

**IODP-MI
Operations Task
Force Meetings**

**Santa Cruz
August 26th, 2007
August 29th, 2007**

August 26th Meeting

Location:

Seaview Room

The Coast Santa Cruz Hotel, Santa Cruz, California 95060 USA

Time:

13:00 – 17:00

Attendees

Jack Baldauf	JOI Alliance (USIO), Texas A&M University, TX, USA
Keir Becker	RSMAS, University of Miami, Miami, FL, USA
Jan Behrmann	Marine Geodynamics, IFM-GEOMAR, Germany
Dan Evans	ECORD Science Operator (ESO), British Geol Survey, UK
Thomas Janecek	IODP Management International, Washington, D.C., USA
Hans Christian Larsen	IODP Management International, Sapporo, Japan
Jim Mori	Disaster Prevention Research Inst, Kyoto University, Japan
Yoshi Kawamura	Center for Deep Earth Exploration (CDEX), Japan

Observers

Catherine Mevel	ECORD Managing Agency, IPGP, Paris, France
Toshi Oshima	MEXT, Japan

August 29th Meeting

Location:

The Coast Santa Cruz Hotel

175 West Cliff Drive

Santa Cruz, California 95060 USA

Time:

17:00-18:00

Attendees

Jack Baldauf	USIO, Texas A&M University, TX, USA
Keir Becker	RSMAS, University of Miami, Miami, FL, USA
Jan Behrmann	Marine Geodynamics, IFM-GEOMAR, Germany
David Divins	USIO, JOI, Inc., Washington, DC
Dan Evans	ECORD Science Operator (ESO), British Geol Survey, UK

Jun Fukutomi
Thomas Janecek
Hans Christian Larsen
Jim Mori

Center for Deep Earth Exploration (CDEX), Japan
IODP Management International, Washington, D.C., USA
IODP Management International, Sapporo, Japan
Disaster Prevention Research Inst, Kyoto University, Japan

Observers

Jamie Allan
Catherine Mevel
Toshi Oshima

National Science Foundation, USA
ECORD Managing Agency, IPGP, Paris, France
MEXT, Japan

The IODP-MI Operations Task Force met twice during the week of the August 2007 Science Planning Committee meeting. The first meeting, on August 26th, focused on finalizing FY08/early FY09 platform schedules. The second meeting, on August 29th, focused on the latter part of FY09 and beyond. In addition, OTF discussed alternative scheduling strategies in light of the fact that non-IODP work may be a regular part of both SODV and *Chikyu* operations in the future.

August 26th meeting report

A) Finalization of FY2008/early FY2009 program

This meeting focused on the finalization of the FY2008/early FY2009 schedule. This schedule would be presented to SPC for endorsement and then included in the final FY2008 IODP Annual Program Plan. The early portion of FY2009 was included in this discussion as long-lead items and resources for planning these early FY2009 programs would need to be included in the IODP FY2008 Annual Program Plan.

Figure OTF 0708-01 (below) shows the FY2008/early FY2009 schedule as of the beginning of the meeting.

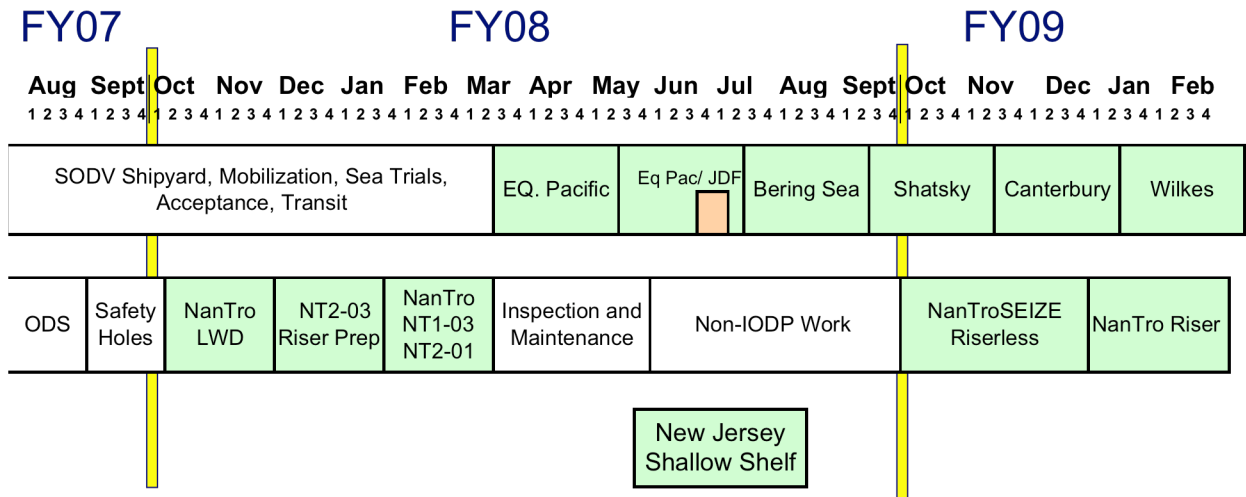


Figure OTF 0708-01: *FY08 operational schedule recommended by OTF as of the start of the August 26th OTF meeting.*

Before the FY08/early FY09 schedule could be finalized OTF needed to address the following issues:

- 1) Determine latest SODV delivery schedule and develop contingency plan(s) in the event any further delays occur after the FY08 plan is approved,

- 2) Determine the status of the New Jersey Shallow Shelf MSP operation and identify plans/timetable for go/no-go decisions regarding both the New Jersey program and the Great Barrier Reef program,
- 3) Determine the specific set of NanTroSEIZE riserless operations to be conducted in the Oct-Dec 2008 riserless slot on *Chikyu*.

FY2008/early FY2009 SODV schedule updates and modifications

The USIO updated OTF on SODV shipyard issues. In sum, the shipyard is over-prescribed and the delivery date will shift from the planned January 1 timeframe. The shift results from a number of issues, including difficulties in procurements, work taking longer than expected, the magnitude of engineering design changes, quality of work (and subsequent re-work), the need for a second dry-dock period, electrical modification issues, and less than adequate commissioning time. The USIO expects the delivery date to move to at least February 15th, 2008 and perhaps as far as the end of March 2008.

OTF discussed the delivery date issue and how best to plan for a viable schedule that would minimize any future changes. As the delivery date delay appears to be on the order of 60-90 days, OTF preferred to use the latter number to err on the conservative side. With 30 days of contingency already built into the previous schedule, this meant shifting the start of operations approximately 60 days, from mid-March to mid-May, 2008.

Given this change, OTF discussed how best to modify the schedule. OTF identified two likely scenarios for further discussion:

- 1) Defer the first Equatorial Pacific expedition to an unspecified later date,
- 2) Replace the Shatsky Rise expedition with the first Equatorial Pacific expedition

The second option was preferred by OTF for several reasons. First, the Equatorial Pacific program was very highly ranked and OTF members felt that deferring half of this highly-ranked program to an unspecified later date (while still conducting a much lower-ranked operation like Shatsky Rise) did not respect community priorities. Second, from a logistical standpoint, significant resources had already been put into planning for the Equatorial Pacific operations and almost none for Shatsky Rise at this point. In the current fiscal climate it seemed prudent to OTF members to take advantage of that planning (resource expenditures) and not implement new planning and resource expenditures, if possible. Thus OTF recommended that the SODV schedule begin with the “second” Equatorial Pacific expedition (which includes the Juan de Fuca remedial cementing operation), followed by Bering Sea, the “first” Equatorial Pacific operation (now inserted into the Shatsky Rise slot), Canterbury and Wilkes Land.

OTF recognized that this new set of operations would impose an additional transit penalty between the Bering and the subsequent Equatorial Pacific operations. Thus there would be a distinct possibility that at least one site could fall off the Equatorial Pacific schedule (although APC/XCB coring estimates are conservative). The USIO was not in a position at this meeting to quantify the transit penalty associated with this new schedule. As a result, OTF requested the USIO to work with the Equatorial Pacific co-chiefs to prioritize the sites and also to quantify the exact transit penalty. If the transit penalty resulted in the loss of too many Equatorial Pacific sites, OTF would need to revisit the shift in operations from Shatsky to Equatorial Pacific.

Figure OTF 0708-02 (below) summarizes the changes in the FY2008/early FY2009 SODV schedule recommended by OTF.

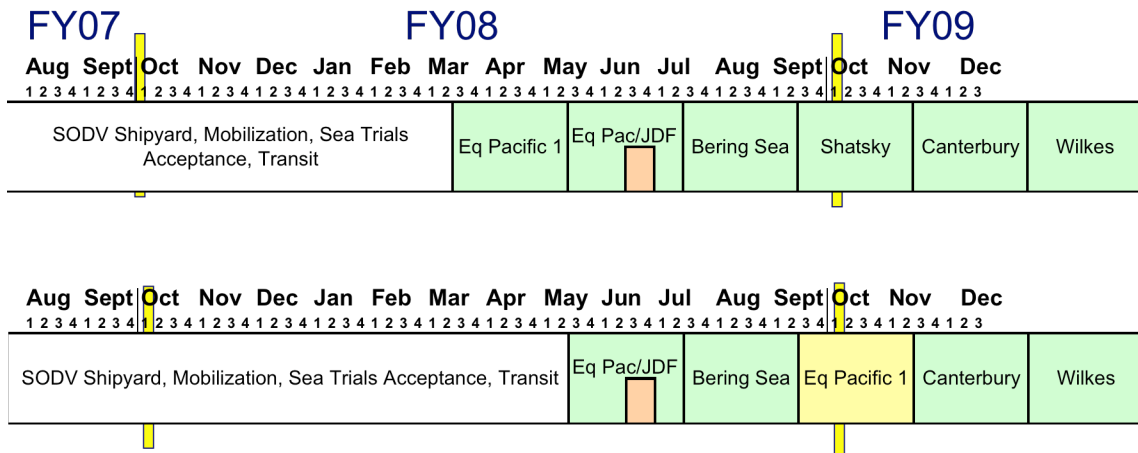


Figure OTF 0708-02: Old (upper panel) and new (lower panel) FY2008/ early FY2009 SODV schedules developed by OTF.

FY2008/early FY2009 MSP schedule updates and modifications

ESO updated OTF on the status of planning for the implementation of the New Jersey Shallow Shelf expedition in 2008. The current contractor (DOSECC) has not found a suitable platform for the proposed operational start time. ESO has indicated that by early to mid-fall (2007) they will have to make a decision about re-tendering the whole project if a suitable platform is not found by then.

OTF members inquired about the status of planning for the Great Barrier Reef project as a possible FY08 replacement for the New Jersey expedition (or possibly in addition to the New Jersey expedition). ESO updated OTF on some permitting issues that have arisen. The Great Barrier Reef Marine Park Authority has put forth a very restrictive interpretation of some sections of the Great Barrier Marine Park Act of 1975. ESO is working with Australian scientists to clarify the issue with the GBRMPA. However, until the permitting issues are resolved the fate of the project is still unknown.

OTF still recommends New Jersey Shallow Shelf expedition for FY2008 (if viable) and Great Barrier Reef for FY2009 MSP operations. But at this point, OTF will await further input from ESO this fall regarding the status of both the New Jersey and Great Barrier Reef expeditions before providing final recommendations for the FY2008 MSP schedule.

FY2008/early FY2009 Chikyu schedule updates and modifications

CDEX provided OTF with updates regarding scheduling changes for *Chikyu*. The three Stage 1 riserless operations are currently on schedule with operations expected to begin on September 21.

At the June 2007 OTF meeting CDEX had proposed that a riserless expedition could be conducted on *Chikyu* during the Oct-Dec 2008 (early FY09) time period and OTF examined the potential operations that would be feasible for this riserless expedition. Given that two high priority NanTroSEIZE operations were previously cancelled from the SODV schedule (Kumano Basin and Subduction Inputs), the OTF preference was to fill in this slot with as much of this deferred work as possible. OTF had then tasked the NanTroSEIZE Project Management Team (PMT) to prioritize the NanTroSEIZE riserless options for this slot.

Appendix A provides a summary of the PMT prioritized options for this time slot. The preferred operation was coring at NT3-01, plus the installation of a very simple observatory. Should the development and installation of the observatory prove not to be feasible in that time frame, the PMT recommended a coring operation similar to the cancelled SODV expedition 317 (Kumano Basin and Subduction inputs) with installation of the observatory at a later stage.

CDEX evaluated the proposed observatory plans and informed OTF at the August 26th OTF meeting that they could not implement the observatory operations by fall 2009. Based upon this input from CDEX, OTF recommended that CDEX begin planning for “Option B”, a coring operation similar to the cancelled SODV expedition 317 (Kumano Basin and Subduction inputs).

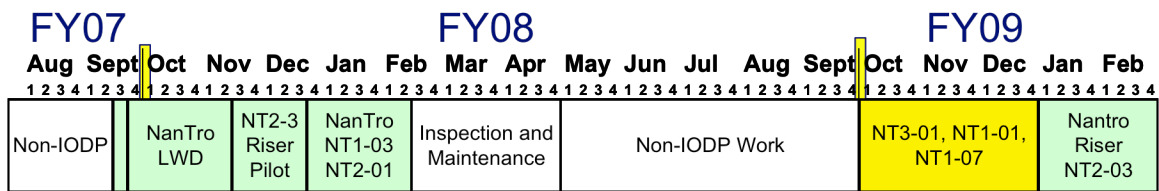


Figure OTF 0708-03: Revised *Chikyu* schedule for FY2008/ early F2009.

Final OTF recommended FY08/Early FY09 Schedule

Figure OTF 0708-04 (below) summarizes the FY2008/early FY2009 schedule for all platforms.

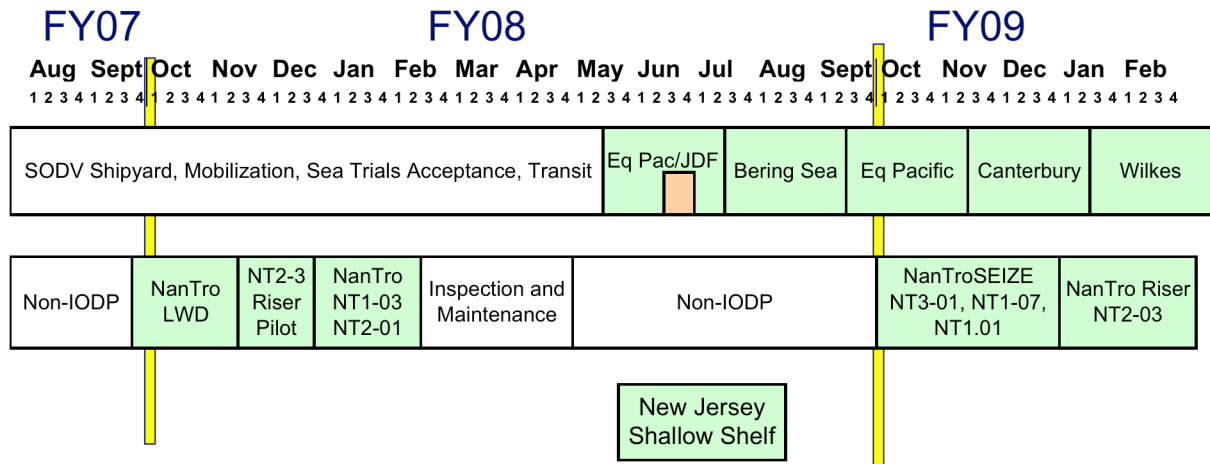


Figure OTF 0708-04: Final FY08/early FY09 platform scheduled recommended by OTF

B) Scheduling Process - Issues and Proposed Changes

The new fiscal climate that is upon IODP appears to require a substantial amount (~4-6 months) of non-IODP work each year to supplement operations of the SODV and *Chikyu*. The various entities in IODP are only beginning to understand how to mix IODP and non-IODP operations. Frequent changes in schedules may become the norm and the IODP system must develop a mechanism to deal with these changes in a timely manner and still deliver high-priority science operations.

While we have been striving to obtain a 24-month (or longer) lead time to properly schedule, approve, budget, and implement IODP operations, we now find ourselves in a situation where non-IODP work may require much shorter-term flexibility. The current IODP ranking, scheduling, approval scenario is not conducive to this need for shorter term scheduling and approval. OTF examined and proposed a model to SPC that could provide a path forward. The model provides for:

- Short-term (a few months) scheduling flexibility within the longer planning cycle (2-3 years) that is required for budgeting, acquisition of long-lead items, and optimizing logistics (e.g., transits, weather windows, etc).
- A new method of ranking and prioritizing IODP programs
- Better definitions of the roles and responsibilities of OTF and SPC in the schedule approval process.

Modified Ranking Exercise

The first part of this model provides for a modified SPC ranking process. SPC would identify the “essential” scientific program (called “Tier 1” programs in this discussion). These programs would be the highest priority programs that must be completed to ensure that IODP has made substantial progress toward reaching the objectives set out in the Initial Science Plan. Ideally, the plan would be to look at least three years out, if not more. These Tier 1 programs could either be currently in the system or may need to be solicited. In this model, OTF envision perhaps 5-6 programs over three years would fit into this Tier 1 category. Because of the current fiscal climate, the programs (especially for SODV) would have to be a mixture of expedition types. Perhaps only half would be “complex” (i.e., expensive or with long-lead time items) with no more than one “complex” expedition being run each FY.

The identification of these Tier 1 programs would most likely be an iterative process with an initial identification of the programs by SAS/SPC, followed by an operational analysis by OTF/IOs. If the programs proved to be too expensive, or logistically too difficult to implement in the time frame available, SAS/SPC would need to identify new Tier 1 programs. Ultimately a set of programs would be identified that IODP would be completely committed to implementing in 3-4 year time frame. The order or timing of the programs would not be specified by SAS/SPC. That would be determined by OTF.

The next step in the process would be for SPC to identify and prioritize the remaining programs in much in the same way that they currently rank and forward programs to OTF. Ideally, the rankings could include priorities within each ocean basin. This pool of “Tier 2” programs would provide OTF with greater flexibility to fill in scheduling gaps between the Tier 1 programs and non-IODP work.

Scheduling of these Tier 2 programs will depend on budgets, locale/length of non-IODP programs, weather, etc. Tier 2 programs not scheduled after a pre-determined number of scheduling cycles would return to SPC.

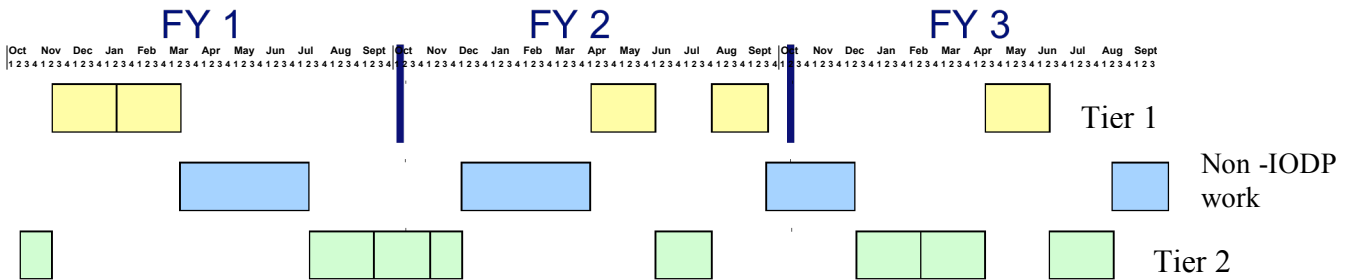
Modified Scheduling Process

The scheduling process would begin with SPC identifying an initial set of Tier 1 and Tier 2 programs. OTF would then take this input and develop a 3-year Tier 1 operational plan for SPC approval. After developing this 3-year framework, OTF would then develop an annual operational plan for approval by SPC. This annual operational plan would include a mixture of Tier 1, Tier 2 and non-IODP programs and be endorsed by the full SPC (in much the same way SPC currently endorses the annual operational science plan).

The approval process for subsequent changes to the annual schedule would depend upon the magnitude of the change. Tier 1 changes would require full SPC endorsement. Tier 2 changes and non-IODP changes would only require OTF endorsement. To ensure that scientific integrity of the program is maintained should short-term scheduling changes be

required, OTF proposes that the SPC membership on OTF be increased to 5 members. In this fashion, SPC members become the majority on OTF. Although OTF has always worked by consensus, this majority role for SPC will help to alleviate any fears that OTF is scheduling “top down” changes without science input.

OTF will present this plan to SPC for consideration in the scheduling of future operations



- Schedule Tier 1 programs to ensure proper weather windows, long lead-time planning, coordination with Non-IODP work (if known), etc
- Schedule in Non-IODP work, if known
- Schedule in 2-3 prioritized Tier 2 programs each FY

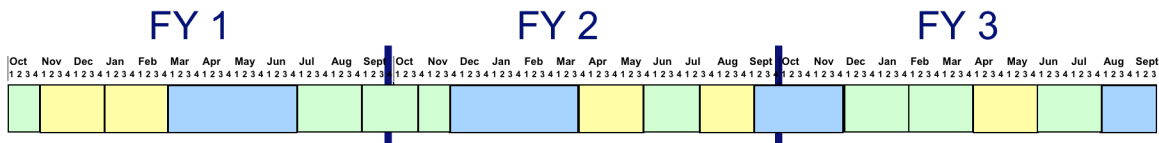


Figure OTF 0708-05: Example showing the how operational schedules could be developed in the future

August 29th meeting report

A) FY2009

OTF examined the proposals residing at OTF (after the SPC reprioritization ---See SPC 0708 minutes) to develop a complete FY09 schedule and look at FY10 and FY11 possibilities

Figure OTF 0708-06 (below) shows the FY09 IODP schedule that needed to be finalized at the August OTF/SPC meetings. In particular, for FY09 OTF needed to determine the following:

- SODV -- Determine Expedition(s) after Wilkes
- *Chikyu* -- Determine Riserless Operations in Mid FY09
- MSP -- If GBR not run in FY08 -- Run in FY09?

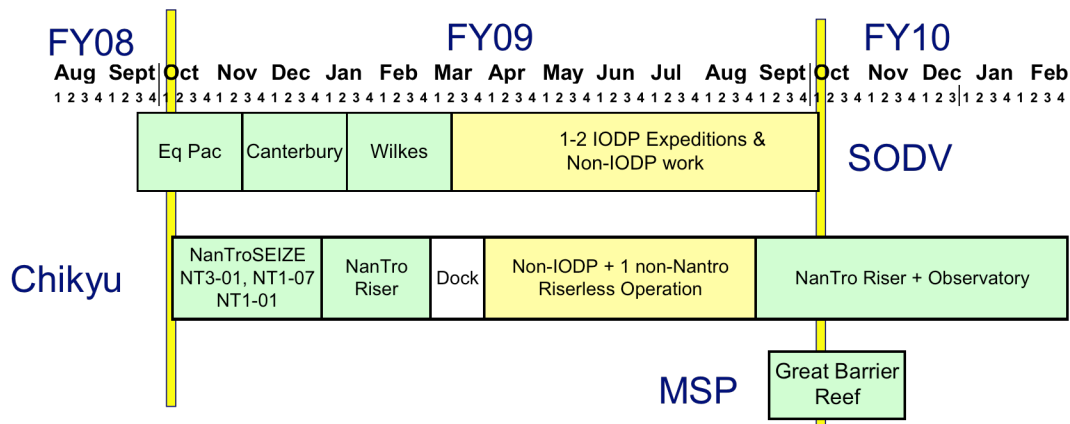


Figure OTF 0708-06: FY2009 operational schedules as of the start of the August 29th meeting.

SODV FY2009 Schedule

OTF discussed potential operations post-Wilkes Land. **Figure OTF 0708-06** (above) suggests that at least one, maybe two, IODP expeditions might be included in combination with potential non-IODP work. Without firm budgets in hand for FY09 and without knowing what (if any) non-IODP work might be available, it was difficult to determine how many expeditions to plan. Currently, the program already has ~2.75 SODV programs in FY09, including Equatorial Pacific (~75%), Canterbury, and Wilkes. OTF members generally agreed that at least one more expedition should be attempted, but obviously this would be subject to available funds (which would not be known until January 2008 when official FY09 budget guidance is received from the Lead Agencies).

OTF began the planning discussion for the latter half of FY09 SODV IODP operations by using the SPC consensus **0608-17**, which recommends a “clockwise” path around the Pacific.

***SPC Consensus 0608-17:** The SPC approves a ship-track model for SODV operations in FY2009-10 that would proceed clockwise through the Pacific Ocean, assuming a start at Wilkes Land.*

The following expeditions, which reside at OTF, were considered for insertion into the schedule:

- Juan de Fuca 2
- Superfast Spreading
- NanTroSEIZE riserless
- Sea of Okhotsk
- Asian Monsoon
- Marianna (no CORK)
- Shatsky Rise
- Geodynamo
- Chamorro APL

Three programs stood out as high priorities based upon previous rankings:

- Juan de Fuca2 -- #1 Riserless Program at September 2003 SPC ranking session
- NanTroSEIZE --- #1 and #2 Riserless Program at Jun 2004 SPC ranking session
- Marianna -- # 1 Riserless Program at Mar 2007 SPC ranking session

OTF discussed these three programs and decided to recommend Marianna as the program to follow Wilkes Land (if funding is available). OTF determined that Juan de Fuca would be too expensive for any FY09 scenario and that the NanTroSEIZE riserless objectives, at least through 2009, could adequately be addressed by *Chikyu*. In addition, the location of the Marianna Convergent Margin program would tie in well with the Chamorro Seamount CORK replacement APL (which has an estimated ~3-5 days of operations).

OTF’s recommendation of a combination Marianna/Chamorro APL expedition is subject to available funding, which will not be known until official budget guidance is given by the Lead Agencies in January 2008.

Chikyu FY2009 Schedule

OTF next examined potential riserless expeditions that could fit into the Apr-Aug 2009 time frame (see Figure **OTF 0708-06** above). CDEX previously indicated that it could conduct one riserless expedition in this time frame (contingent upon it not conflicting with non-IODP work). The weather window suggests that a non-NanTroSEIZE operation is required. Thus, OTF examined potential Pacific operations including:

- Juan de Fuca 2
- Superfast Spreading

- Sea of Okhotsk
- Asian Monsoon
- Shatsky Rise
- Geodynamo

OTF determined that the operations should be in the western Pacific to minimize transits (as it is expected the non-IODP work may be near Japan). The viable western Pacific options included:

- Sea of Okhotsk
- Asian Monsoon
- Shatsky Rise

OTF examined these options and recommended Asian Monsoon as the highest priority candidate. Asian Monsoon is a highly ranked program with a clear interest for many Asian IODP scientists and it does not have a weather constraint for this time period. The Sea of Okhotsk, while highly ranked, may have significant clearance issues and thus OTF felt it was not prudent to put forward this expedition until it had a better idea as to the viability of obtaining the necessary clearances. OTF will task the IOs (CDEX and USIO) to investigate this clearance issue in more detail and report back at the next OTF meeting.

MSP FY2009 Schedule

The FY2009 MSP is problematic at this time due to the fluid nature of planning with respect to New Jersey Shallow Shelf and Great Barrier Reef (see FY08 discussion above). The potential FY09 MSP operations include:

- Great Barrier Reef
- New Jersey Shallow Shelf
- New England Hydrogeology
- Chicxulub
- Coralgal Reefs

As discussed above in this report, it is still expected that New Jersey Shallow Shelf will be the MSP operation in FY2008. Of the remaining programs, Great Barrier Reef is the preferred option for FY2009 but it still has some permitting/clearance issues to address (but this seems to be progressing). New England Hydrogeology does not have the requisite surveys and may not have them in the foreseeable future. Chicxulub would be cost prohibitive at this point unless multiple year POC and SOC funds (at least 3 years worth) could be banked for the operation. Coralgal Banks is a viable, relatively low-cost operation, but one that is significantly lower-ranked than the others.

Given these issues and constraints for MSP operations, OTF recommends that ESO move forward with planning for both the New Jersey and Great Barrier Reef operations, with New Jersey being the preferred operation in FY08 and Great Barrier Reef in FY09. ESO is to report back to OTF during the fall of 2007 on the status of planning for both

operations. At that time, OTF will review its recommendation for FY08 and FY09 MSP operations.

Final FY09 OTF-recommended Platform operational schedule

Figure OTF 0708-07 (below) shows the OTF-recommended operations for FY09 for all platforms. The operations for all platforms are still subject to funding availability, which will not be known officially until January 2008. In addition, the location/length of any non-IODP work for the SODV and *Chikyū* may require a change in operations, particularly post-Wilkes operations for the SODV and the proposed Asian Monsoon operations for *Chikyū*. The proposed MSP Great Barrier Reef operation still requires the issuance of permits from the Great Barrier Reef Marine Park Authority. In addition, should the platform contracts for the FY08 New Jersey expedition provide for an early (May 2008) start of that operation, there is a possibility that the Great Barrier Reef operation could start in September 2008 (one year early). It still would be considered an FY09 Operation, though.

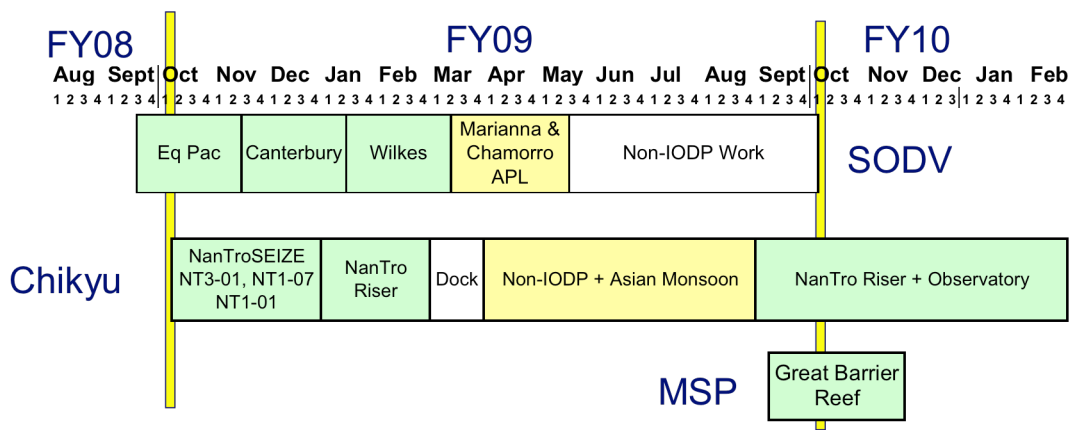


Figure OTF 0708-07: Final FY09 schedule for all platforms recommended by OTF.

FY2010

OTF attempted to lay out potential FY2010 scheduling options for all platforms for SPC to prioritize. This prioritization would be contingent on available funding and location/length of non-IODP but would provide the IOs with enough information to begin low-level planning for that fiscal year.

SODV

The SODV has numerous options for FY2010. In order to narrow these options down, OTF determined that it would request SPC to prioritize the areas of operations for FY2010 (e.g., Atlantic, Pacific, Indian). Based upon this prioritization, OTF would then task the USIO to examine the programs available in this highest priority area and develop

scheduling scenarios for presentation at its next full scheduling meeting. OTF will request that SPC prioritize more than one area of operation in the case that non-IODP and/or budgets preclude the efficient implementation of the highest priority area.

Chikyu

OTF discussed the riser and riserless possibilities for *Chikyu* in FY2010. CDEX has indicated that one ~5 month riser program and one ~2 month riserless program are viable in FY10. OTF examined the potential riser programs that remained at OTF following the SPC reprioritization efforts (See SPC 0708 minutes). These riser programs include:

- NanTroSEIZE --NT3-01
- Murray Ridge

Given the SASEC priorities of achieving major milestones in NanTroSEIZE before 2013 (of which NT3-01 is a major milestone), the fact that significant logistical preparation is already underway for NT3-01, and that no other viable program is ready for 2010, OTF easily made the recommendation that CDEX should plan to conduct riser operations at NT3-01 following the conclusion of riser operations at NT2-02.

OTF also recommended that Murray Ridge be the next riser program after NanTroSEIZE (if clearances can be obtained by CDEX).

OTF then examined the possible options for a riserless expedition for *Chikyu* in FY2010. Considering *Chikyu* will be in the Western Pacific conducting NanTroSEIZE operations, the OTF focused on riserless programs in that area. These programs included:

- NanTroSEIZE
- Shatsky Rise
- Asian Monsoon
- Sea of Okhotsk

After some discussion, OTF decided to not to make a specific recommendation at this time. OTF members felt that they needed to know (1) more information about the early outcomes of NanTroSEIZE riserless drilling, (2) whether Asian Monsoon will actually be implemented in FY09 and (3) the possibility that clearances could be obtained for Sea of Okhotsk (for either *Chikyu* or SODV). OTF will revisit FY2010 *Chikyu* riserless drilling options at its next meeting (which will most likely associated with the next SPC meeting in March 2008).

MSP Operations

Given the unknowns associated with the implementation of both New Jersey Shallow Shelf and Great Barrier Reef, OTF decided to not make a specific FY2010 MSP recommendation at this time. OTF will revisit the issue after the March SPC rankings and when more is know with respect to the New Jersey and Great Barrier Reef operations.

APPENDIX A: Excerpted notes from July 2007 NanTroSEIZE PMT meeting pertinent to FY09 *Chikyu* riserless schedule

Note: The PMT has termed this potential riserless expedition as “Stage 1B” (should it be a NanTroSEIZE expedition). Stage 1A is defined as the 3 expeditions on *Chikyu* this fall (expeditions 314, 315, and 316).

Priorities for Stage 1B – Discussion 2

- Assume one 8-week expedition duration
- Question: Can a CORK-style installation be done by *CHIKYU* in this time frame? Can the existing (JR-based) plan be modified for use on *CHIKYU*?
- Proposed Priorities:
 - An observatory above/in the mega splay region (as simple as necessary to get it done). Location could be NT3-01, NT2-03, or NT2-01.
 - Coring and downhole measurements of NT1-07
 - Coring and downhole measurements of NT3-01

Action Item: PMT propose 2 paths and do some rapid investigation of the 2 paths in the next 2 weeks to present to OTF.

Proposed Implementation Plans (2 paths):

- OPTION A - Preferred
 - Oct-Dec 2008 Expedition - Coring and DH measurement at NT3-01, plus ultra-simple observatory measurements at NT3-01 *OR* NT2-01 [+/- coring at NT1-07]
 - Next riserless opportunity (June or Nov 2009?) - complete NT1-07, NT1-01, install seis/geodetic/? CORK
- OPTION B - if no installation in Oct-Dec is possible
 - Oct-Dec 2008 Expedition - Coring and DH measurements (casing?) NT3-01, NT1-07 [+/- NT1-01, NT2-10, NT2-05].
 - Next riserless opportunity (June or Nov 2009?) - Install borehole observatory in megasplay region

Action Item: Small observatory group to discuss intensely what the possibilities are for the observatory portion of Option A and Option B. Observatory team should consist of: Demian, Masa (chair), Araki, Liz, Harold, Achim, with Harold more of the observer. CDEX to receive a comment by August 1.

Time and budget preclude a full-blown multi-component observatory; therefore, the PMT has come up with this set of options forward. The observatory group is a subset of the PMT, so it will be the PMT that provides the sketch to CDEX with consultation of the proponents.

Option A

We know we can come up with a design for an observatory, but can it be implemented in 12 months?

Can move ahead with two plans in Option A – 1) ultra-simple design or 2) something more complicated. Need to investigate all the possibilities.

If Option A is the one to investigate, in the next week, the observatory group needs to actually make a sketch of the proposed observatory and bring this to CDEX and the funding agencies. Plan is to just show them one model for a first step.

CDEX needs to know that this sketch is coming and that they need to react quite quickly.

If the sketch is presented, can the funding and design be approved in this condensed time frame? We are asking for something above and beyond and we appreciate the flexibility from CDEX to even consider this.

Design should include pore pressure or seismometer in this ultra-simple observatory. Either would provide useful science and both would be nice...

NT2-03 – should this be on this list? It is a back-up, in case we don't have enough information to install in NT3-01.

The less options [for the observatory], the better for presenting to the operators.

We need to emphasize importance of science. Based on that, maybe NT2-01 and NT3-01 are preferred. Pore pressure in drawing for NT2-01 and seismometer in drawing for NT3-01. We should specify this once we present the options.

Option B

If we are going with Option B, the exact day-to-day operations don't need to be specified at this time. Just that coring and downhole measurements are planned and an observatory may be a possibility.

Option B will also require coming up with a sketch to present to CDEX [As observatory would be installed at a later date]

Potentially this Aug. we will know if we can do Option A or Option B and then go from there.