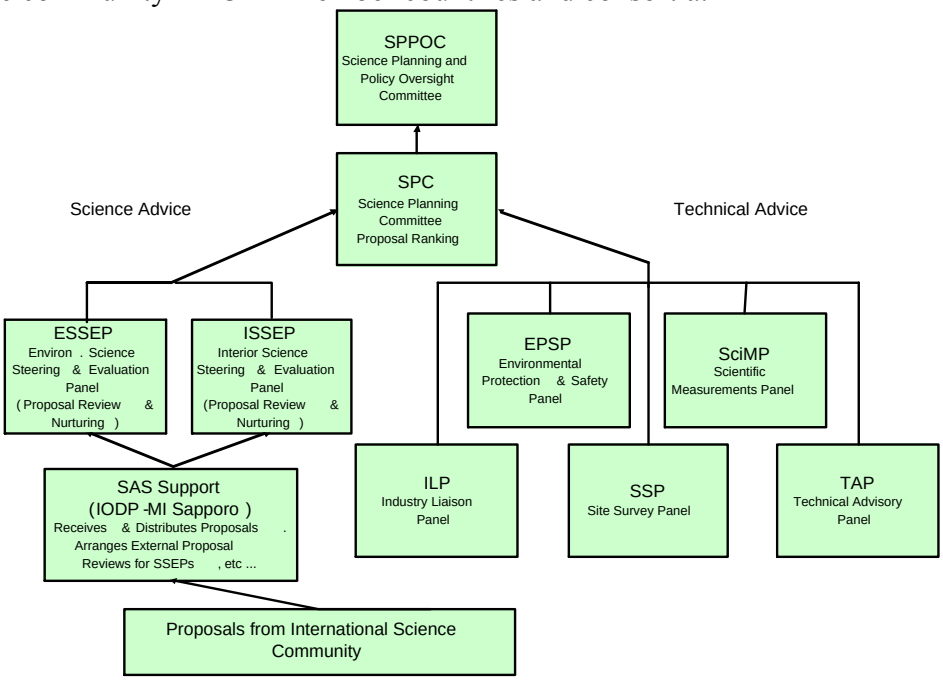

Figure ES- 3: *IODP Science Advisory Structure.*

The SPPOC (Kensaku Tamaki, chairman) is considered the "Executive Authority" of the SAS and is composed of representatives from scientific organizations in the IODP member countries. SPPOC is a committee of IODP-MI. The SPPOC, as its name implies, provides scientific oversight of IODP. An important responsibility of the SPC (Mike Coffin, chairman; Keir Becker,

vice chairman) is to prioritize the recommendations for the drilling sites. It considers recommendations from the various SAS Support panels and is the focus of scientific planning for IODP.

A principal responsibility of IODP-MI is to construct an annual program plan. In doing so its OPCOM committee plays a very important part (**Figure ES-4**). OPCOM receives prioritized drilling recommendations from SPC, and in discussions with the IOs and SPC constructs an operational plan. The operational plan is sent to SPC for review and comment and, if necessary, modifications are made**.** IODP-MI then uses it to construct an annual Program Plan after receiving budgetary guidance from the Lead Agencies. The Program Plan includes work statements for subcontracts to the IOs and other third parties and is submitted to SPPOC and then to the IODP Board of Governors for approval, and then finally to NSF which administers the contract on behalf of the Lead Agencies.

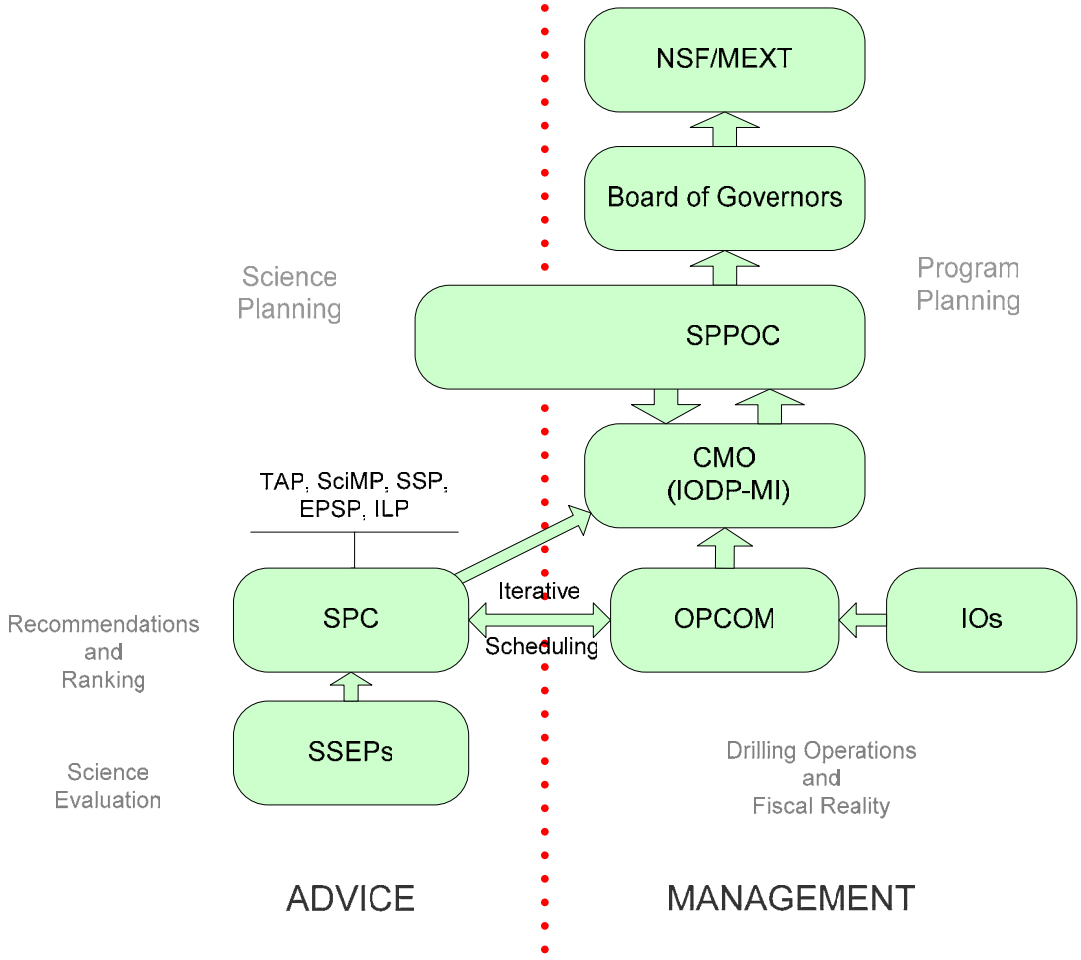

Figure ES- 4: *The flow of scientific advice towards expedition scheduling.*

Scientific advice to the IODP management structure occurs via advisory panels and committees. Scientific planning for IODP is provided by a Science Advisory Structure, which is led by the Science Planning Committee. IODP-Management International is the Central Management Organization (CMO) that will translate the scientific priorities of ocean drilling community into program plans to carry out the scientific operations of IODP. It will do so based on advice from the international IODP Science Advisory Structure (SAS) and in consultation with vessel operators (referred to as "Implementing Organizations" aka IOs).

FY05 EXPEDITION DESCRIPTIONS

Figure ES- 5: *FY05 Expedition Locations*

Specific details concerning science operations for FY05 are presented in the Program Plan (pgs. 6-9 of the document). The table below provides a brief summary of the operations.

	Cruise	Port (Origin)	Dates	Total Days (Port/Sea)	Days at Sea (Transit/Op[4])
303	North Atlantic Climate 1	St. John's Newfld	22 Sept – 14 Nov	53 (5/48)	5/43
304	Oceanic Core Complex 1	Ponta Delgada	14 Nov – 5 Jan '05	52 (5/47)	7/40
305	Oceanic Core Complex 2	Ponta Delgada	5 Jan – 27 Feb	53 (5/48)	7/41
306	North Atlantic Climate 2	Ponta Delgada	27 Feb – 22 Apr	54 (5/49)	4/45
307	Tahiti		Spring/ Summer-05		
	JR Transit	Reykjavik	22 Apr – 10 May	18 (3/15)	15/0
	JR Demobilization	Galveston	10 May – 1 Jun	22 (22/0)	0/0

Table ES- 1: *Operational schedule for the Riserless and MSP platforms in FY05*

JOI Alliance Riserless Operations

The FY05 Program consists of the completion of one science program initiated at the end of FY04 and three complete science programs, all in the North Atlantic Ocean (see

Figure ES-6 for expedition locations and the detailed Budget Section in the JOI Alliance appendix for expedition costs).

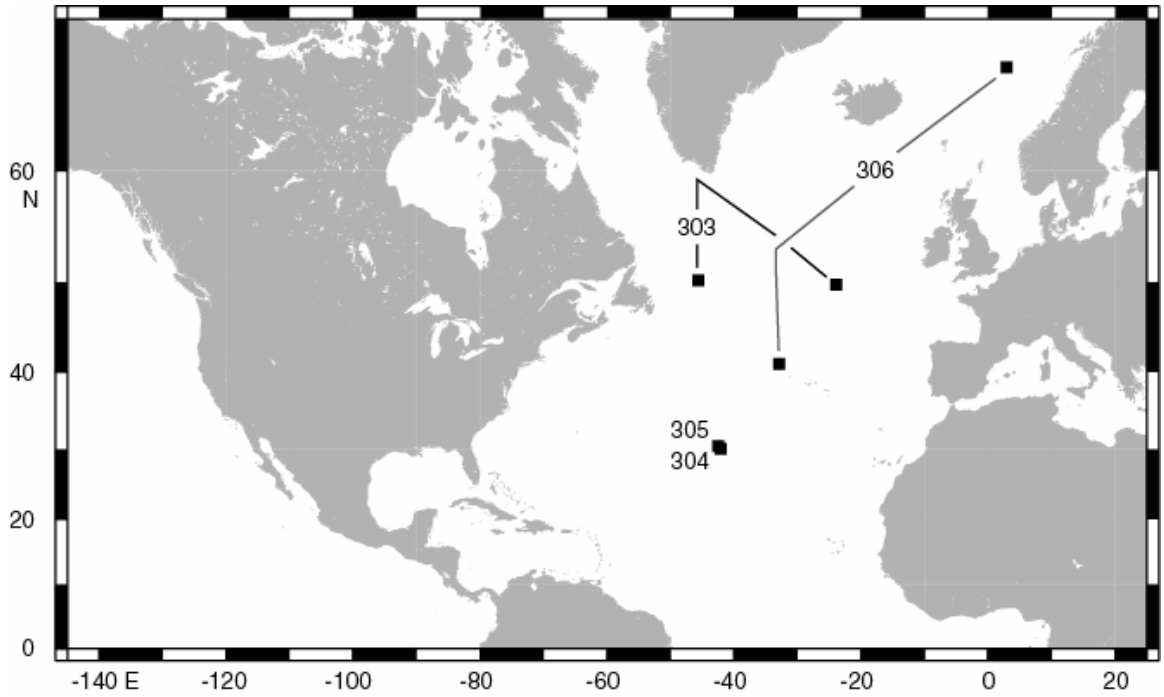

Figure ES- 6: *IODP Riserless FY05 expedition map.*

IODP Expeditions 303 and 306: North Atlantic Climate 1 and 2

The objective of these two expeditions is to establish for the Late Neogene to Quaternary the intercalibration of geomagnetic paleointensity, isotope stratigraphy, and regional environmental stratigraphies to develop a millennial-scale stratigraphic template for the North Atlantic. Other objectives are (1) to better understand the relative phasing of atmospheric, cryospheric, and oceanic changes that are central to understanding the mechanisms of global climate change on orbital or millennial timescales, (2) to improve our knowledge of the temporal and spatial behavior of the geomagnetic field through high-resolution records of directional secular variation and geomagnetic paleointensity, and (3) to provide fundamental constraints for numerical models of the geodynamo. These goals will be accomplished by advanced piston corer (APC) coring nine primary sites with the objective of acquiring complete sedimentary sections appropriate for high-resolution studies. This is a two-expedition program with five sites to be occupied during IODP Expedition 303 and the remaining four sites cored during IODP Expedition 306. In addition, at the last Expedition 306 site we will investigate the feasibility of reconstructing bottom-water temperature histories at the decadal to centennial timescale by making high-precision temperature-depth measurements at a location in the Norwegian-Greenland Sea with the proposed installation of a Cork and instrument string near ODP Site 642.

Proposed Operations

With the exception of the aforementioned final site of Expedition 306, from an operational standpoint these will be routine sediment coring expeditions. Each site will consist of multiple APC-cored holes to assure recovery of the complete sediment section. APC coring, employing the drillover technique, will extend to ~300 m below seafloor (mbsf). One site will be logged with the triple combination (triple combo) and Formation MicroScanner (FMS)/Sonic tool strings. For the Norwegian-Greenland Sea site, the proposed operation is to jet in a reentry cone and deploy a thermistor string and Cork.

IODP Expeditions 304 and 305: Core Complex 1 and 2

This two-expedition program is aimed at documenting the conditions under which oceanic core complexes (OCCs) develop. These large shallow seafloor features appear to be related to rifting and accretion at slow-spreading mid-ocean ridges. However, currently available data are inadequate to characterize the magmatic/tectonic/metamorphic history so that we can better understand the mechanisms of uplift and emplacement of OCCs. Two sites will be drilled:

1. Deep penetration site (est. >700 m) on the Central Dome of Atlantis Massif (Site AMFW-01A) to sample the detachment fault zone and the alteration front and drill into unaltered mantle (core and logging analyses planned).
2. Shallower penetration site (est. 400–500 m) through the hanging wall (Site AMHW-01A) to sample rock just above the detachment, the shallowest part of the unexposed fault, and through the fault zone (core and logging analyses planned).

Proposed Operations

Both sites will require casing to maximize the chances of achieving deep penetration. The first casing string (13-$^{3}/_{8}$ in) will be set to ~20 mbsf using the Hard Rock Reentry System (HRRS) Hammer Drill-in Casing system. Each site will then be rotary core barrel (RCB) cored to ~130 mbsf and opened using a bicentered bit or underreamer, allowing a second (10-3/4 in) casing string to be set. Each hole will then be RCB cored to maximum depth and logged. During IODP Expedition 304, both sites will be established with the HRRS Hammer Drill reentry cone/casing system and drilled to casing depth. The supplemental 10¾-in casing strings will be set (as required). Remaining time will be devoted to drilling and coring the hanging wall hole to the maximum depth possible in the available time. IODP Expedition 305 will be devoted to deepening the hole at the footwall site to the maximum depth possible. Plans call for a limited trial (~50 m) of the advanced diamond core barrel (ADCB) coring system during Expedition 304 to further evaluate the potential of this system to achieve improved hard rock core recovery and quality over the conventional RCB system. Three days have been added to the Expedition 304 schedule for the ADCB evaluation. If successful, the ADCB may be used further during Expedition 305.

ESO Mission Specific Platform Operations

Late Deglacial Sea Level History—Expedition 307

The history of sea-level and sea surface temperature variation associated with the last deglaciation is of prime interest to understand the dynamics of large ice sheets and their effects on Earth's isostasy. So far, the only sea-level record that encompasses the whole deglaciation is based on offshore drilling of Barbados coral reefs which overlie an active subduction zone, implying that the apparent sea-level record may be biased by tectonic movements. The main objective of this expedition is to establish the course of the last deglacial sea level rise and to identify short-term paleoclimatic/paleoceanographic changes that are thought to have punctuated the transitional period between present-day climatic conditions following the Last Glacial Maximum. The reef setting of Tahiti (French Polynesia) is ideal for this type of study because it is in a tectonically inactive area far away from glaciated regions (**Figure ES-7**).

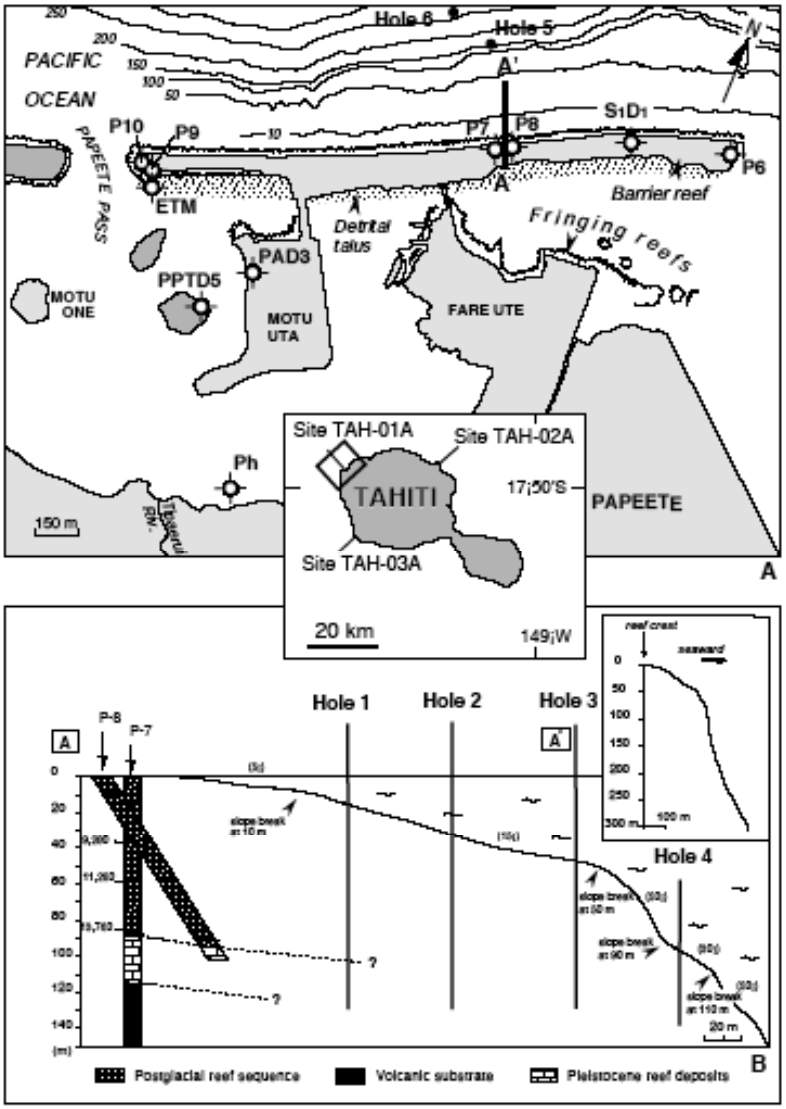

Figure ES- 7: *Location of sites to be drilled on Expedition 307*

Science Description
The main objective of this Expedition is to drill to a series of boreholes along a number of transects in order to:

1. Reconstruct the deglaciation curve for the period 20,000 to 10,000 yrs BP in order to establish the minimum sea-level during the Last Glacial Maximum (LGM), to test predictions based on different ice and rheological models, and to assess the validity, the timing and amplitude of meltwater pulses which are thought to have disturbed the general thermohaline oceanic circulation and, hence, global climate.

2. Identify and to establish patterns of short-term paleoclimatic changes that are thought to have punctuated the transitional period between present-day climatic conditions following the LGM. It is proposed to quantify the variations of sea surface temperatures based on high-resolution isotopic and trace element analyses on massive coral colonies. When possible, we will try to identify specific climatic phenomena such as El Nino-Southern Oscillation in the time frame prior to 10,000 yrs BP and try to get a better knowledge of the global variation and relative timing of post-glacial climate change in the southern and northern hemisphere.

3. Analyze the impact of sea-level changes on reef growth, geometry and biological makeup, especially during reef drowning events; this approach will help improving the modeling of reef development and the morphological and sedimentological evolution of the foreslopes (highstand vs low-stand processes).

Operational Plans
For Tahiti, the requirement is for a dynamically positioned drilling vessel. Two possibilities, both types equipped with a drilling rig and associated equipment, are:

- A vessel with sufficient accommodation, space and facilities to allow all required scientific work to be carried out at sea.

- A relatively small geotechnical-survey vessel suitable for drilling but with insufficient accommodation and facilities to permit full on-board working. In this case core will be transferred to shore for completion of core logging and curation. This will require the use of a local boat for daily visits to the ship for the transfer of cores to the onshore facility; such facilities are known to be available in Papete.

BUDGETS
This Program Plan budget identifies a total program cost of $56,142K for FY05 (see **Table ES-2**), to meet the high-priority needs identified by the SAS. Of this cost, 37% is considered to be Science Operation Costs (SOCs) and the remaining 63% is Platform Operation Costs (POCs). These costs are distributed among the three IOs (JOI Alliance, CDEX, and ESO), IODP-MI, AESTO, and the University of Bremen.

Table ES- 2: *IODP Summary Budgets for FY05*

	IODP-MI		IODP-MI Operators & Subcontracts				Totals (K)
	Washington DC	Sapporo	JOI-Alliance	CDEX*	ESO	Bremen	
SOCs (Science Operations Costs)	$ 3,509	**$ 1,594**	$ 12,832	$ 644	$ 1,758	$ 241	**$ 20,578**
POCs (Platform Operations Costs)			$ 21,912	$ 8,656	$ 4,996		**$ 35,564**
Total (K)	**$ 3,509**	**$ 1,594**	**$ 34,744**	**$ 9,300**	**$ 6,754**	**$ 241**	**$ 56,142**

* CDEX SOC/POC budget funded directly by MEXT in FY05

IODP-MI's Washington office budget is $3,509K (**Table ES-2).** The base Management and Administrative budget is $2,569K. The cost of several activities and services, such as the Site Survey Data Bank ($420K) and Education and Outreach Activities ($340K) will be supported, in part or entirely under subcontracts to IOs or other entities. An Engineering Development budget of $90K provides funds for workshops and task forces to prioritize IODP-wide Engineering development activities.

IODP-MI Sapporo Office budget is $1,594K. The Sapporo IODP-MI Office will be supported, in part ($1,188K) via a subcontract to Japan's Advanced Earth Science and Technology Organization (AESTO). This office coordinates the SAS, its committee meetings, and assists with the other activities managed by the Vice President for Science Planning including oversight of data management, the Site Service Data Bank and publication activities. The remaining costs are for key personnel and travel ($376K) and production of the successor journal to the JOIDES Journal ($30K).

The JOI Alliance budget of $34,744K for FY05 mainly includes support for three full expeditions in FY05 (North Atlantic Climate 2, and Core Complex 1 and 2), and partial costs for North Atlantic Climate 1 expedition (which straddles the FY04 and FY05). Of the Alliance's total budget (see **Table ES-2**), 63% are POCs and 37% are SOCs.

The ESO budget of $6,754K (24% SOC / 76% POC) is primarily in support of the Tahiti expedition. Other funds are in support of long-term planning, education and outreach, and data management support and administration. It does not include shore-based work for Tahiti which will be carried out in FY06

The CDEX budget is $9,300K (93% POC). These funds are to support engineering site surveys, administration and operations personnel, education and outreach, publications, project scoping, and data management

The University of Bremen Core Repository budget is $241K (100% SOC). These funds are primarily for personnel and operating costs (consumables, supplies, telecommunications, etc) associated with normal IODP/ODP core sampling and core archiving operations. Funds for curatorial support for MSP operations are identified in the ESO budget.

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Budget Process – Science Operation Costs

Detailed budgets for Science Operation Costs were submitted to IODP-MI from the IOs, AESTO, and the University of Bremen. The total amount of proposed SOCs was approximately $26,000K. The Lead Agencies gave IODP-MI budget guidance for a target figure of $20,000K for Science Operation Costs. IODP-MI assessed the scientific priorities of FY05 and developed SOC budgets to reach this target figure (**Table ES-3**).

Table ES- 3 *IODP-MI, operator, and subcontractor activity (SOCs only)*

	IODP-MI		IODP-MI Operators & Subcontracts				Total SOC ***
	D.C.	Sapporo****	JOI-Alliance	CDEX*	ESO**	Bremen	Total (K)
Management & Administration	$ 2,659	$ 663	$ 1,971	$ -	$ -	$ -	**$ 5,293**
Site Survey Data Bank	$ 420	$ -	$ -	$ -	$ -	$ -	**$ 420**
Support for Science Advisory Structure	$ -	$ 901	$ -	$ -	$ -	$ -	**$ 901**
Engineering Development	$ 90	$ -	$ -	$ -	$ -	$ -	**$ 90**
Technical, Engineering & Science Support	$ -	$ -	$ 5,282	$ 303	$ 1,064	$ -	**$ 6,649**
Core Curation	$ -	$ -	$ 836	$ -	$ 13	$ 241	**$ 1,090**
Data Management	$ -	$ -	$ 2,361	$ 153	$ 165	$ -	**$ 2,679**
Publications	$ -	$ 30	$ 953	$ -	$ 10	$ -	**$ 993**
Logging	$ -	$ -	$ 1,329	$ -	$ 450	$ -	**$ 1,779**
Education & Outreach	$ 340	$ -	$ 100	$ 188	$ 56	$ -	**$ 684**
Total (K)	**$ 3,509**	**$ 1,594**	**$ 12,832**	**$ 644**	**$ 1,758**	**$ 241**	**$ 20,578**

* CDEX SOC budget funded directly by MEXT in FY05
** Actual subcontract to British Geological Survey
*** The actual amount of the SOC contract with NSF is $19,934K ($20,578K - $644K)
**** AESTO budget split between M&A costs for data specialist, publications manager and Program Associate ($287K) and Support for Science Advisory Structure ($901K)

The summary budget table ES-S / PP-14 is given in a format we believe relates most clearly to the Program Plan. This table is related to tables PP-14a and PP-14b found in Appendix A, which are given in slightly different formats. Table PP-14a is in a format required by NSF for contractual reporting and Table PP-14b is in a format required by MEXT. The main difference between the formats is that some of the tasks are combined in different ways. In addition, NSF required that the Management and Administration costs in the JOI Alliance budget appear in a separate line whereas MEXT required it to be part of one or more tasks. We emphasize that the three tables contain identical figures; they are just formatted differently.

C) FY05 IODP PROGRAM PLAN

The science and operational plan for IODP FY05 was finalized by OPCOM based on input from the Science Advisory Structure, from the Implementing Organizations and the University of Bremen.

The Management and Administration of IODP will be carried out through this contract in the Washington and Sapporo offices. Support for the Science Advisory Structure will be carried out through this contract in the Sapporo office, which is supported by AESTO through a subcontract. Other tasks will be carried out by the Implementing Organizations and by the University of Bremen. There are still other tasks for which we will issue RFPs (e.g., Site Survey Data Bank).

The detailed proposals from the subcontractors are provided in the appendices.

IODP ORGANIZATIONAL FRAMEWORK AND ENTITIES

Organizational Framework

According to the principles upon which the Integrated Ocean Drilling Program (IODP) has been founded, the "Science Operation Costs" (SOCs) of the IODP will be supplied to the not-for-profit corporation IODP Management International, Inc. (IODP-MI), which provides the Central Management Organization (CMO) functionality for the Program (see **Figure PP-1**). In turn, IODP-MI will distribute SOCs to Implementing Organizations (IOs, drilling operators) and to other subcontractors according to the budgets outlined in this and subsequent IODP annual Program Plans. SOC funds will be collected from IODP members, commingled by the U.S. National Science Foundation (NSF), and provided through contract to IODP-MI (see **Figure PP-1**). Currently, the U.S. NSF, Japan, as represented by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the European Consortium for Ocean Research Drilling (ECORD), as represented by the European Management Agency (EMA), and the People's Republic of China, as represented by the Ministry of Science and Technology (MOST) are IODP members. The U.S. NSF and Japan's MEXT are designated as Lead Agencies, the EMA is a Contributing Member and the People's Republic of China's MOST is an Associate Member.

The Lead Agencies have established an IODP Council that: a) provides governmental oversight for all IODP activities, b) assures effective planning, management and operation of the IODP and c) encourages and promotes broad international participation in the IODP. The Council members are representatives from each country or entity contributing support to the IODP. The Chair of the Council is from one the Lead Agencies and is to alternate between them on a yearly basis. The Council meets once per year with the agenda and site for all meetings decided through mutual understanding. The responsibility for meeting arrangements is to reside with the Chair. The Chair is responsible for developing the meeting agenda, in consultation with the other Lead Agency. Meetings of the Council may be open to participation by others through mutual confirmation of the Agencies. The Council is expected to serve as a consultative body reviewing financial, managerial and other matters involving the overall support of the IODP. A formal agenda is prepared for each meeting and written records are to be kept. Guests include representatives from the CMO (IODP-MI), IOs, and Science Advisory Structure.

As detailed in **Figure PP-1**, "Platform Operating Costs" (POCs) are supplied directly from individual funding agencies of the countries or consortia operating IODP drilling assets: from NSF to the JOI Alliance (JOI, Inc., Texas A&M University, Lamont-Doherty Earth Observatory of Columbia University) for operation of the non-riser vessel (JOIDES *Resolution* in the first phase of IODP), from MEXT to the Center for Deep Earth Exploration (CDEX) for continued outfitting of the riser ship *Chikyu* and all preparation activities in support of international operations expected to start in FY2007, and from ECORD to the ECORD Science Operator (ESO) for Mission-Specific Platform (MSP) operations.

The technical management relationship consists of the following components: a) overall central management tasks and responsibilities for science operations by IODP-MI, with offices in Washington, D.C. and Sapporo, Japan; b) science advice is provided by the SAS, supported by a planning office at IODP-MI, Sapporo; and c) multiple IOs, as listed in the previous paragraph – JOI Alliance, ESO and CDEX.

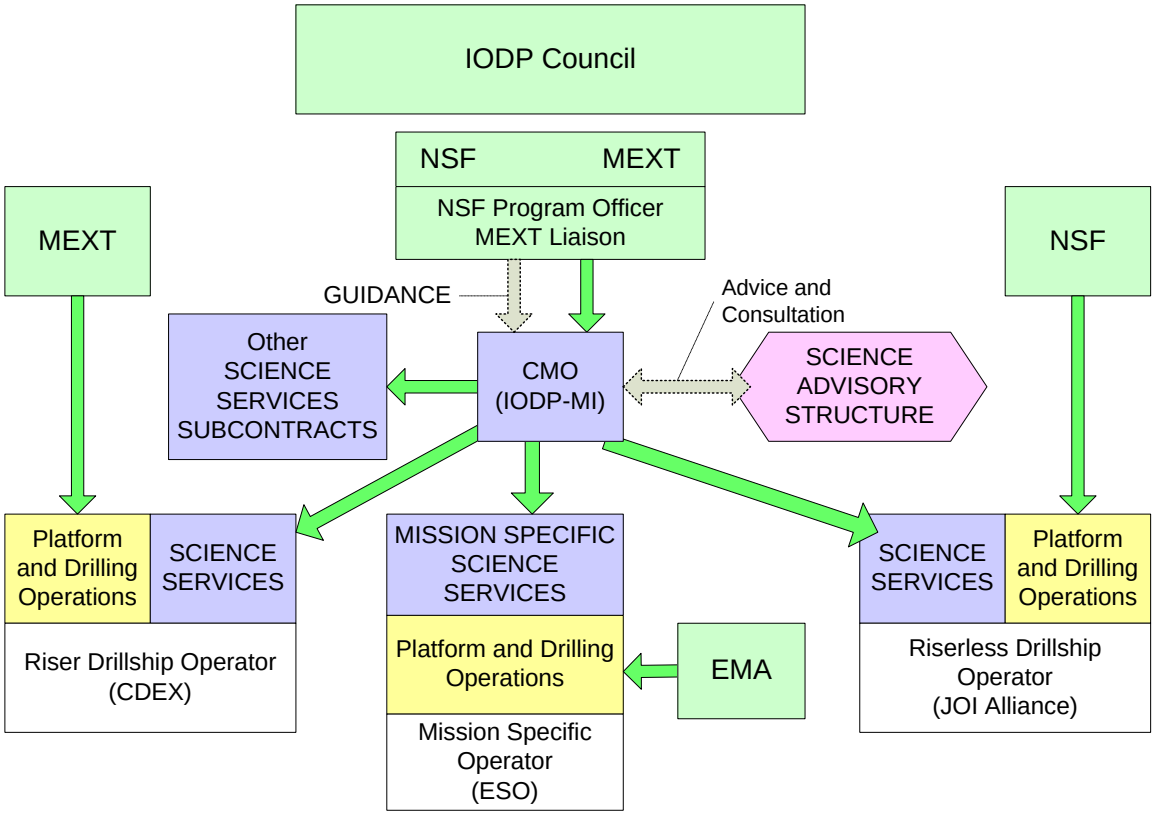

Figure PP- 1: *IODP program management structure.*

SOCs and POCs are detailed in accompanying budgets, both in the Program Plan and in Appendices A-E. The funding agencies consist of NSF and MEXT (as the Lead Agencies), EMA as a contributing member, and MOST (the People's Republic of China) as an Associate Member. Solid arrows indicate flow of funds. Dotted arrows indicate flow of advice.

Program Management

A Central Management Organization (CMO) has been established with the concurrence of MEXT and NSF to develop and manage science operations and implementation plans for the IODP. The CMO is provided by IODP Management International, Inc. through a ten-year contract with NSF. The CMO: a) receives advice and recommendations on scientific priorities and plans from the SAS, b) requests plans that are responsive to this advice from IOs, and c) works with IOs and the SAS to produce an integrated annual IODP Program Plan (**Figure PP-2**).

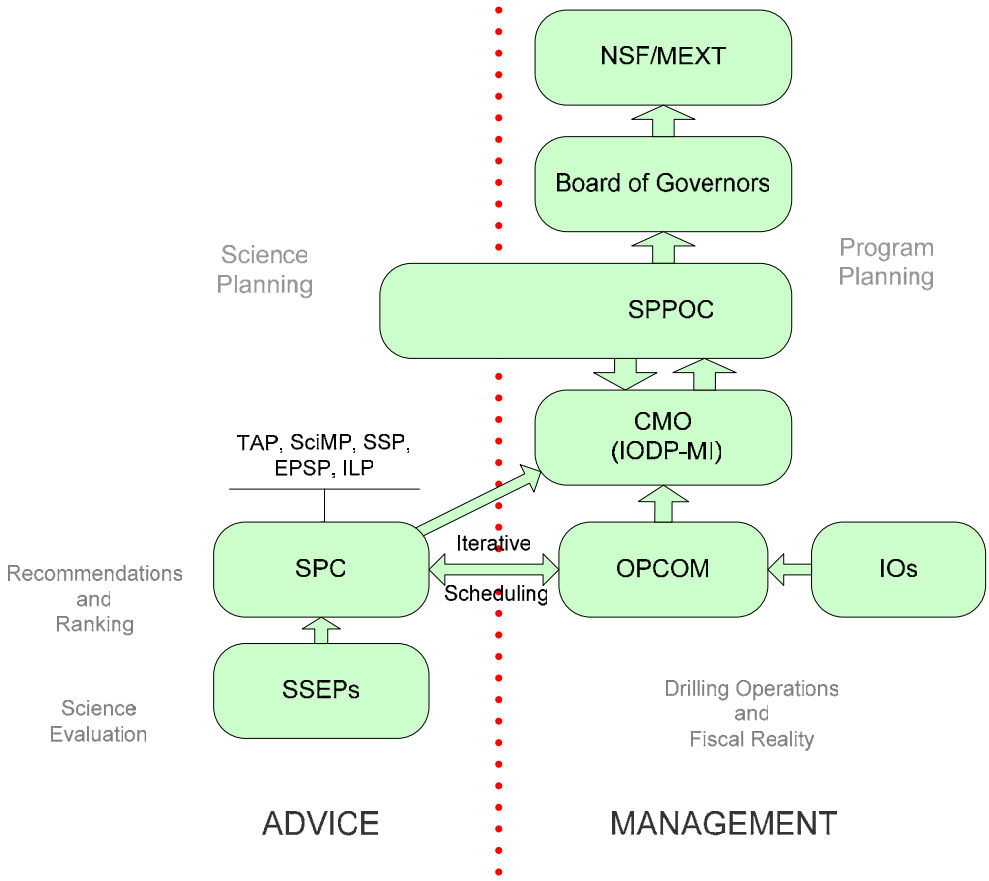

Figure PP- 2: *The flow of scientific advice towards expedition scheduling.*

Scientific advice to the IODP management structure occurs via advisory panels and committees. Scientific planning for the IODP is provided by a Science Advisory Structure which is led by the Science Planning Committee. IODP-Management International is the Central Management Organization (CMO) that will translate the scientific priorities of ocean drilling community into program plans to carry out the scientific operations of IODP. It will do so based on advice from the international IODP Science Advisory Structure (SAS), and in consultation with vessel operators (referred to as "Implementing Organizations", aka IOs).

IODP-MI submits the annual IODP Program Plan to the Science Planning and Policy Oversight Committee (SPPOC), the executive authority of the SAS and an IODP-MI committee, for review and approval prior to consideration by the IODP-MI Board of Governors (BoG) and the Lead Agencies. The NSF has responsibility to approve contractually the annual IODP Program Plan, in consultation with MEXT. After approval by the Agencies, significant changes in the annual

IODP Program Plan are to be considered and approved by IODP-MI and the Lead Agencies prior to implementation, in consultation with the SPPOC and the IOs, as appropriate.

The Annual Plan is to be consistent with budget guidance provided to IODP-MI by the Lead Agencies. The annual Plan includes a presentation of total program costs, which include both SOCs and POCs. IODP-MI will manage SOC funds provided under contract with the NSF. The NSF is expected to administer the contract with due consideration to the interests of MEXT. POCs will be provided directly to the IOs from the Lead Agencies and EMA (**Figure PP-1**)

We present an organizational wiring diagram of for IODP-MI (**Figure PP-3**). IODP-MI provides contractual, management and fiscal links for science operations between NSF and the various operational and advisory components of IODP. IODP-MI has two offices, one in Washington, D.C., USA, and another in Sapporo, Japan.

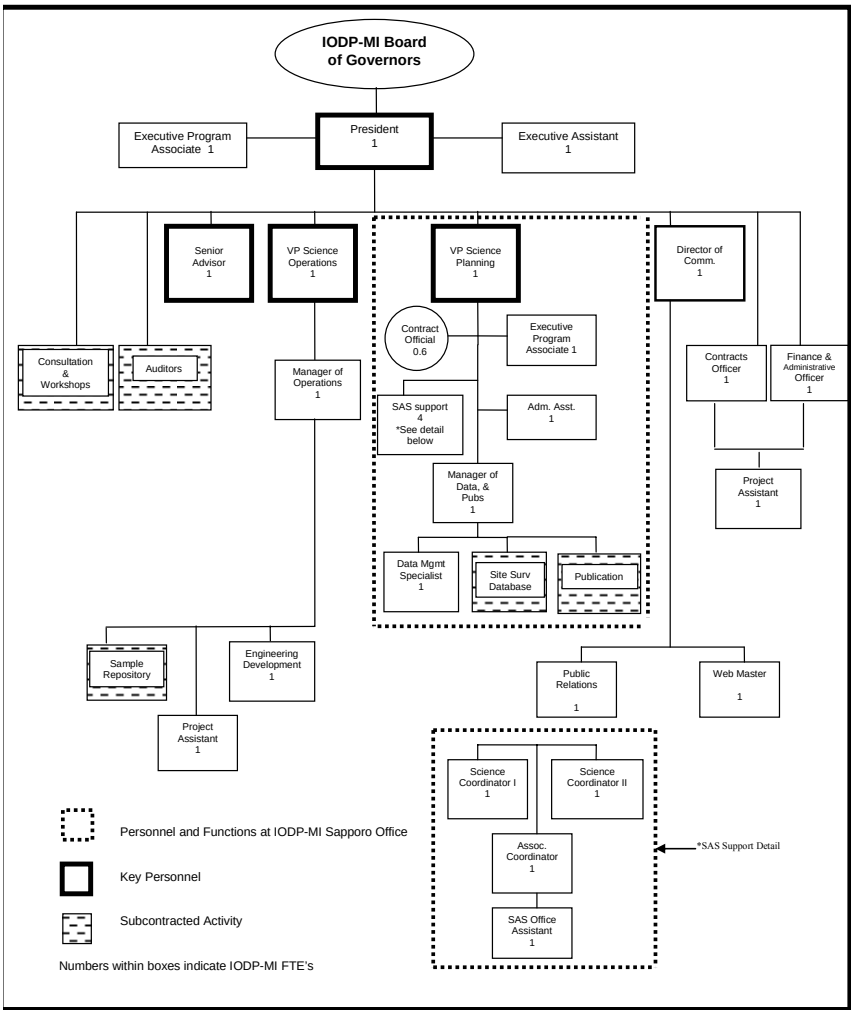

Figure PP- 3: *Organization of IODP Management International, Inc.*

Three positions (Manager of Operations, the Executive Program Associate, and Public Relations Officer) will be hired halfway through FY05. Two positions (Engineering Development and a Project Assistant) will not be hired until FY06.

Science Advisory Structure

The IODP Science Advisory Structure is composed of scientists, engineers and technologists designated by IODP member organizations, such as national or consortia organizations. The SAS provides long-term guidance on the scientific planning of the IODP, and recommends annual science and engineering plans based on proposals from the international science community. The initial scientific objectives of IODP are listed in the IODP Initial Science Plan (ISP) (www.iodp.org/isp.html). Through SAS-sponsored activities, these objectives are pursued, reaffirmed and modified as appropriate by the SAS and by other international scientists, engineers and technologists engaged in ocean drilling. The SAS consists of several advisory committees, panels and groups (see **Figure PP-4**) containing hundreds of scientists from the international geoscience community in IODP member countries and consortia. The SAS provides planning and program advice and guidance to IODP-MI with regard to scientific goals and objectives, facilities, scientific personnel and operating procedures. In turn, IODP-MI provides support for SAS planning in the form of SOCs.

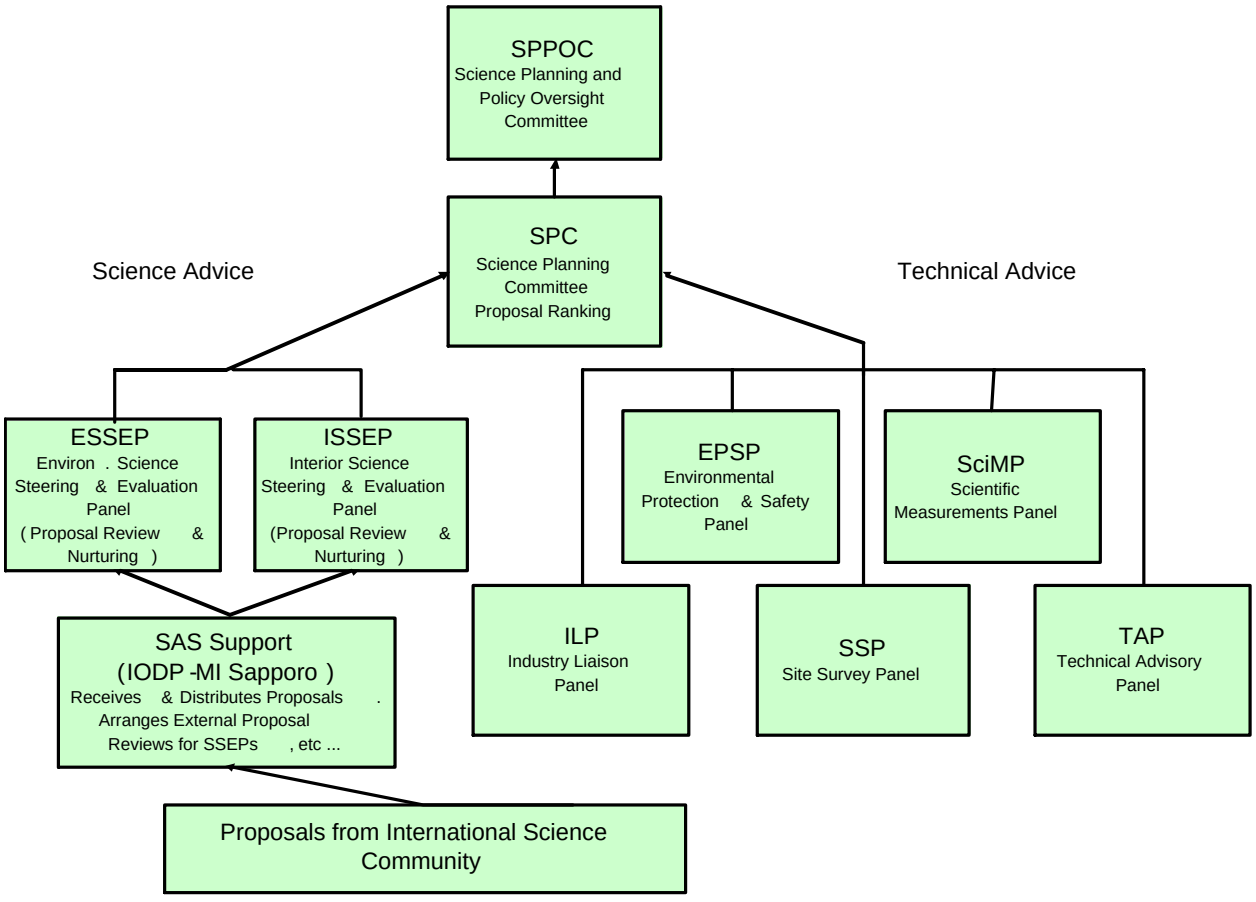

Figure PP- 4: *IODP Science Advisory Structure (SAS Support).*

(Technical and scientific advisory panels liaise as necessary).

The Science Planning Committee (SPC) Chair, Vice Chair and the SAS Support group (part of the IODP-MI Sapporo office) coordinate the SAS. The SAS Support group assists with many aspects of the SAS, including the SPC and the Science Planning and Policy Oversight Committee (SPPOC). The Chair of the SPC also receives financial and administrative support through this SAS Support group. The SPC Chair rotates every two years. The current Chair is Mike Coffin of the Ocean Research Institute (ORI) of the University of Tokyo. The Vice-Chair is Keir Becker of the Rosenstiel School of Marine Science at the University of Miami. The Chair of SPPOC is Kensaku Tamaki of the University of Tokyo. SPC and SPPOC Chairs are expected to rotate, on a 2-year basis, initially between institutions in Japan and the USA.

The SPPOC (a committee of IODP-MI) heads the SAS, is considered the "Executive Authority", and is composed of representatives from scientific organizations in the IODP member countries that have a major interest in the study of the sea floor. The SPPOC formulates scientific and policy recommendations with respect to IODP planning and operations.

The SAS may establish panels and/or committees as needed to address its responsibilities, including panels on platforms and on science operations. The Lead Agency countries are entitled to equal representation on all SAS panels (seven members each). ECORD is entitled to have three voting members and one non-voting member on each SAS panel and committee. The Ministry of Science and Technology (MOST) of the People's Republic of China is entitled to have one voting member to five SAS panels and one non-voting member to SPC and TAP.

Implementing Organizations

IODP is the first international scientific ocean-drilling program to have more than one Implementing Organization (IO, drilling operator). The IOs receive SOCs from NSF by way of IODP-MI, and POCs directly from their national or consortia funding agencies (see **Figure PP-1**).

Non-riser drilling capability will be supplied by the NSF through a contract to the JOI Alliance (see Appendix C), consisting of JOI, Inc. (prime contractor and overall management), Texas A&M University (subcontractor that operates a non-riser drillship, and provides associated services and functions such as expedition staffing, logistics, program-specific engineering development and operations, shipboard laboratories, curation, and distribution of core samples and data) and Lamont-Doherty Earth Observatory of Columbia University (geophysical and geochemical logging services aboard the non-riser vessel, involving acquisition, processing and interpretation of logging measurements). In phase one of the U.S. IO operations (extending to at least May 2005), the JOI Alliance will provide the *JOIDES Resolution* as the non-riser vessel. Five non-riser expeditions are planned between June 2004 and April 2005. A vessel, still to be determined, will be refitted and provided by the Alliance as the phase two non-riser platform (Details of the JOI Alliance and its operational plans for FY05 are presented in the Appendix C).

Riser drilling capability by way of the vessel *Chikyu* will be supplied by CDEX and will begin in FY07 (see Appendix D). CDEX is part of the Japan Agency for Marine-Earth Science and Technology (JAMSTEC). CDEX will also administrate the Kochi University Center for

Advanced Marine Core Research (CMCR) repository. This repository will mainly house samples and cores from the *Chikyu*.

MSP drilling, sampling and logging capability will be supplied by the ESO, a consortium led by the British Geological Survey (BGS; which will conduct MSP operations and program-specific engineering development), the European Petrophysics Consortium (logging services) and the University of Bremen (repository services for MSP samples and cores). ESO will utilize Bremen curatorial personnel and services during actual MSP operations (These ESO funds are separate from the normal IODP core archive and sampling operations proposed by Bremen in the Program Plan—See Appendix F). The ESO will have a contractual arrangement with the ECORD Management Agency (EMA), affiliated with the CNRS, based in Paris. The ESO is currently conducting a coring expedition to the high Arctic (August and September of 2004) and are planning for a second MSP Operation near Tahiti in FY05 (Details of ESO and its operational plans for FY05 are presented in Appendix E and for Bremen in Appendix F).

FY05 OPERATIONAL PROGRAM DEVELOPMENT

The FY05 operational program was developed (in conjunction with the FY04 plan) at the first SPC meeting in September 2003. Minor changes to the riserless schedule were incorporated following the March 2004 SPC and the April 2004 OPCOM meeting. One MSP expedition was added to the program for FY05

The Operational Program Development for FY05 is divided into two parts including (1) a summary of September 2003 SPC/OPCOM ranking and scheduling (derived from the FY04 Program Plan and (2) modifications and additions to the program based upon the March 2004 SPC and April 2004 OPCOM meetings.

Summary of the program development from September 2003 SPC meeting:

Presentation of proposals

The prospectus for the first SPC meeting in September 2003 consisted of 17 externally reviewed drilling proposals, including five that required MSPs and one that involved some riser drilling. The committee organized the proposals for review into three groups (as follows), corresponding to the three main themes of the IODP Initial Science Plan (ISP):

I. Deep Biosphere and Subseafloor Ocean

545-Full3	Juan de Fuca Ridge Flank Hydrogeology	
547-Full4	Oceanic Subsurface Biosphere	
553-Full2	Cascadia Margin Hydrates	
557-Full2	Storegga Slide Gas Hydrates	
573-Full2	Porcupine Basin Carbonate Mounds	
584-Full2	TAG II Hydrothermal	
589-Full3	Gulf of Mexico Overpressures	

II. Environmental Change, Processes and Effects

482-Full3	Wilkes Land Margin	
519-Full2	South Pacific Sea Level	MSP
533-Full3	Central Arctic Paleoceanography	MSP
543-Full2	Norwegian Margin Bottom Water	
548-Full2	Chicxulub K-T Impact Crater	MSP
564-Full	New Jersey Shallow Shelf	MSP
572-Full3	N. Atlantic Neogene–Quaternary Climate	
581-Full2	Late Pleistocene Coralgal Banks	MSP
595-Full3	Indus Fan and Murray Ridge	Riser (partial)

III. Solid Earth Cycles and Geodynamics

512-Full3	Atlantis Oceanic Core Complex

Before outlining and discussing the procedure for reviewing and ranking proposals, the SPC decided to forward Proposal 533-Full3 directly to the Operations Committee (OPCOM) without

further review because of its history of favorable reviews, top ranking, advanced operational planning, and because IODP-MI considered the program to be in the implementation phase.

Global ranking of proposals

The SPC conducted the ranking through a closed vote. Each member submitted a signed ballot, assigning the numerical rank of one through sixteen to the full set of proposals. The iSAS Support staff collected the ballots and tabulated the results, as shown below:

Rank	Proposal #	Short Title	Mean	St dev
1	519-Full2	South Pacific Sea Level	4.43	2.56
2	512-Full3	Atlantis Oceanic Core Complex	4.57	3.16
3	545-Full3	Juan de Fuca Ridge Flank Hydrogeology	4.64	3.88
4	564-Full	New Jersey Shelf	5.21	3.81
5	589-Full3	Gulf of Mexico Overpressures	6.21	5.22
6	553-Full2	Cascadia Margin Hydrates	8.14	4.00
7	572-Full3	N. Atlantic Neogene–Quaternary Climate	8.64	3.67
8	482-Full3	Wilkes Land Margin	8.79	4.59
9	543-Full2	Norwegian Margin Bottom Water	9.14	3.96
10	547-Full4	Oceanic Subsurface Biosphere	9.50	3.25
11	595-Full3	Indus Fan and Murray Ridge	9.57	3.13
12	584-Full2	TAG II Hydrothermal	10.21	3.14
13(t)	557-Full2	Storegga Slide Gas Hydrates	11.14	3.48
13(t)	581-Full2	Late Pleistocene Coralgal Banks	11.14	3.98
15	548-Full2	Chicxulub K-T Impact Crater	11.57	5.77
16	573-Full2	Porcupine Basin Carbonate Mounds	13.07	3.67

The SPC examined the global ranking results and debated which proposals to forward to OPCOM and finally decided to forward the top twelve ranked proposals in two tiers for possible scheduling.

Development of scheduling options

After hearing a report on the advanced status of operational planning for the Arctic drilling project, the OPCOM recommended including it in the FY2004 operations schedule for MSP programs.

OPCOM Consensus 03-09-1: The OPCOM recommends Proposal 533-Full3 Central Arctic Paleoceanography to the SPC for inclusion in the FY2004 operations schedule to institute the necessary steps for program implementation. Its final implementation is contingent upon ECORD participation.

An effort to maximize the scientific return and safety, while minimizing the overall costs and transit times, resulted in the OPCOM recommending three potential scheduling scenarios shown below. The OPCOM expressed a clear preference for the last scenario, because it includes four of the six highest-ranked proposals for the non-riser vessel, it completes three of them, and it involves the lowest estimated costs.

OPCOM Consensus 03-09-2: The OPCOM recommends the following three scenarios to the SPC for consideration as possible drilling schedules for FY2004 and FY2005, with preference given to Scenario 10:

Exp.	Scenario 8	Scenario 9	Scenario 10
1	545-Full3 (Pt. 1)	545-Full3	545-Full3 (Pt. 1)
2	572-Full3 (Pt. 1)	572-Full3 (Pt. 1)	572-Full3 (Pt. 1)
3	584-Full2	584-Full2	512-Full3 (Pt. 1)
4	512-Full3 (Pt. 1)	512-Full3 (Pt. 1)	512-Full3 (Pt. 2)
5	512-Full3 (Pt. 2)	572-Full3 (Pt. 2) + 543-Full2	572-Full3 (Pt. 2) + 543-Full2
6	589-Full3 or 543-Full2	-----	-----
Cost:	$6.2-7.0M	$5.6M	$4.6M
Transit:	42 days	52 days	52 days

Review of scheduling options and vote on final schedule

The SPC accepted the OPCOM recommendation on including Proposal 533-Full3 in the operations schedule for FY2004,

SPC Motion 03-09-32: The SPC recommends including Proposal 533-Full3 Central Arctic Paleoceanography in the MSP operations schedule for FY2004, pending ECORD participation in the IODP.

The SPC then reviewed the three scheduling scenarios proposed by OPCOM for operating the non-riser drilling vessel in FY2004 and provisionally in FY2005. After identifying the non-A-CORK component of Proposal 553-Full2, Cascadia Margin Hydrates, as an acceptable alternate for 545-Full3, Pt. 1, the SPC voted to approve the expedition schedule as follows.

SPC Motion 03-09-34: The SPC approves the following expedition schedule for the non-riser vessel during June 2004 through May 2005:

1.	545-Full3	Juan de Fuca Ridge Flank Hydrogeology (Part I)
2.	572-Full3	N. Atlantic Neogene-Quaternary Climate (Part I)
3.	512-Full3	Atlantis Oceanic Core Complex (Part I)
4.	512-Full3	Atlantis Oceanic Core Complex (Part II)
5a.	572-Full3	N. Atlantic Neogene-Quaternary Climate (Part II)
5b.	543-Full2	Norwegian Margin Bottom Water

The SPC also identifies the non-A-CORK component of Proposal 553-Full2 Cascadia Margin Hydrates as an alternate first expedition in case any significant delays arise in the logistical planning for Proposal 545-Full3.

Highly ranked but unscheduled proposals

Several of the other highly ranked but unscheduled proposals at the September 2003 SPC meeting received various measures of commitment, as stated in the following motions and consensus.

SPC Motion 03-09-37: The SPC forwards Proposals 519-Full2, South Pacific Sea Level, 564-Full, New Jersey Shelf, and 589-Full3, Gulf of Mexico Overpressures, to the OPCOM for consideration at the next OPCOM scheduling meeting without re-ranking

FY04 and Provisional FY05 Schedule

Table PP-1 presents the operational schedule for FY04 and the provisional FY05 schedule resulting from the September 2003 SPC and OPCOM meetings.

Table PP- 1: *IODP Operational Schedule, FY04 (and provisional FY05)*

Exp. #	Expedition	Port (origin)	Dates[1,2]	Total Days (Port[1]/Sea)	Days at Sea (Transit/Ops[3])
1/300	Juan de Fuca	Astoria	[4]21 June – 29 Aug.	69 (6/63)	11/52
MSP-1	Lomonosov Ridge	Stavanger	~1 Aug. - ~15 Sept.	TBD	~35 (in ice)
	JR transit	Acapulco	29 Aug. – 13 Sept.	15 (1/4)	14/0
2/301	North Atlantic 1	Bermuda	13 Sept. – 30 Oct.	47 (2/45)	14/31
3/302	CORE 1	Ponta Delgada	30 Oct. – 18 Dec.	49 (4/45)	8/37
4/303	CORE 2	Ponta Delgada	18 Dec. – 10 Feb. '05	54 (5/49)	8/41
5/304	N. Atl 2 & Norweg.	Ponta Delgada	10 Feb. – 5 April	54 (5/49)	15/34
	JR transit[5]	Reykjavik	5 April – 23 April	18 (3/15)	15/0

Revisions/additions to the FY05 Program

Modifications to the provisional FY05 riserless operational plan (shown in **Table PP-1**; above) were made following the March 2004 SPC meeting and the April 2004 OPCOM meeting. One additional MSP program was added to the schedule (Tahiti) and minor changes were made in the USIO riserless platform schedule.

Mission Specific Platform Operations

In September 2003, ESO were mandated by SPC to prepare plans to carry out two proposals that were at that time ranked as No. 1 and No. 4 respectively:

No.1 - Tahiti and the Great Barrier Reef (GBR), #519-Rev 1
No.4 - New Jersey Margin, #564

Subsequently, at the March 2004 SPC meeting a consensus was reached that the FY05 Program should be confined to the Tahiti drilling only.

SPC Consensus 04-03-13: The SPC recommends that the OPCOM split Proposal 519 South Pacific Sea Level into two MSP expeditions. The Tahiti component should be considered for scheduling in FY05.

OPCOM accepted this consensus and recommended that ESO begin preparations for drilling the Tahiti South Pacific Sea Level Program in FY05.

JOI Alliance Riserless Platform Operations

OPCOM recommended only minor changes to the provisional FY05 USIO riserless platform operations. No new expeditions have been scheduled. The current 365-day program had about eight additional days of unallocated time and OPCOM considered several options to utilize that unallocated time.

OPCOM discussed and approved changes in operations for the North Atlantic expeditions including the drilling of alternate sites for the originally proposed IRM sites, the drilling of a new hole for the Norwegian Bottom Water Proposal 543-Full2 (North Atlantic 2 expedition), the incorporation of contingency time into North Atlantic Operations and tests of the Advanced Diamond Core Barrel during the Core Complex expeditions.

North Atlantic Expeditions

•IRM Sites:

OPCOM was informed by the JOI Alliance that Transocean required a support vessel for operations at the IRM sites. OPCOM discussed the implications of the cost of a vessel to drill these sites (estimated to be greater than $330K) versus the loss of science if alternate sites were drilled (e.g., information on latitudinal changes, water-mass migration, and deep water end member for the N. Atlantic). The science at the IRM sites is a high priority of the proposal but the cost implications at this stage are an overriding factor. OPCOM elected to move forward with replacing the IRM site with alternate sites. However, OCPOM also decided to keep the IRM sites under its purview to allow for the possibility of incorporating these sites into a future (riserless Phase 2) program when a ship with increased operational capabilities may be available.

•Weather Program -contingency time*:*
The concept of including weather contingency time in North Atlantic Climate 1 schedule (and in expeditions in general) was discussed by OPCOM. The USIO estimated that the expedition could have 10-15% downtime resulting from weather. Given this, OPCOM agreed that some flexibility (3-4 day contingency) was important to incorporate into planning for this expedition. OPCOM, however, stressed that this concept needs to be discussed on a case-by-case basis for non-riser expeditions.

•Norwegian Bottom Water site:
OPCOM discussed the following consensus item from SPC:

SPC Consensus 04-03-23: The SPC was briefed about discussions with the JOI Alliance regarding drilling a new hole for achieving the objectives described in Proposal 543-Full2. The proposal indicated that Hole 642E would be suitable, and in many ways ideal, for the proposed experiments. We are concerned that drilling a new hole will require additional time and funds, and we request that the lead proponent prepare a proposal addendum that justifies additional ship time and program costs if these are required to achieve the primary project objectives. The addendum should be submitted in time for consideration at the OPCOM meeting on 15-16 April 2004. Otherwise, the proponent and the JOI Alliance should determine the best approach to accomplish the proposed science within the currently allocated ship time and budgets.

The proponent did submit a proposal addendum and OPCOM spent considerable time discussing the scientific merit outlined in the original proposal and the addendum as well as the time and costs associated with the new hole. OPCOM deemed the scientific merit for a new hole was justified and approved the new strategy with the understanding that the original program would be used as a backup strategy.

Core Complex Expeditions

•Advanced Diamond Core Barrel:
The JOI Alliance discussed the possibility of using the Advanced Diamond Core Barrel (ADCB) on the Core Complex expeditions. The purpose of the test would be to run a head-to-head comparison with the RCB in the same hard-rock formations. There would be minimal impact on the science as the ADCB would be deployed in the bottom of the hole after RCB coring operations ceased. ADCB operations would need approximately two days. OPCOM supported the concept of incorporating the use of the ADCB into the Core Complex program. They felt (1) that this type of test was very appropriate given the lithologies and the science program, and (2) that it was important in IODP for IOs to provide this type of engineering development and testing time when possible. In addition, if the ADCB operations were successful, it could be used at other times during the expedition.

Final FY05 Operational Schedule

The revised FY05 schedule developed by OPCOM and the USIO, which incorporates the changes described above, is as follows:

Table PP- 2: *IODP Operational Schedule, FY05*

	Cruise	Port (Origin)	Dates	Total Days (Port/Sea)	Days at Sea (Transit/Op[4])
303	North Atlantic Climate 1	St. John's Newfld	22 Sept – 14 Nov	53 (5/48)	5/43
304	Oceanic Core Complex 1	Ponta Delgada	14 Nov – 5 Jan '05	52 (5/47)	7/40
305	Oceanic Core Complex 2	Ponta Delgada	5 Jan – 27 Feb	53 (5/48)	7/41
306	North Atlantic Climate 2	Ponta Delgada	27 Feb – 22 Apr	54 (5/49)	4/45
307	Tahiti		Spring/ Summer-05		
	JR Transit	Reykjavik	22 Apr – 10 May	18 (3/15)	15/0
	JR Demobilization	Galveston	10 May – 1 Jun	22 (22/0)	0/0

FY05 EXPEDITION DESCRIPTIONS

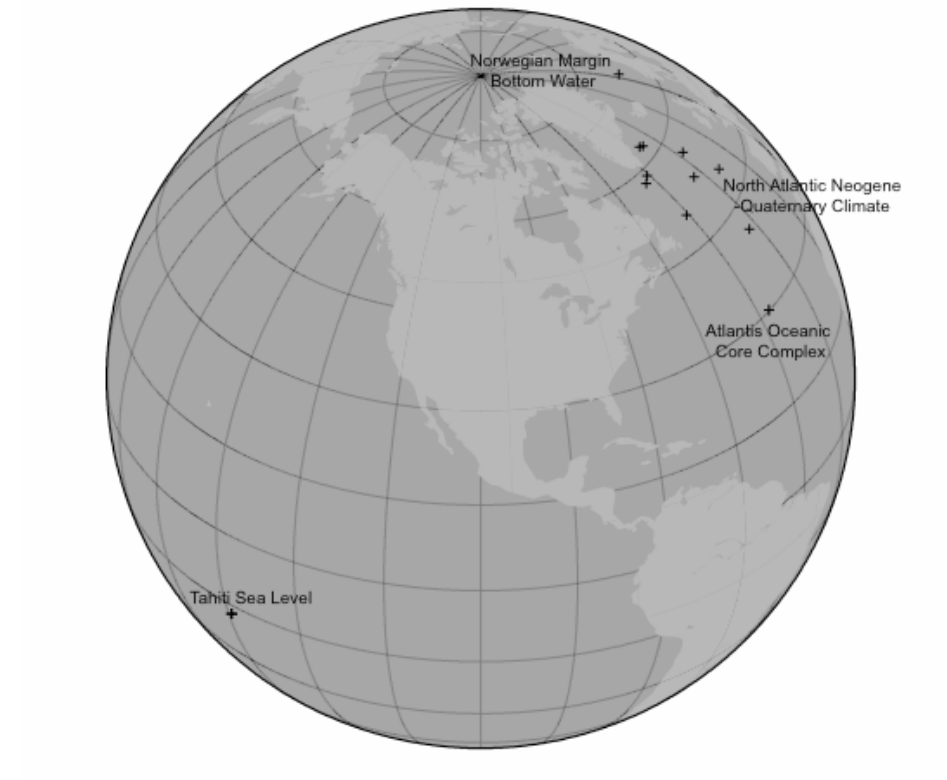

Figure PP- 5: *FY05 Expedition Locations*

Expeditions 303 and 306 North Atlantic Climate

Expeditions 303 + 306	**North Atlantic Neogene-Quaternary Environments**
Proposal	**572-Full3**
Title	**Ice-sheet–ocean–atmosphere interactions on millennial time scales during the late Neogene–Quaternary using a paleointensity-assisted chronology for the N. Atlantic**
Proponents	**James E. T. Channell, Joseph S. Stoner, Gerard C. Bond, David A. Hodell, and Ellen E. Martin**

Expedition 306	**Norwegian Margin Bottom Water**
Proposal	**543-Full2**
Title	**Installation of a CORK in Hole 642E to document and monitor bottom-water temperature variations through time**
Proponents	**Robert N. Harris**

Figure PP- 6: *Primary sites for the North Atlantic Expeditions*

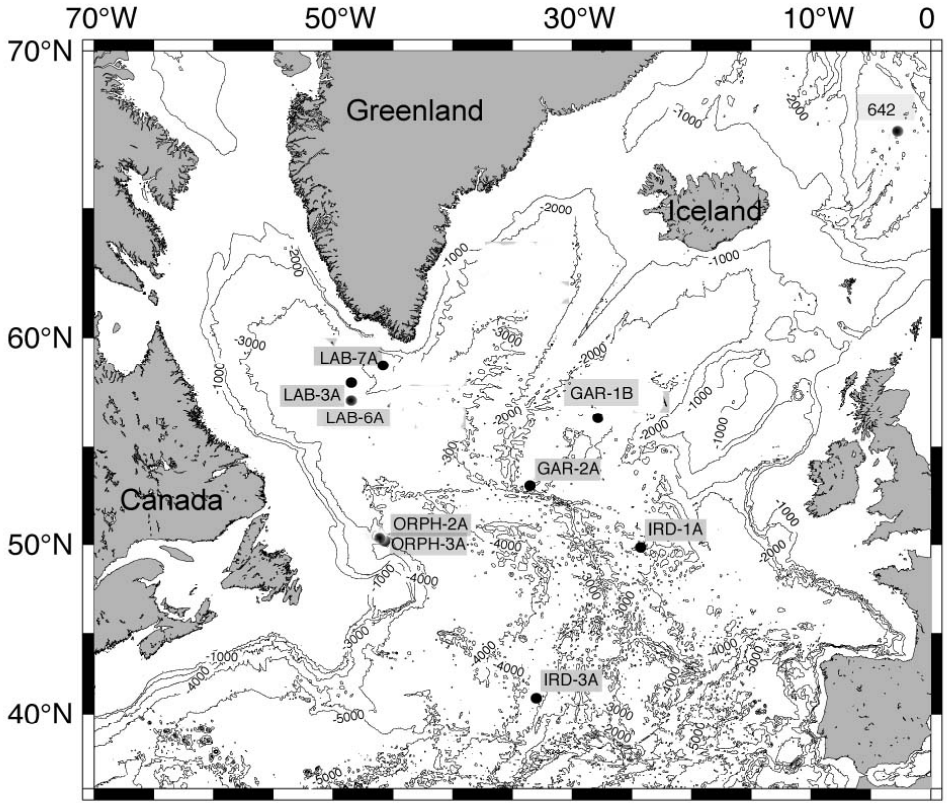

Table PP- 3: *Primary Sites for North Atlantic Climate 1 Expedition*

Site No.	Location (Lat/Long)	Water Depth (mbsf)	Operations Description (mbsf)
ORPH-3A	50° 09.98' N	3591	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	45° 38.27' W		Logging with Triple Combo and FMS-sonic
LAB-7A	58° 14.23' N	2273	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	46° 38.59' W		
LAB-3A	58° 02.17' N	3350	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	48° 27.57' W		
LAB-6A	57° 28.51' N	3485	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	48° 31.842' W		
IRD-1A	49° 52.667' N	3884	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	24° 14.287' W		

Table PP- 4: *North Atlantic Climate 1 Alternate sites*

(note that all NAC II sites will be alternate NAC I sites to allow maximum weather contingency)

IRD-3A	41° 0.068' N	3426	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	32° 57.438' W		
ORPH-2A	50° 12.40' N	3539	3XAPC to 200 mbsf. Drill over stuck core barrels
(Canada)	45° 41.22' W		
GAR-2A	53° 03.400' N	3024	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	33° 31.780' W		
GAR-1B	56° 21.882' N	2820	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	27° 53.310' W		
IRD-4A	42° 50.205' N	3542	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	23° 5.252' W		
LAB-8A	58° 28.75' N	2703	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	46° 27.34' W		
LAB-8B	58° 33.22' N	2556	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	46° 18.04' W		
LAB-8C	58° 29.7737' N	2618	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	46° 25.2140' W		Pending EPSP approval

Table PP- 5: *North Atlantic Climate 2 Primary Sites*

North Atlantic Climate 2 Primary Sites			
Site No.	**Location (Lat/Long)**	**Water Depth**	**Operations Description**
IRD-3A	41° 0.068' N	3426	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	32° 57.438' W		
ORPH-2A	50° 12.40' N	3539	3XAPC to 200 mbsf. Drill over stuck core barrels
(Canada)	45° 41.22' W		
GAR-2A	53° 03.400' N	3024	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	33° 31.780' W		
GAR-1B	56° 21.882' N	2820	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	27° 53.310' W		
Site 642	67° 13.20' N	1288	Install cone with 120 m 10 3/4" casing and thermistor probe.
(Norway)	02° 55.80' W		

Table PP- 6: *North Atlantic Climate 2 Alternate sites*

(Note that all NAC I sites will be alternate NAC II sites to allow maximum weather contingency.)

ORPH-3A	50° 09.98' N	3591	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	45° 38.27' W		
LAB-7A	58° 14.23' N	2273	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	46° 38.59' W		
LAB-3A	58° 02.17' N	3350	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	48° 27.57' W		
LAB-6A	57° 28.51' N	3485	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	48° 31.842' W		
IRD-1A	49° 52.667' N	3884	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	24° 14.287' W		
IRD-4A	42° 50.205' N	3542	3XAPC to 300 mbsf. Drill over stuck core barrels
(International)	23° 5.252' W		
LAB-8A	58° 28.75' N	2703	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	46° 27.34' W		
LAB-8B	58° 33.22' N	2556	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	46° 18.04' W		
LAB-8C	58° 29.7737' N	2618	3XAPC to 300 mbsf. Drill over stuck core barrels
(Denmark)	46° 25.2140' W		Pending EPSP approval

Science Description

(Note: This science program will be undertaken in two parts, as expeditions 303 and 306)

The objective of these two expeditions is to establish for the Late Neogene to Quaternary the intercalibration of geomagnetic paleointensity, isotope stratigraphy, and regional environmental stratigraphies to develop a millennial-scale stratigraphic template for the North Atlantic. Other objectives are (1) to better understand the relative phasing of atmospheric, cryospheric, and oceanic changes that are central to understanding the mechanisms of global climate change on orbital or millennial timescales, (2) to improve our knowledge of the temporal and spatial behavior of the geomagnetic field through high-resolution records of directional secular variation and geomagnetic paleointensity, and (3) to provide fundamental constraints for numerical models of the geodynamo. These goals will be accomplished by APC coring nine primary sites with the objective of acquiring complete sedimentary sections appropriate for high-resolution studies. This is a

two-expedition program with five sites to be occupied during Expedition 303 and the remaining four sites cored during Expedition 306. In addition, at the last Expedition 306 site we will investigate the feasibility of reconstructing bottom-water temperature histories at the decadal to centennial timescale by making high-precision temperature-depth measurements at a location in the Norwegian-Greenland Sea with the proposed installation of a Cork and instrument string near ODP Site 642.

Proposed Operations

With the exception of the aforementioned final site of Expedition 306, from an operational standpoint these will be routine sediment coring expeditions. Each site will consist of multiple APC-cored holes to assure recovery of the complete sediment section. APC coring, employing the drillover technique, will extend to ~300 m below seafloor (mbsf). One site will be logged with the triple-combination tool and Formation MicroScanner/sonic tool strings. For the Norwegian- Greenland Sea site, the proposed operation is to jet in a reentry cone and deploy a thermistor string and Cork.

Experiments

The emphasis of these two expeditions will be on sediment core recovery and analyses. No downhole experiments are planned for the North Atlantic Climate Sites. Heavy use of the core imaging system, a magnetometer, and multisensor track systems can be expected. No downhole experiments are anticipated for the Norwegian Greenland Sea Cork site.

Environment and Safety

There is a high risk of losing operating time because of severe weather and ice conditions. The optimum weather window for drilling these sites is July through September. Scheduling these expeditions in the September–November and February–April time frame increases the risk of operational downtime (to about 10%) attributable to weather. To minimize risks to the safety personnel and equipment, the JOI Alliance has arranged for daily site-specific forecasts from a weather service experienced in North Atlantic conditions and a dedicated local weather observer will sail. Three additional operating days have been added to Expedition 301 to accommodated operating time lost due to weather. There is a low risk encountering poor hole conditions.

Logistics

Operations for Expedition 303 will require and estimated 53 days (5 in port, 5 in transit, and 43 on site). Note that this expedition straddles the FY04/F05 program years. Operations for Expedition 306 require and estimated 54 days (5 in port, 4 in transit, and 45 on site).

Logging

Expedition 303: North Atlantic Climate 1
During Expedition 303, the standard geophysical tool string for density, porosity, resistivity and gamma ray information and the Formation MicroScanner (FMS)/sonic tool string for high-resolution resistivity logs and images and sonic velocity data will be deployed. The scientific objectives that could be addressed using logging data include: (1) providing reference depths for composite core depth scales, (2) recognition of ice-rafted debris, (3) recognition of ash, clay and organic layers, and (4) characterization of millennial scale cyclostratigraphy.

The prime target for logging will be the Orphan Knoll Site. This is the first deep drilling investigation of the sediments on the flanks of Orphan Knoll, and the collection of downhole log data will be instrumental in fully characterizing the site. Logging at Orphan Knoll will allow the assessment of potential problems with core expansion and contraction. Total logging time for a hole at Orphan Knoll is estimated at approximately 18 hours.

Expedition 306: North Atlantic Climate 2
The current plan is to drill four sites, namely GAR1A, GAR2A, ORPH2A, and IRD3A, that will be complementary to Expedition 303 (North Atlantic 1) and to log a minimum of two sites with the triple combo tool string and added high-resolution MGT (given suitable sediment characteristics), the FMS/sonic tool string, and the WST check shot tool. Logging operations at any of the sites to be cored during Expedition 306 will take approximately 30 hours (20 for standard logging and 10 for WST checkshots). If core recovery/core quality is poor at any of the other sites, the further use of downhole logging should be considered in order to accomplish the scientific objectives of the expedition.

The second part of Expedition 306 will consist of the installation of a cork near ODP Hole 642E, located on the Voring Plateau. This cork installation will be used to document and reconstruct bottom-water temperature (BWT) variations through time on the decadal to centennial scale by measuring thermal anomalies in the sediment pile. The area near Hole 642E, originally drilled during ODP Leg 104, is ideal for this study because it is in a climatically sensitive region with an established 50-yr time series of bottom-water temperature measurements in ~278 m of Neogene and Quaternary pelagic and hemipelagic sediments overlying a series of basalts and interbedded Eocene sediments. The full suite of standard logging tools will be available for use as needed during this second part of the expedition. Log data may be useful in determining the initial thermal regime of the hole, as well as providing data on hole condition and characterizing the formation surrounding the Cork.

Expeditions 304 and 305: Core Complex 1 and 2

Expeditions 3/304 + 4/305	**Atlantis Oceanic Core Complex**
Proposal	**512-Full3**
Title	**Oceanic core complex formation: Deformation, alteration, and accessible mantle peridotite**
Proponents	**Donna Blackman, John Collins, Javier Escartin, G. Früh-Green, Kevin Johnson, Chris MacLeod, Monique Seyler**

Figure PP- 7: *Primary sites for the Core Complex expeditions*

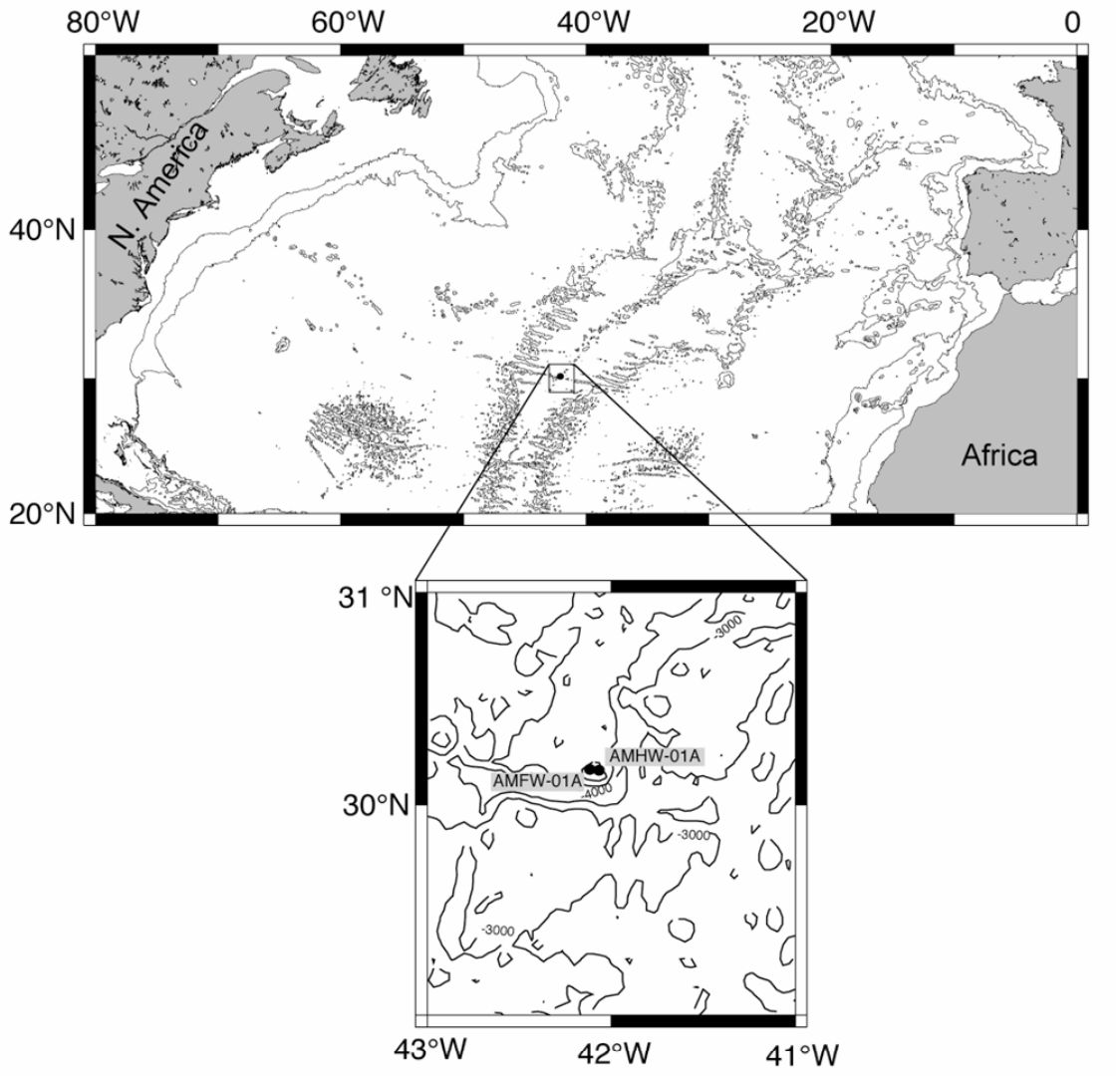

Table PP- 7: *Oceanic Core Complex 1 Primary operations*

Site	Location (lat/long)	Water depth	Operations Description (mbsf)
AMFW-01A (footwall - peridotite)	30.17000°N 42.12333°W	1630	Hole A: Bare rock spud, RCB 1/2 cores 0–130 mbsf Hole B: HRRS hammer drill-in 22 m 13-3/8 inch casing Underream to ~130 m, Run ~120 m 10-3/4" casing Set retainer, cement 10-3/4 inch casing
AMHW-01A (hanging wall - basalt)	30.19166°N 42.06500°W	2580	Hole A: HRRS hammer drill-in 22 m 13-3/8 inch casing RCB 1/2 cores 22 to 70 mbsf, ADCB 70 to 130 mbsf Underream to ~130 m, Run ~120 m 10-3/4" casing Set retainer, cement 10-3/4 inch casing RCB 1/2 cores 130 to 500 mbsf Log: triple combo, FMS/sonic, mag., UBI

Table PP- 8: *Alternate Operations for Core Complex 1*

<u>If first footwall pilot hole fails (not peridotite/gabbro or bad hole conditions), attempt another pilot hole</u>			
Footwall (peridotite)	~30.17°N ~42.12°W	~1630	Bare rock spud, RCB 1/2 cores 0–130 mbsf Log: triple combo, FMS/sonic, mag., UBI
			Subtotal = 4.7 days
<u>If first footwall pilot hole OK but HRRS fails, attempt 2nd HRRS installation and core (leave time for HW site)</u>			
Footwall (peridotite)	~30.17°N ~42.12°W	~1630	HRRS hammer drill-in 22 m 13-3/8 inch casing Underream to ~130 m, Run ~120 m 10-3/4" casing Set retainer, cement 10-3/4 inch casing
			Subtotal = 7.6 days
<u>If first footwall pilot hole and HRRS OK, but first HW HRRS fails (no time for 2nd HW HRRS):</u> <u>Deepen FW hole as time permits</u>			
Footwall (peridotite)	~30.17°N ~42.12°W	~1630	RCB 1/2 cores 130 to1060 mbsf Log: triple combo, FMS/sonic, mag., UBI, VSP
			Subtotal = 36.9 days
<u>Transect of shallow MDCB core holes in FW</u>			
Footwall (peridotite)	~30.17°N ~42.12°W	~1630	Trip in/out with XCB/MDCB BHA MDCB core two holes 0 to ~9.0 mbsf average
			Subtotal = 1.3 days
<u>Bare rock spud and RCB 1/2 core to bit destruction in FW</u>			
Footwall (peridotite)	~30.17°N ~42.12°W	~1630	RCB 1/2 cores to bit destruction 0 to ~150 mbsf Drop bit, Log: triple combo, FMS/sonic, mag., UBI
			Subtotal = 5.5 days
Footwall (peridotite)	~30.17°N ~42.12°W	~1630	RCB 1/2 cores 0 to ~26 mbsf
			Subtotal = 1.6 days

Table PP- 9: *Oceanic Core Complex 2 Primary Operations.*

Site	Location (lat/long)	Water depth (mbrf)	Operations Description
AMFW-01A (footwall - peridotite)	30.17000°N 42.12333°W	1630	Hole A: HRRS Hammer Drill-In 22 m 13-3/8 in. casing RCB 1/2 cores ~22 to 70 m, ADCB 70-130 m Underream to ~130 m, Run ~120 m 10-3/4" casing Run Retainer, Cement 10-3/4" casing (0.9 d) RCB 1/2 cores 130 to 1100 m Log: Triple Combo, FMS/Sonic, Mag., UBI, VSP Hole B: RCB 1/2 cores 0 to ~26 m

Table PP- 10: *Alternate Sites for Core Complex 2*

AMFW-01A	~30.17°N ~42.12°W	1630	HRRS Hammer Drill-In 22 m 13-3/8 in. casing RCB 1/2 cores ~26 to 130 m Underream to ~130 m, Run ~120 m 10-3/4" casing Run ~120 m 10-3/4" casing w/ MM & UnderReamer Run Retainer, Cement 10-3/4" casing RCB 1/2 cores 130 to 610 m Drop Bit, Log: Triple Combo, FMS/Sonic, Mag., UBI VSP **Hole Subtotal = 30 days**
AMHW-01A	~30.19166°N '~42.06500°W	2580	RCB to bit destruction 'Hole Subtotal = 3.0 days
AMFW-01A	~30.17000°N ~42.12333°W	1630	MDCB core 8 hole transect 0 to 4.5 m **Hole Subtotal = 1.8 days**
AMHW-01A	~30.19166°N ~42.06500°W	2580	RAB to bit destruction **Hole Subtotal = 3.0 days**

Science Description

The principal objective of Expeditions 304 and 305 is to determine the conditions under which oceanic core complexes (OCCs) develop. Formation of these large, shallow seafloor features appears to be a common manifestation of plate rifting and accretion at slow spreading ridges.

The Atlantis Massif, located at the eastern intersection of the Mid-Atlantic Ridge and Atlantis transform fault, has several key features that make this site an ideal target for OCC drilling. The hanging wall is in contact with the footwall of the detachment surface, which is believed to be dominated by variably serpentinized peridotite at the surface that may grade into fresh peridotite over drillable distances. The objectives of these

expeditions are to (1) characterize variation in rock type, structure, and alteration with depth at an ultramafic OCC, including the nature and deformation history of the detachment fault and (2) obtain core of essentially fresh, in situ peridotite to document composition, microstructure, evidence for melt production/migration and relationships between deformation/melt and syntectonic alteration.

To achieve these goals, two expeditions are proposed and two sites will be drilled:

- Deep drill (>700 m) on the Central Dome of Atlantis Massif (Site AMFW-01A) to sample the detachment fault zone and the alteration front and drill into unaltered mantle (core and logging analyses planned).
- Deep drill (400–500 m) through the basaltic hanging wall (Site AMHW-01A) to sample rock just above the detachment, the shallowest part of the unexposed fault, and through the fault zone (core and logging analyses planned).

Operations

Both sites will require casing to maximize the chances of achieving deep penetration. The first casing string (13-3/8 in) will be set to ~20 mbsf using the HRRS Hammer Drill-in Casing system. Each site will then be RCB cored to ~130 mbsf and opened using a bicentered bit or underrreamer allowing a second (10.75″) casing string to be set. Each hole will then be RCB cored to maximum depth and logged. During Expedition 304, both sites will be established with the HRRS Hammer Drill reentry cone/casing system and drilled to casing depth. The supplemental 10¾ ″ casing strings will be set (as required). Remaining time will be devoted to drilling and coring the hanging to the maximum depth possible in the available time. Expedition 305 will be devoted to deepening the hole at the footwall site to the maximum depth possible. Plans call for a limited trial of the Advanced Diamond Core Barrel (ADCB) coring system during Expedition 304 to further evaluate the potential of this system to achieve the improved hard rock core recovery and quality over the conventional RCB system. Three days have been added to the Expedition 304 schedule for the ADCB evaluation. At site AMHW-01A, the ADCB will be used to deepen the hole ~50 m following the cessation of conventional rotary drilling. If successful, the ADCB may be used further during Expedition 305.

Experiments

A borehole vertical seismic profile (VSP) experiment has been proposed at the footwall site. All other operations during these two expeditions will focus on maximizing recovery and increasing depth of penetration.

Environment and Safety

The principal risks to the program are the difficulty of starting a hole in bare rock and the possibility the possibility of encountering unstable hole conditions. The difficulty of starting a hole on bare rock will be mitigated through use of the HRRS Hammer Drill-in Casing System. Experience has shown that in hard rock drilling the upper part of the

hole is most prone to instability; hence, we will be prepared to case the upper 120 m of each hole. Below that depth we expect to encounter competent rock that will provide stable conditions and allow deep penetration, although it is possible that the shallowest (hanging wall) site will exhibit unstable hole conditions throughout the section. Sufficient supplies and hardware will be carried to allow a third hole to be started in the event that one of the primary holes is lost through instability.

Weather conditions should not be a limiting factor, even though this expedition is scheduled for late Fall 2004.

Procedures will be adopted to minimize risk to marine mammals from the proposed seismic experiments, including posting observers while experiments are in progress to record the presence and proximity of marine mammals, gradually increasing the amplitude of the sound sources to allow animals time to move away, and suspending operations if animals approach within 800 yards.

Logistics

Operations for Expedition 304 require an estimated 52 days (5 in port, 7 in transit, and 40 on site). For Expedition 305, operations require an estimated 53 days (5 in port, 7 in transit, and 41 onsite).

Logging

Downhole logging will provide in situ information on the geophysical structure of the drilled formation. Whereas core recovery is often biased and incomplete in basement, downhole logging data are continuous and therefore provide information over intervals of low recovery. The downhole logging program is designed for logging the hanging wall and footwall holes using the triple combination (triple combo) tool string, FMS/sonic tool string, and Well Seismic Tool (WST). In addition, the Ultrasonic Borehole Imager (UBI) will also be available for Expedition 305 operations. The deployment of a third-party magnetometer (i.e., Bundesanstalt für Geowissenschaften und Rohstoffe [BGR]—German Geological Survey) is under investigation.

Table PP- 11: *Logging Operations for Core Complex Sites*

Site	Water Depth (mbsl)	Sediment Thickness (m)	Basement Thickness (m)	Logging Operations
AMFW-01A	1630	1	> 700	Triple Combo, FMS/sonic, UBI, WST3
AMHW-01A	2550	1-2	400-500	Triple Combo, FMS/sonic

Expedition 307: Deglacial Sea Level Rise in South Pacific; Tahiti

Expedition 307	**Tahiti**
Proposal	**519-Full2**
Title	**The Last Deglacial Sea-Level rise in the South Pacific: Offshore Drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef**
Proponents	**G.F. Camoin, E. Bard, B Hamelin, P Pezard, P.J. Davies, W.C. Dullo**

Figure PP- 8: *Proposed location of sites for Tahiti drilling*

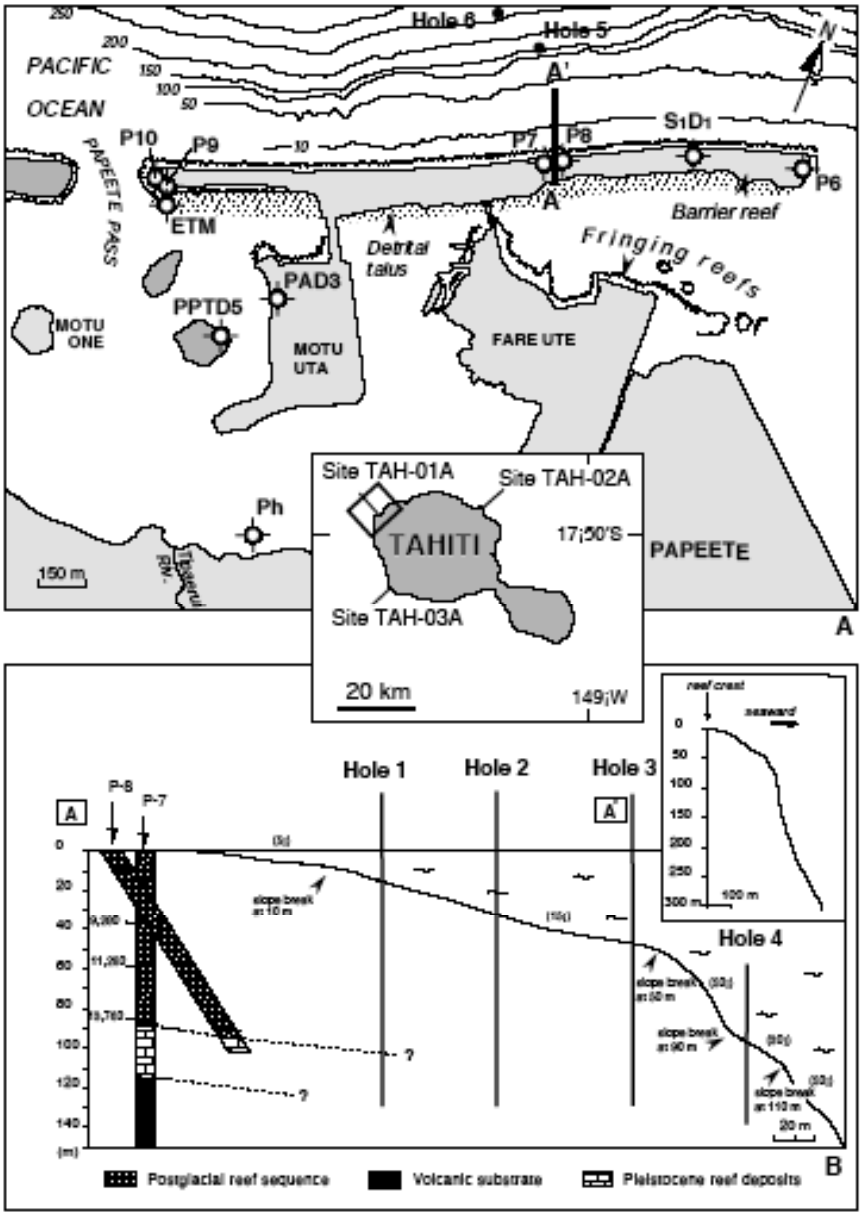

Table PP- 12: *Proposed sites for Tahiti expedition*

Site Name	Position	Water Depth (m)	Penetration (m)			Brief Site-specific Objectives
			Sed	Bsm	Total	
TAH-01A	17.31S – 149.35E	20/300	50/100	10	440	6 holes (transect) -Recovery of Holocene and Pleistocene depositional reef sequences. Volcanic basement.
TAH-02A	17.35S – 149.20E	20/300	50/100	10	440	6 holes (transect) –Recovery of Holocene and Pleistocene depositional reef sequences. Volcanic basement.
TAH-03A	17.45S – 149.35E	20/300	50/100	10	440	6 holes (transect) -Recovery of Holocene and Pleistocene depositional reef sequences. Volcanic basement.
RIB-01A	15.30S– 145.40E	25/250	30/100	10	330	5 holes (transect) - Recovery of Holocene and Pleistocene depositional reef sequences. Limestone basement.
HYD-01A	18.40S - 147.40E	40/250	50/100	10	400	6 holes (transect) - Recovery of Holocene and Pleistocene depositional reef sequences. Limestone basement.
Alternate site BOW-01	16.50S – 145.50E	25/250	30/100	10	330	6 holes (transect) Recovery of of Holocene and Pleistocene depositional reef sequences. Limestone basement.

Science Description

The main objective of this Expedition is to drill to a series of boreholes along a number of transects in order to:

1. Reconstruct the deglaciation curve for the period 20,000 to 10,000 yrs BP in order to establish the minimum sea-level during the Last Glacial Maximum (LGM), to test predictions based on different ice and rheological models, and to assess the validity, the timing and amplitude of meltwater pulses which are thought to have disturbed the general thermohaline oceanic circulation and, hence, global climate.

2. Identify and establish patterns of short-term paleoclimatic changes that are thought to have punctuated the transitional period between present-day climatic conditions following the LGM. It is proposed to quantify the variations of sea surface temperatures based on high-resolution isotopic and trace element analyses on massive coral colonies. When possible, we will try to identify specific climatic phenomena such as El Nino-Southern Oscillation in the time frame prior to 10,000 yrs BP and try to get a better knowledge of the global variation and relative timing of post-glacial climate change in the southern and northern hemisphere.

3. Analyze the impact of sea-level changes on reef growth, geometry and biological makeup, especially during reef drowning events; this approach will help improving the modeling of reef development and the morphological and sedimentological evolution of the foreslopes (highstand vs. lowstand processes).

Operational Plans

For Tahiti, the requirement is for a dynamically positioned drilling vessel. Two possibilities are both types equipped with a drilling rig and associated equipment:

- A vessel with sufficient accommodation, space and facilities to allow all required scientific work to be carried out at sea.

- A relatively small geotechnical-survey vessel suitable for drilling but with insufficient accommodation and facilities to permit full on-board working. In this case core will be transferred to shore for completion of core logging and curation. This will require the use of a local boat for daily visits to the ship for the transfer of cores to the onshore facility; such facilities are known to be available in Papeete.

It is proposed to use a 'piggy-back' mining-type wireline coring system with a conductor to seabed. This will allow minimum cuttings due to the small kerf on the bit, a smooth hole profile due to bit type and the best chance of obtaining high quality and high recovery of core. This type of equipment has been used extensively in other coral reef situations world-wide and has a good track record. For offshore use the drillstring is protected by the conductor pipe to seabed. This serves both to avoid excessive string bending and provide a conduit to the vessel for any cuttings which come to surface.

If a sufficiently large drilling vessel is used for this expedition, it will be possible to carry out all necessary preliminary scientific work onboard the drillship (e.g. for drilling decisions, safety and ephemeral properties). After due consideration, it has been decided that there will be no splitting of the cores at sea, as it will be more efficient to carry out the majority of the scientific analysis during an onshore party at Bremen. Therefore, there would be only limited scientific analysis carried out onboard, and only a limited number of scientists would be required to sail. It is currently planned that core will be cut on board into 1.5 m lengths and curated. The core catcher sample will be split and a visual description recorded. At present there is no indication of requirements for microbiology, but this can be incorporated into the prospectus.

The drilling transects are never more than 40 km from the island's capital Papeete, with the closest being immediately offshore. We are advised that there is plenty of space at a research centre at the local University, and it would be possible to set up an onshore base at Papeete where it would be possible to carry out limited analytical work should the drillship facilities deem this necessary. However, this activity would not in any way

replace the proposed work at the Onshore Party in Bremen, and would be classed as an offshore operation.

Environment and Safety

Meteorological information suggests that the most favorable weather window is in the period from May to October. It is presently proposed that the expedition begins in May/June 2005 if the chosen drilling vessel is available at that time. However, the information also indicates that there are seldom strong winds, so that there can be considerable flexibility in timing from a weather point of view. Swell is predominantly from the north-east, but is likely to be only occasionally problematic.

All operations in the coral-reef environments must be carried out to the highest standards both for the health and safety of all personnel involved and for the protection of this fragile environment. The proposed IODP statement on the conduct of operations with due regard to the environment shall form the baseline for any requirements in any area of work.

The ESO will operate to its own set of guidelines that will follow established NERC/BGS Health and Safety Policy. These will be in addition to the guidelines produced by OPCOM for reef drilling in general, and will be integrated with the IODP Health and Safety Policy and the specific vessel ISM requirements. In the event of all encompassing policies having different standards, the highest practicable will be used.

At sites in water depths of less than 50 m, an ROV will be deployed prior to drillstring deployment in order to observe the seabed and to avoid spudding into live coral heads.

Logistics

The estimated time for Expedition 307 is yet to be determined. The expedition will most likely take place in May/June 2005.

Logging

Considering the anticipated shallow depth and small diameter of many holes, short slimline tool strings are required.

The following is a generic list of minimum and additional tools, based on formation properties and not on 'operator'-based trademark names:

Minimum measurements

1. Natural gamma (total counts and spectral) – for log-log and core-log correlation (total counts), clay typing, mineralogy and red algae detection from uranium and dissolution horizons identification (spectral).

2. Porosity (cannot utilize a radioactive source) – for physical properties, core-log correlation, quality control, lithology.

3. Electrical resistivity (shallow-deep measurement) for physical properties, core-log correlation, quality control, lithology and pore-fluid identification.

4. Sonic measurements – for physical properties, core-log correlation, borehole-seismic integration, quality control.

Additional requested measurements

1. High-resolution borehole wall imaging at cm- to mm-scale (either electrical, acoustic or optical) – for core-log correlation, detailed reefal stratigraphic analyses from direct identification of coral types (with optical images), hole size (with acoustic images), mesoscale porosity identification, oriented sedimentological and structural information.

2. Hydrochemical borehole fluid analysis (with the simultaneous measurement of borehole pressure, fluid temperature, pH and electrical conductivity) allowing the identification of fluid circulation within the reef, an essential aspect for the primary scientific objective of the expedition, the complete reconstruction of the sea-level curve.

3. Check-shots – direct measurement of seismic travel time for core/borehole-surface seismic integration.

Due to environmental concerns in this shallow-water reef environment, the use of chemical nuclear sources is prohibited. As such, density and porosity logging tools that require standard Am-Be (for neutrons) and Ce (for gamma rays) sources cannot be used.

The proponents borehole geophysics plan expresses the need to have a full program in at least two holes per transect, and possibly three. Besides the standard suite of tools (1- 4) the deployment of two specialty tools, pending available funds, is requested. One is an optically imaging tool and the other is fitted with hydrochemical sensors to measure simultaneously: p, T, Cw, pH. The holes will be drilled with seawater providing an ideal environment for the mm-scale optical imaging.

FY05 Engineering Site Surveys-CDEX

Introduction

At the March 2004 meeting, the SPC designated Proposal 603-CDP3 Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) and Proposal 537-CDP3 Costa Rica Seismogenesis Project (CRISP) as complex drilling projects (CDPs) and forwarded them to the OPCOM to determine the required level of scoping activity for the projects. Based upon this SPC consensus CDEX proposes to conduct engineering site surveys at

Kumanonada (NanTroSEIZE Proposal Site) in FY05. The tentative schedule is to deploy current profiler and meter during October 4-7, 2004 for a 2.5 month survey and then conduct Side Scan Sonar and Sub-Bottom Profiler surveys and retrieve the current profiler and meter during a December 9-28, 2004 cruise During the summer of 2005, CDEX would then conduct either a high-resolution 2D seismic survey or a 3D seismic survey if SAS and Project Scoping Group advice indicates a need for this data.

Operations- Proposal 603-CDP3 Nankai Trough Seismogenic Zone Experiment

This Complex Drilling Project (CDP) proposal describes the rationale and scientific objectives for an integrated program of geophysical and geologic studies, non-riser drilling, and riser drilling designed to investigate the aseismic to seismic transition of the megathrust system and the processes of earthquake and tsunami generation at the Nankai Trough subduction zone. The fundamental goal is the creation of a distributed observatory spanning the up-dip limit of seismogenic and tsunamigenic behavior. Three distinct phased IODP drilling efforts are proposed: Phase 1 – *Inputs to the seismogenic zone system*, investigating variations in the sediments, oceanic crust, and fluids input to the plate boundary system; Phase 2 – *Mega-splay (OOST) fault drilling* to sample and instrument thrusts which splay from the basal décollement up through the forearc, in order to characterize fault properties transecting the aseismic to seismic transition from 1 to 3.5 km depth shallow; and Phase 3 – *Sampling and instrumenting the plate interface* (décollement) at ~ 6 km below seafloor, in a region predicted to be within both the zone capable of generating seismogenic behavior and in the zone of co-seismic slip in the 1944 great earthquake. Long-term monitoring of a wide range of phenomena will be a major part of the effort, to detect signals of fault zone processes in the near-field. In addition, ongoing seismological and geodetic arrays in the vicinity as well as in the deep boreholes, geologic studies, laboratory and modeling efforts are all integral components of the NanTroSEIZE project, essential to success in achieving project objectives.

Proposed Site Survey

Proposal 603 (NanTroSEIZE) requires several riser drilling operations, due to the deep penetration depth. To examine the proponent's seismic data, and local knowledge, especially the existence of Methane Hydrates and the strong Kuroshio Ocean Current, CDEX proposes detailed engineering site survey for this site, including the deployment of a Current Profiler & Meter, Side Scan Sonar, and Sub-Bottom Profiler. In addition, CDEX proposes to conduct high quality, high resolution ((2D or 3D) seismic surveys to identify the shallow geo-hazards and the precise target depth.

From October 4 to October 7, 2004, a mooring system consisting of an Acoustic Doppler Current Profiler (ADCP) and Recording Current Meters (RCMs) will be deployed in the vicinity of NanTroSEIZE Hhase 3 proposal site using the JAMSTEC research vessel KAIYO. A catenary mooring analysis will be carried out using shallow (200 m water depth) ship-bottom ADCP data previously collected in this area. From December 9 to December 28, 2004, a Side Scan Sonar and Sub-Bottom Profiler survey will be conducted in the area. At the beginning of this cruise, the Current Profiler and Meter mooring system will be retrieved (providing a 2.5 month ocean current survey). If SAS

and PSG advice indicates the need for 3D and/or high-resolution 2D seismic surveys in the proposal area, CDEX would conduct this survey during the summer 2005.

MAJOR PRIORITIZED ACTIVITIES OF IODP-MI FOR FY05

This section describes the major activities to be carried out by IODP-MI during FY05.

Program Plan Development for FY06

A major activity of IODP-MI will be to devise a program plan for FY06 in conjunction with JOI Alliance, CDEX, ESO. The Program Plan will be based on proposal rankings by SPC and will be finalized in consultation with the IOs. The Program Plan will be approved by SPPOC and the IODP-MI Board of Governors and then submitted to the Lead Agencies for approval and funding.

Subcontract Oversight

IODP-MI will monitor subcontracts (SOC funds) to the JOI Alliance, ESO, and the University of Bremen (core repository). The JOI Alliance subcontract will be through JOI, Inc, and the ESO subcontract through the British Geological Survey. We will not have a subcontract with CDEX but an MOU will be executed and on the basis of this MOU, we will obtain regular reports from CDEX.

Education and Outreach

The IODP-MI education and outreach strategy will (1) consider the national plans of each IO, and (2) draw attention to those specific objectives, activities, and events, and (3) coordinate those activities for maximum impact. While the IOs outreach will reflect their respective platform-specific activities, IODP-MI will communicate the entire IODP mission, position the global program as a major research initiative, and broadly expose the IO activities to illustrate and exemplify how IODP accomplishes its work.

Recommendations from IODP's Education & Outreach Workshop and Task Force meeting, both held in 2004 have led to number of Education & Outreach program objectives for FY 2005 including (1) the establishment of a visual communications system that clearly brands the IODP program, including design of a strengthened logotype, a distinct color palette, usage guidelines, and stock descriptive language, (2) the launch of an IODP-wide internal communication campaign to focus on program identity, key messages, and positioning of various program components. This outreach includes developing the IODP web site as a primary portal and information resource for all program partners, (3) outreach to scientists through the creation of a state-of-the-art e-letter to highlight important expedition results, leaders, and activities. Outreach also will be conducted through IODP-MI exhibition at scientific conferences and a Town Hall meeting at the AGU conference in December 2004, (4) IODP news and information targeted directly to professional audiences (educational leaders, museum directors, aquarium and zoo directors) through specialized media campaigns, and to the public through consumer-interest media and (5) media outreach to emphasize the global program will be coordinated through IODP-MI, coordinated with the IOs and their national promotional plans. News events to launch the program and its leaders to the press will be held in Washington, DC, Europe, and Japan, coincident with news releases. The details of many of these activities will be developed in the second Education & Outreach Task Force meeting to be held in October 2004 in Washington, D.C.

Science Advisory Structure (SAS) support
The SAS is supported by the IODP-MI through its Sapporo Office. In FY05 this includes (1) Support for SPC Chair (part time salary) and one FTE on-site secretarial assistant and (2) Support of the SPC and SPPOC chair and the entire SAS structure by two science coordinators and one SAS assistant.

SAS Support by science coordinators and SAS assistant includes (but is not limited to) the following:

- Receive and distribute drilling proposals including interactive web pages to underpin this process and maintain communication with proponents on all related matters
- Coordination of all SAS panel and committee meetings with presence at meetings as necessary, and overseeing inter-panel communication and liaison functions
- Help preparing SPC and SPPOC agendas, prepare agenda books for these meetings, provide executive minutes as well as full minutes according to program policy on this and support with other documents necessary for SAS functions
- Solicit external reviews of proposals and coordinate reviews for SSEPs
- Assist SSP and PPSP as necessary for their reviews of site survey data
- Assist SPC chair with contributions to the annual program plan
- Oversee panel and committee membership issues, including adherence to COI policy

Publications
For FY05, the major portion of the publication budget is for JOI Alliance to publish the initial expedition reports. CDEX will publish some technical manuals. ESO will prepare its initial expedition reports through the science editing stage; the final production and publication will be handed over to JOI Alliance. IODP-MI will subcontract the printing of the IODP newsletters. Policies and guidelines for publication will be developed with the support and advice of the Task force on Publications.

A Task Force will be formed by IODP-MI within the first part of FY05 to assess how to most effectively implement IODP publications. The Task Force will make use of currently available SAS reports. The Task Force will include (but not be limited to) members from SAS, members from the IOs, representatives from scientific societies potentially interested in entering agreements with IODP on publications, and representatives form commercial publishers with special experience in web based electronic publications. A member from International Continental Drilling Program (ICDP) may also be involved. Initially the Task Force will be chaired by the VP of Science Planning with a focus on: (1) Policy to secure optimum publication and impact of scientific results; (2) How to ensure cost-effective, uniform and coordinated publication of Expedition Reports; and (3) Program Newsletter. It is expected to be a Task Force extending into FY06 and possibly with a variable membership in accordance with changing emphasis from general policy review to implementation.

Data Management
In FY05, IODP-MI will form a Task Force to examine the broader issue of data management within IODP, including the coordination of the IO-based databases (e.g., JANUS, J-CORES, and DIS Databases). The Task Force will build upon and focus the output of SAS working group reports and IODP-MI led IO discussions addressing this issue. The first IODP-MI led data management meeting will take place in October 2004 in conjunction with the bi-annual IO/IODP-MI managers meeting. A second will be called for by IODP-MI in the first half of calendar year 2005 and will be intended to clearly define what steps are needed to fully secure inter-IO compatibility of data bases as well as serving as a useful input to a new program-wide data handling system.

High priority is given to fill the Data Management Specialist Position in the IODP-MI Sapporo office and to have this individual working closely with the IOs to ensure proper coordination of efforts between the IO meetings on this issue. This will include extended working visits by the Data Management Specialist with IOs. This direct work with the IOs regarding coordination of their data bases capturing platform generated data is also a first step in preparing for a program-wide information handling system.

Site Survey Data Bank
In late November 2005, an RFP for a new, fully electronic Site Survey Data Bank will be issued by IODP-MI. A two-month response time will be given for vendors to submit their proposals. The RFP will be widely circulated including possible commercial vendors. A target date of April 1, 2005 has been set for the establishment of a contract with a new vendor.

An existing contract through the JOI already secures the current SSDB functions until January 31st, 2005. These Site Survey Data Bank activities will be secured beyond this date through a contract with NSF, which will continue until the new SSDB is fully functional.

Engineering Development
Engineering developments for the different platforms will be needed at various stages of IODP. Engineering development will be based upon priorities established by the SAS as it reviews proposals and determines the engineering needs to address the objectives of the proposals. An Engineering Task Force of 8-10 people, primarily industry representatives and chaired by either the Vice President of Operations or the Manager of Operations will be utilized by IODP-MI to focus this advice, work out details, and assist in determining the best strategy for implementation. This Task Force will focus on three main areas of engineering development: Cross Platform engineering needs (e.g., coring tools), IO-specific needs, and short-term (~1 year) projects.

Project Scoping
Complex Drilling Projects will need Scoping Groups to oversee and assess the state of readiness of the drilling plans, tool and engineering development, engineering site surveys etc. OPCOM will determine the level of scoping needed for a CDP and may

designate a formal Project Scoping Group (PSG). The PSG will take over planning and coordination of the CDP and carry it through the multi-year, multi-leg, and multi-platform project. Each scoping group will have the either the Vice President of Operations or the IODP-MI Operations Manager as head. This group will also include one or two designated (co) "Chief Project Scientists," to provide the scientific leadership necessary to plan and coordinate all aspects of the project, in close collaboration with the TAMU and CDEX staff scientists and project engineers, as well as with the SAS for overall scientific oversight and review, and national organizations for coordination of outreach, PR, and education. It would also include co-Chiefs of individual expeditions, IO representation, SAS representation, and outside engineers and/or scientists as needed for specific expertise or peer review.

Expedition Assessment

In FY05, IODP-MI will take initiatives to establish procedures to continuously assess how well the program achieves its short and long-terms goals. The first step was taken in late FY04 by requesting the Scientific Prospectus and the Preliminary Reports series to include direct assessment by the Co-chiefs and IO project managers of how well the Prospectus mapped the proposed science into the expedition plan, and how well the expedition achieved this plan. A 'Review and Assessment Committee' (REVCOM) chaired by the VP of Science Planning and with membership from SAS, IOs and independent experts will be established. It will undertake review and assessment on the intermediate to long term. This committee can be considered a complementary committee to OPCOM.

Coordination with Other Geoscience Programs

A major effort to increase the user base of IODP by coordinating with other geoscience programs will be launched. Manik Talwani and Yoichiro Otsuka will lead this effort.

Inviting Other Nations to Join IODP

To further internationalize IODP an effort led by Manik Talwani and Yoichiro Otsuka will be made to engage in new discussions and continue ongoing discussions with scientists from several countries, including South Korea, Taiwan, Brazil and India.

FY05 BUDGET OVERVIEW

This Program Plan budget identifies a total program cost of $56,142K for FY05 (see **Table PP-13**), to meet the high-priority needs identified by the SAS. Of this cost, 37% is considered to be Science Operation Costs (SOCs) and the remaining 63% is Platform Operation Costs (POCs). These costs are distributed among the three IOs, IODP-MI, AESTO, and the University of Bremen.

	IODP-MI		IODP-MI Operators & Subcontracts				Totals (K)
	Washington DC	Sapporo	JOI-Alliance	CDEX*	ESO	Bremen	
SOCs (Science Operations Costs)	$ 3,509	**$ 1,594**	$ 12,832	$ 644	$ 1,758	$ 241	**$ 20,578**
POCs (Platform Operations Costs)			$ 21,912	$ 8,656	$ 4,996		**$ 35,564**
Total (K)	**$ 3,509**	**$ 1,594**	**$ 34,744**	**$ 9,300**	**$ 6,754**	**$ 241**	**$ 56,142**

Table PP- 13: *IODP Summary Budgets for FY05*

* CDEX SOC/POC budget funded directly by MEXT in FY05

IODP-MI's Washington office budget is $3,509K (**Table PP-13).** The base Management and Administrative budget is $2,659K. The cost of several activities and services, such as the Site Survey Data Bank ($420K) and Education and Outreach Activities ($340K) will be supported, in part or entirely, under subcontracts (through an RFP process) to IOs or other entities. An Engineering Development budget of $90K provides funds for workshops and task forces to prioritize IODP-wide Engineering development activities.

IODP-MI Sapporo Office budget is $1,594K. The Sapporo IODP-MI Office will be supported, in part ($1,188K) via a subcontract to Japan's Advanced Earth Science and Technology Organization (AESTO). This office coordinates the SAS, its committee meetings, and assists with the other activities managed by the Vice President for Science Planning including oversight of data management, the Site Survey Data Bank and publication activities. The remaining costs are for key personnel and travel ($376K) and production of the successor journal to the JOIDES Journal ($30K).

The JOI Alliance budget of $34,744K for FY05 mainly includes support for three full expeditions in FY05 (North Atlantic Climate 2, and Core Complex 1 and 2), and partial costs for North Atlantic Climate 1 expedition (which straddles the FY04 and FY05). Of the Alliance's total budget (see **Table PP-13**), 63% are POCs and 37% are SOCs.

The ESO budget of $6,754K (24% SOC/ 76% POC) is primarily in support of the Tahiti expedition. Other funds are in support of long-term planning, education and outreach, and data management support and administration. It does not include shore-based work for Tahiti, which will be carried out in FY06

The CDEX budget is $9,300K (93% POC). These funds are to support engineering site surveys,

administration and operations personnel, education and outreach, publications, project scoping, and data management

The University of Bremen Core Repository budget is $241K (100% SOC). These funds are primarily for personnel and operating costs (consumables, supplies, telecommunications, etc) associated with normal IODP/ODP core sampling and core archiving operations. Funds for curatorial support for MSP operations are identified in the ESO budget.

Budget Process

Detailed budgets for Science Operation Costs were submitted to IODP-MI from the IOs, AESTO and the University of Bremen. The total amount of proposed SOCs was approximately $26,000K. The Lead Agencies gave IODP-MI budget guidance for a target figure of $20,000K for Science Operation Costs. IODP-MI assessed the scientific priorities of FY05 and developed budgets to reach this target figure. **Table PP-14** below provides details of SOC expenditures for all entities, including the IODP-MI Washington and Sapporo offices, JOI Alliance, ESO, CDEX, the University of Bremen.

Table PP- 14: *Science Operation Costs for IODP-MI, operators and subcontractors.*

	IODP-MI		IODP-MI Operators & Subcontracts				Total SOC ***
	D.C.	Sapporo****	JOI-Alliance	CDEX*	ESO**	Bremen	Total (K)
Management & Administration	$ 2,659	$ 663	$ 1,971	$ -	$ -	$ -	**$ 5,293**
Site Survey Data Bank	$ 420	$ -	$ -	$ -	$ -	$ -	**$ 420**
Support for Science Advisory Structure	$ -	$ 901	$ -	$ -	$ -	$ -	**$ 901**
Engineering Development	$ 90	$ -	$ -	$ -	$ -	$ -	**$ 90**
Technical, Engineering & Science Support	$ -	$ -	$ 5,282	$ 303	$ 1,064	$ -	**$ 6,649**
Core Curation	$ -	$ -	$ 836	$ -	$ 13	$ 241	**$ 1,090**
Data Management	$ -	$ -	$ 2,361	$ 153	$ 165	$ -	**$ 2,679**
Publications	$ -	$ 30	$ 953	$ -	$ 10	$ -	**$ 993**
Logging	$ -	$ -	$ 1,329	$ -	$ 450	$ -	**$ 1,779**
Education & Outreach	$ 340	$ -	$ 100	$ 188	$ 56	$ -	**$ 684**
Total (K)	**$ 3,509**	**$ 1,594**	**$ 12,832**	**$ 644**	**$ 1,758**	**$ 241**	**$ 20,578**

* CDEX SOC budget funded directly by MEXT in FY05
** Actual subcontract to British Geological Survey
*** The actual amount of the SOC contract with NSF is $19,934K ($20,578K - $644K)
**** AESTO budget split between M&A costs for data specialist, publications manager and Program Associate ($287K) and Support for Science Advisory Structure ($901K)

The summary budget table PP-14 (and ES-3) is given in a format we believe relates most clearly to the Program Plan. This table is related to tables PP-14a and PP-14b found in Appendix A, which are given in slightly different formats. Table PP-14a is in a format required by NSF for contractual reporting and Table PP-14b is in a format required by MEXT. The main difference between the formats is that some of the tasks are combined in different ways. In addition, NSF required that the Management and Administration costs in the JOI Alliance budget appear in a separate line whereas MEXT required it to be part of one or more tasks. We emphasize that the three tables contain identical figures; they are merely formatted differently.

BUDGET DETAILS FOR CONTRACTOR (IODP-MI)

IODP-MI Offices and Personnel

Offices and Their Locations

IODP-MI has established two offices. The primary *IODP-MI Office* is located in the U.S. in the Washington, D.C. area, and it will serve as the headquarters and corporate office. The *Sapporo IODP-MI Office*, headed by the IODP-MI Vice President for Science Planning, is located in Sapporo, Japan. The Sapporo IODP-MI Office will be supported, in large part, via a subcontract to Japan's Advanced Earth Science and Technology Organization (AESTO). The VP for Science Planning will oversee this subcontract.

Personnel and Their Duties - Washington, DC

Table PP- 15: *Personnel in IODP-Washington D.C. office and date of hire*

	FY 2004	**FY 2005**	**FY 2006**
President	January 1, 2004		
VP Science Operations	April 1, 2004		
Senior Advisor to the President	April 13, 2004		
Finance & Administrative Officer	February 17, 2004		
Contracts Officer	April 1, 2004	Anticipated full-time	
Director of Communications	August 2, 2004		
Manager of Operations		April 1, 2005	
Engineering Development Manager			October 1, 2005
Project Assistant	June 14, 2004		
Executive Assistant	June 28, 2004		
Executive Program Associate		April 1, 2005	
Web Master	August 30, 2004		
Public Relations		April 1, 2005	
Project Assistant			October 1, 2005

The key personnel consist of the President, the Vice President for Science Operations, the Vice President for Science Planning, and the Senior Advisor to the President.

The *IODP-MI President* is responsible for all IODP-MI employees. He directly oversees the two IODP-MI Vice Presidents (VPs), the Senior Advisor to the President, the Director of Communications, the Financial and Administrative Officer and the Contracts Officer. The President is the Chief Executive Officer of IODP-MI and will be responsible for the operation of the CMO. In this capacity, he will construct the IODP Annual Program Plan, obtain approvals from the IODP-MI Board of Governors, and

negotiate the contract for its implementation with NSF (on behalf of NSF/MEXT). He will be ultimately responsible for the execution of the Annual Program Plan and within the Program Plan he will, jointly with the relevant Vice President, be responsible for the various subcontracts to be awarded. While the Vice Presidents will be responsible for timely budgetary and programmatic monitoring of the work done under the subcontracts, the President will be ultimately responsible for all the work done under the contract with NSF.

The *VP for Science Operations* is responsible for oversight of IODP field operations and planning. The VP for Science Operations will work closely with the IOs to develop implementation strategies to achieve the science objectives of IODP. Since core sample repositories will be subcontracted, their oversight and overall management is one of the responsibilities of the VP for Science Operations. He will also serve as Chair of the Operations Committee (OPCOM), an IODP-MI committee.

The principal role of the *Senior Advisor to the President* is to advise the President with regard to liaison with MEXT, NSF and other IODP funding agencies. We believe that continuous and thoughtful liaison is of vital importance and therefore it needs to be handled at a very high level within IODP-MI. He will also work closely with the President toward encouraging other nations to join IODP.

The *Director of Communications* heads the Education/Outreach effort at IODP-MI and is responsible for coordinating the Education/Outreach with the IOs and the national organizations involved in IODP-MI. The Director's tasks also include developing and monitoring the principal IODP website, arranging IODP outreach events such as maintaining booths at scientific meetings, arranging town hall meetings, cultivating media contacts, writing press releases and publishing IODP brochures and informational letters. The Director of Communications will supervise a Web Designer and a Public Relations Assistant. The latter will be hired during the latter half of FY05.

The *Finance and Administrative Officer* is responsible for all aspects of accounting, human resources and office management. In addition, the Finance and Administrative Officer is responsible for interacting with the independent auditors and works closely with the Contracts Officer on procurement and monitoring of contracts.

The *Contracts Officer* is responsible for the NSF contract, all subcontracts and managing RFP processes as needed. The Contracts Officer monitors reporting requirements for the NSF contract and all subcontracts, regulatory changes and approves reimbursement requests under subcontracts.

The *Manager of Operations* will assist the Vice President for Science Operations, particularly in coordinating and overseeing engineering development. S/he will also head the Project Scoping Groups

The *Engineering Development* –Position not filled in FY05

The *Executive Assistant* is responsible for all aspects of support for the President. The Executive Assistant is also responsible for all travel arrangements for staff, OPCOM, task forces and scoping group meetings.

The *Executive Program Associate* will help the president in scientific matters including the preparation of presentations, liaison with the scientific community, and assembling information of activities related to but lying outside IODP. This person might work at IODP-MI on a two-year rotating basis on loan from an IODP-MI member.

The *Web Master* is to organize content and serve as information architect of the IODP Web portal. A multimedia developer and designer, this individual will apply current Internet standards and scripting languages to the IODP-MI web site to expand, collapse, and link material as appropriate, under the guidance of the Director of Communications. The Web Master also provides technical problem-solving capacity to IODP-MI personnel as needed, and creative and technical input to a variety of electronically published information products to be created during the fiscal year.

The *Public Relations Assistant* supports the Communications mission of IODP-MI by fostering relationships with related organizations and the media that result in information exchange and network building. The PR Assistant will update and maintain a database of reporters, producers, editors, writers, and public relations professionals to be used in the dissemination of IODP news and information products. He/she will research, develop, and acquire lists to be used in marketing IODP information to identified target audiences. He/she will serve as en editorial/production assistant in the creation and dissemination of publications, information kits, and other campaign materials. He/she will contribute to coordination of special events, and written materials as assigned. He/she will respond to routine media inquiries and maintain a news clipping archive.

The *Project Assistants* are responsible for support of all staff and back up to the Executive Assistant.

Personnel and Their Duties -- Sapporo, Japan

Table PP- 16: *Personnel in IODP-MI Sapporo office and their date of hire*

	FY 2004	**FY 2005**	**FY 2006**
VP Science Planning	April 1, 2004		
Executive Program Associate	April 1, 2004		
Science Coordinator I	April 1, 2004		
Science Coordinator II	April 1, 2004		
Associate Coordinator		June 1, 2005	
SAS Support Assistant	April 1, 2004		
Manager of Data & Pub.		April 1, 2005	
Data Management Specialist		October 1, 2004	
Publications Specialist			October 1, 2005
Contracts Officer (.5 FTE)	April 1, 2004		
Administrative Assistant	April 1, 2004		

The *VP for Science Planning* represents the main interface between the international scientific community and IODP. Key responsibilities are to provide the management interface to the SAS by supporting and coordinating the SAS Support group in the IODP-MI Sapporo office and to oversee the production of the key products of IODP – data and publications. He serves as an advisor to the Science Planning Committee (SPC) Chair and to the SPPOC Chair. He will directly oversee the subcontract for the Site Survey Data Bank. The Sapporo IODP-MI Office will be supported via a subcontract to Japan's Advanced Earth Science and Technology Organization (AESTO). The VP for Science Planning will oversee this subcontract. In addition to the SAS Support functions, staff in the Sapporo office, under the supervision of the VP for Science Planning, will plan for data management as well as publication subcontracts.

The *Program Data and Publications Manager* (PDPM) will implement and oversee IODP policies in the area of data management and publications, liaise with the SAS Support and designated Task Forces on all matters regarding data management and publications, and oversee and coordinate all IODP data management and publications. The PDPM will work directly with IOs and program external vendors in the area of data management and publications and lead task forces regarding publications and data management.

The *Data Management Specialist* (DMS) will oversee and direct development of data management systems that meet IODP requests in this area, oversee proper maintenance of data archival (legacy) functions, liaise with the SAS Support personnel and designated Task Forces on matters regarding data management and work directly with IO technical staff and program external vendors in the area of data management. The DMS will also provide specifications for RFP's regarding data management, establish links between IODP data management systems and other large databases in Earth sciences, develop tools for improved data outreach of programmatic data and provide in-house IT expertise for the daily running of the IODP-MI Sapporo Office.

Publications Specialist- Not to be filled during FY05

The *Science Coordinators 1 and* 2 provide SPPOC, SPC and VP-SP with support in all areas of SAS Support activities including, but not limited to: Meeting coordination, meeting logistics, meeting approvals, drafting of agenda, preparing agenda books, providing meeting minutes and VP-SP support with Task Force groups, if applicable. The coordinators also are responsible for the handling of drilling proposals including receiving, filing, maintaining the proposal data base, generating proposal statistics (theme, nationality), arranging for external peer-review, summarizing panel reviews and communication with proponents for information and nurturing purposes. In addition, the science coordinators also maintain the interactive web page for proposal submission and status, SAS Support activity logs, etc. They represent IODP-MI as liaisons on SAS panels as required and enhance cross panel communication and lead coordination between IODP National secretariats.

The *Associate Science Coordinator* assists the Science Coordinators in their duties and

takes full responsibility for data input and data retrieval from the new web- based Site Survey Data Bank planned to be in operation from late FY05 or at the start of FY06. This Associate Science Coordinator provides proponents and SAS Support panels, SSP and EPSP in particular, with data when requested and develops ties to other academic geophysical databases and industry to develop the Data Bank.

The *SAS Support Assistant* is an administrative position that assists science coordinators in their service of panels, filing and retrieval of proposals. This position is also responsible for coordinating meeting and travel logistics domestically and internationally, for routine contact and coordination with IODP national secretariats and for helping international staff settling in Sapporo.

The *Administrative Assistant* is the personal assistant to the VP-SP in all administrative matters, travel arrangements, reporting, and contact with local authorities. The Administrative Assistant is responsible for office-wide administrative issues on a daily basis.

The *Executive Program Associate* is responsible for office administration and protocols in relation to contract with AESTO. This person also assists the VP-SP in all communications with Japanese agencies and institutions; provides support and advice to the VP-SP and the Program Data and Publications Manager in the areas of data management and publications and assists in the production of the IODP Program Newsletter (JOIDES Journal successor).

The details for the specific cost elements in the IODP-MI Washington D.C. (**Table PP-15**) and Sapporo offices (**Table PP-16**) are provided below (note that personnel details were provided above).

Table PP- 17: *Management and Administrative costs for IODP-MI Washington Office*

Item	Specific	Sub Total	Total
Personnel			
	Key Personnel	758,084	
	Managers and Officers	512,816	
	Technical & Administrative	311,300	
	Total		**1,582,200**
Equipment & Supplies			**99,000**
Travel			**372,800**
Other			**605,000**
	Space and furniture	292,000	
	Insurance	15,000	
	Printing costs	27,000	
	Relocation and Recruiting	60,000	
	Association dues and subscriptions	7,000	
	Bank Charges	12,000	
	Network Operations	12,000	
	Telephone Services	25,000	
	Video Conferencing	15,000	
	Meeting expenses	5,000	
	Admin. Consultants, legal fees, auditors	50,000	
	Honorarium—Panel Chairs	35,000	
	Scientific/Tech Advisors & Consultants	50,000	
FYO5 Total Budget			**2,659,000**

Table PP- 18: *Management and Administration costs (and AESTO subcontract) for IODP-MI Sapporo Office (FY05)*

Item	Specific	Total
Personnel	Key Personnel	**240,000**
Travel		**136,000**
Subcontract	AESTO	**1,188,123**
FYO5 Total Budget		**1,564,123**

Management and Administration non-personnel budget justification
Equipment and Supplies

- Equipment – Computers, laptops and printers are needed for new staff as they are hired and repairs and maintenance costs of existing equipment. The server system maintenance and on-going monitoring will be needed throughout the year. A LCD projector will be needed for meetings and presentations.

- Supplies --- Office supplies are based on reaching full staffing during the year and the need for letterhead, envelopes and business cards.

Travel

- Travel includes all domestic and foreign travel for the IODP-MI staff, two AESTO staff, the SPC Chair, four task forces (Education and Outreach, Publications, Data Management and Engineering Development) and two advisory and oversight groups. The activities and milestones of these task forces are provided in more detail in the "Major Prioritized Activities of IODP-MI" section.

Other

- Space and Furniture – This represents our estimate of rent for the full year and additional furniture needs to complete our space. Office machine rentals include a copier, printer and postage machine.

- Relocation and recruiting is based on the hiring assumptions noted in the personnel section.

- Postage, telephone are based on reaching full staffing during the year.

- Administrative consultants include legal fees and auditors.

- Honoraria for Panel Chairpersons -- Panel Chairperson are very important to IODP. They arrange meetings, run the meetings, and take the minutes and distribute them. In the U.S., all scientists must account for their time away from their main (funded) duties. IODP advisory duties take the chairs away from their main duties, so they need to be compensated. We recommend annual honoraria of $5,000 for SAS panel chairs. Co-chairs will receive $2,500 each. Vice-chairs will not receive honoraria. The three SSEP chairs will each receive $5,000. This plan for Chairperson compensation has been unanimously approved by the IODP Board of Governors.

- Fees for scientific/technical advisors and consultants (for task forces, evaluation, advisory boards).

Education and Outreach

Based upon the recommendations made by the IODP Education and Outreach Workshop in February and the IODP-MI task force of May 2004, the following Education & Outreach objectives have been set for FY05:

(1) Program Identity/Branding

Establish a visual communications system—with help from specialized design vendors, IODP-MI will develop a methodology to consistently and clearly brand the program, including the design of a strengthened corporate logotype, a color palette, secondary typography, use of color imagery, use of IODP name, and stock descriptive language.

(2) Internal Network Communication

The next step will be to launch IODP initially and "internally" through an information campaign that focuses on program identity, key messages, and positioning of IODP and its various component parts. The IODP web site will be further developed to contain and provide informational and visual resources for all IODP partners.

(3) Outreach to Scientists

Second-tier outreach of IODP's new program identity will be to the science community, including its many subsets of specialists. A regularly scheduled, state-of-the-art e-letter that highlights and promotes important expedition results, expedition leaders, and expedition activities of interest to marine scientists and other academic scientists will be developed for distribution to scientists To reach scientists in professional venues, IODP will design and furnish a conference booth structure and regularly will plan and implement a Town Hall meeting in San Francisco at the AGU conference in December.

(4) Public Education/Public Outreach

Announcement of IODP and its web site as educational and newsworthy resources will be directed to the public through the media, and specifically to educational leaders for their use in teaching about ocean-drilling research and technology, its goals and results, i.e. museums nationwide, educators and their associations, community-based resource centers such as aquariums and zoos. Special public events in one or more locations, with or without a partner, will emphasize IODP's new broadened scope of operations and dovetail with an international campaign to promote IODP's mission and purpose.

(5) Media Outreach

IODP launch materials, part of an international outreach effort, will be provided to the media: in the U.S. through IODP-MI, Washington DC; in Japan, through MEXT; in Europe, through coordination with ESO and its affiliated organizations.
IODP-MI, Washington, will build media distribution lists for international, national, and regional use. It will also establish an IODP presence among national and

international media, making contacts, fostering relations, and placing stories with media representatives for the good of all the IOs, and the overall program.

Table PP- 19: ***IODP-MI Education and Outreach Budget***

Item	Specifics	Sub Total	Total US$
Corporate Identitity / Branding Tools (See Items 1 and 2 on previous page)	Design/Template Production: Logotype, brochure, annual report, information kits, posters, visual communication system	30,000	30,000
Message Development and Media Training (Items 4 and 5 on previous page)		25,000	25,000
IODP International Launch / Overseas Media Event (Items 2, 4, and 5 on previous page)		30,000	30,000
Educational Outreach (Items 3 and 4)	Conference Booth Structure	30,000	
	Booth Graphics/Signage	15,000	
	Booth Transport/Insurance	5,000	
	Speakers Bureau	5,000	55,000
Media Relations / Meaurement (Item 5 on previous page)	Subscriptions/Memberships (i.e., EurekAlert, ProfNet, National Press Club)	5,100	
	Representations at journalists' conferences (AAAS, National Associations Science Writers' Association./DCSWA)	1,000	
	Reference Directories/Publications	1,400	
	International News Distribution	9,500	
	News Monitoring	7,000	24,000
Web / Electronic Production (Items 2, 3, 4, 5 on previous page)	Documentary Production	58,000	
	Video News Release Production	10,000	
	E-messaging/Online Database Development	3,000	71,000
Print Collateral Production (Items 2, 3, 4, 5 on previous page)	Freelance writing	25,000	
	Photography	10,000	
	Printing	35,000	
	Distribution	15,000	
	Translation Services	20,000	105,000
		FY05 Total Budge	**340,000**

Site Survey Data Bank

In order to prepare for the RFP and provide proper response time for interested vendors, the contract for the current Site Survey Data Bank at LDEO needs to be extended. A quote for this extension of the contract has been received from LDEO. The quote for $346,678 covers the eight months from February 1st, 2005 to end of FY05 (Sept 30, 2005). However, we believe we can keep the LDEO activity to less than $330K, as the new vendor should be able to commence operations sooner than September 30, 2005.

In addition to this cost of extending operation of the current Site Survey Data Bank, we are requesting $90K in start-up funds for the new SSDB Operator (to by chosen through an RFP process) to purchase hardware (e.g., PC Server, Workstation Server, Scanner) and software (e.g., Schlumberger Firewall Software and Hardware). Thus the total budget for SSDB in FY05 is $420K ($330 for current SSDB through FY05 and $90K in new start-up funds). If this budget turns out to be insufficient to meet the financial requirements of the chosen RFP, a slightly slower implementation of the new data bank will occur with some of the related expenses being postponed to FY06.

Title	**Proposed Data Bank Budgets for Feb-Sept. '05** **Contract from IODP-MI** **Management of Interim IODP Site Survey Data Bank**			
Principal Investigator:	**D. Quoidbach**			
Period of Performance	**February 1, 2005 - September 30, 2005**			
Total Requested:		$		346,678
			2/1/05 9/30/05	
SALARIES AND WAGES				8 months
Daniel Quoidbach			*	
Technical support (tbh)			*	
Ana Maria Alvarez			*	
Artem Fishman			*	
Casual - hourly employee @$10/hr			*	
Total Salaries and Wages		$		160,529
FRINGE BENEFITS				
July 1, 2004 - June 30, 2005 @ 26.4%	5 months	$		26,487
July 1, 2005 - June 30, 2006 @ 26.6%	3 months	$		16,013
Total Fringe Benefits		$		42,500
Total Salaries, Wages, Fringe Benefits		$		203,029
TRAVEL				
Domestic Travel		$		2,000
Foreign Travel		$		4,000
Total Travel		$		6,000
PERMANENT EQUIPMENT				
Total Permanent Equipment		*$*		-
OTHER DIRECT COSTS				
1. Materials and supplies		$		2,600
2. Publication costs		$		-
3. Scientific Computing Facility Cost		*$*		*6,667*
4. Other:	Communications and shipping	$		6,000
	Data Duplication General	$		4,600
Total Other Direct Costs		$		19,867
TOTAL DIRECT COSTS		$		228,896
MTDC		$		222,229
INDIRECT COSTS				
Direct costs subject to ICR * 53%		$		117,782
TOTAL COST		$		346,678

Table PP- 20: *Feb-Sept '05 Site Survey Data Bank funding extension budget*

(Note: Modified Total Direct Costs (MTDC) = Total Direct – Computing Facility cost)

Engineering Development
An Engineering Task Force of 8-10 people, primarily industry representatives will be utilized by IODP-MI to assist IODP-MI in determining the be implementation plan for IODP-wide engineering development activities for FY06. The implementation plan will be based up SAS-derived prioritization of IODP-wide engineering needs. The Task force will meet at least three times in FY05. $90K is allocated for travel and meeting expenses for 10 people for three meetings.

Table PP- 21: *Engineering Task Force Budget Details*

3 meetings x 10 people/meeting x $2800/person =	$84,000
Meeting expenses $2000/meeting x 3 meetings	$6,000
Total FY05 Engineering Task Force Budget	**$90,000**

Publications
IODP-MI will publish a successor journal to the well-known JOIDES Journal $30,000 is the estimated cost for outsourcing the production, publication and distribution of this new IODP Journal on a quarterly basis.

GENERAL POLICIES AND PROCEDURES OF IODP-MI

This section describes the approach used by IODP-MI to prioritize and integrate IODP activities including such items as Publications, Data Management, Site Survey Data Bank, and Education and Outreach.

Task forces/Workshops
IODP-MI is a very small organization, at present with only four key scientists. Only a few more scientists will be added in the future. However, IODP-MI is responsible for the implementation of a large number of tasks, including engineering development, publication of drilling results, site survey data base establishment, education and outreach and database management. While on all of these matters, IODP-MI will get advice from SAS, the advice will not, in general, be focused enough or decisive enough to launch into implementation. The purpose of task forces in each of these areas will be to focus the advice obtained from SAS Support and provide concrete advice on policy so that IODP-MI can proceed with implementation. All task forces will, in general, be appointed on an ad hoc basis. Their deliberation may or may not culminate in a formal report, but will be carried out to the point that IODP-MI can make implementation decisions. Usually, the task forces will include some SAS members, some representatives from the IOs and other experts. The members of the task forces will not be nominated by outside bodies but will be chosen by IODP-MI. Task forces will not be asked to write RFPs. The policy formulations by the task forces, however, will often guide IODP-MI personnel in writing

RFPs. IODP-MI will organize workshops where advice from a larger group than a 7-8 member task force is needed. The workshops will always result in a formal report.

Conflict of Interest

We recognize the great importance of avoiding any actual conflict of interest or any perception that conflict of interests might be occurring. We are in the process of formulating a detailed conflict of interest policy for IODP-MI personnel. A cornerstone of that policy will be that the formulation of RFPs, evaluation of proposals or awarding of contracts will not involve conflicted personnel.

RFPs

Most tasks to be outsourced that involve a substantial dollar amount (defined as greater than $100,000) will involve RFPs. These tasks will be formulated by IODP-MI personnel in consultation with the Contracts Officer. Non-conflicted outsiders may be asked to review the RFPs as well as the proposals resulting from the RFPs. Detailed procedures for issuing the RFPs, evaluating proposals and monitoring the contracts resulting from successful proposals are provided below:

IODP-MI Request for Proposal (RFP) generation process:

IODP-MI recognizes three types of acquisitions.

1. Actions less than $2,500 are considered micro-purchases and may be awarded verbally and without competition.

2. The use of simplified acquisition procedures applies for actions greater than $2,500 and less than $100,000. The requester will need to include a sole source justification if only one source will satisfy the requirement. The contracts office, in conjunction with the requester, will determine the appropriate means to solicit the requirement.

3. For actions in excess of $100,000, open and competitive bidding should be employed unless the specified deliverables and scope of work can only be satisfied by a sole source. IODP-MI will acquire all appropriate Lead Agency notifications/approvals required by the terms and conditions of the prime contract. IODP-MI will prepare solicitations and resulting subcontracts using the uniform contract format outlined in FAR 15.204-1.

When possible, working group reports representing the stakeholders in the program (scientific community) will be used as the basis for developing an RFP. The appropriate subject matter experts and scientific practitioners on the IODP-MI staff will develop the technical requirements for RFPs based upon community consensus.

Potential qualified subcontractors will be notified of the upcoming RFP

opportunity through either an IODP-MI published notice (IODP-MI web site) or through contact with known, qualified providers.

RFPs are opened by the Contracts Office at the appointed bid opening time.

Proposals are received by the Contracts Office and forwarded to the RFP requisitioner for technical evaluation. The Contracts Office and other appropriate IODP-MI personnel review the business/cost elements of the proposal. The assembled proposal evaluation team will evaluate all offers to determine if the proposal(s) meet the prime contract and IODP-MI terms, conditions, scope of work, and other requirements.

When appropriate, Best and Final Offers are to be submitted by bidders in a competitive negotiated procurement after written and oral discussions have been conducted. The Contracts Office will issue a request for BAFOs which includes at least the following information:

a. Notice that the period of discussion is ended;
b. Notice of the final submission date and,
c. Ramifications of a late submission.

A subcontract award is tendered to the highest-ranked bidder(s) whose offer is most advantageous to the IODP considering price and the technical evaluation factors.

The Contracts Officer will coordinate major contract actions with the requestor prior to the IODP-MI President's signature. An IODP-MI Routing and Transmittal Sheet will be used to document review, comments and concurrences.

In particular, RFPs and subcontracts in the areas of Engineering Development and Repository Management will be the responsibility of the VP of Science Operations and the Manager of Operations. RFPs and subcontracts in the areas of SAS office support, the Site Survey Databank, IODP publications and data management will be overseen by the VP of Science Planning. RFPs and subcontracts in the areas of outreach and education will be overseen by the Director of Communications.

D) APPENDICES – BUDGET DETAILS FOR SUBCONTRACTORS

The attached appendices provide budget details for the IODP-MI subcontractors:

Appendix A: Lead Agency Budget tables
Appendix B: AESTO
Appendix C: JOI Alliance
Appendix D: CDEX
Appendix E: ESO
Appendix F: University of Bremen
Appendix G: List of Abbreviations