

#22 PMT Meeting Memo
9-10 October 2012
CDEX, Yokohama, Japan

1. Meeting Participants:

| | |
|-------------------|------------------------------------------------------|
| Harold Tobin | Co-Chief Project Scientist, University of Wisconsin |
| Demian Saffer | Specialty Coordinator, Pennsylvania State University |
| Gaku Kimura | Specialty Coordinator, University of Tokyo |
| Geoff Wheat | Specialty Coordinator, MBARI |
| Greg Moore | Exp. 338 Co-chief & SC, University of Hawaii |
| Mike Underwood | Specialty Coordinator, University of Missouri |
| Toshi Kanamatsu | Specialty Coordinator, IFREE JAMSTEC |
| Eiichiro Araki | PMT Observatory team, IFREE JAMSTEC |
| Masa Kinoshita | PMT Observatory team, KCC JAMSTEC |
| Brandon Dugan | Exp. 338 Co-chief, Rice University |
| Kyu'ichi Kanagawa | Exp. 338 Co-chief, Chiba University |
| Michael Strasser | Exp. 338 Co-chief, ETH Zurich |
| Jin-Oh Park | 3D VSP Representative, University of Tokyo |
| Wataru Azuma | CDEX |
| Nobu Eguchi | CDEX |
| Ikuo Sawada | CDEX |
| Takahiro Yokoyama | CDEX |
| Moe Kyaw Thu | CDEX |
| Nori Kyo | CDEX |
| Sean Toczko | CDEX |
| Yusuke Kubo | CDEX |
| Shinji Hida | CDEX |
| Yasuhiro Namba | CDEX |
| Yoshinori Sanada | CDEX |
| Yukari Kido | CDEX |
| Kiyoshi Suyehiro | IODP-MI |
| Yoshi Kawamura | IODP-MI |
| Issa Kagaya | IODP-MI |

2. Agenda and Discussion Points:

1. Introduction

A. General information (HSE)

- Masa Kinoshita expressed his position and potential COI, but all members accepted and agreed to his presence and free commenting.

2. Exp. 338 update

- CDEX explained the current Exp. 338 situation:

The plan includes 20 contingency days, but one day already used during port call. Due to Typhoon #21, the ongoing wait-on-weather (WOW) may consume more than 9 contingency days.

The status of the Kuroshio Current remains as usual, around 3 knots.

A. Lessons learned from Exp. 337 (riser operation)

- CDEX reported that core recovery with riser operations was much better and the quality of the core was consistently better when compared to past D/V *Chikyu* riserless operations. Bit damage was also much reduced during Exp. 337 (Shimokita).
- CDEX reported on some riser operation points from Exp. 337, related to Gas Monitoring, Drilling Mud, and Cuttings:
 - Degasser Position, minimum Mud flow requirement
 - Mud sample and Mud engineer report/log
 - Cutting sampling plan to be discussed/confirmed

B. Lessons learned from Exp. 337 (laboratory)

- CDEX explained the status of Lab set-up, and brought up some points related to Gas monitoring:
 - GC-NGA, O₂ & Ar measurements: specific requirements
 - Radon gas analyzer: 3rd party equipment
 - SSX, PGMS & MCIA issues

C. Science party briefing (final confirmation)

- No specific issues

D. Crossover (final confirmation)

- No specific issues

E. Exp. 338 contingency plan (requested by Co-chiefs)

- The four contingency plans were re-examined based on new/confirmed CDEX information. CDEX mentioned that the budget situation may limit

contingency options, especially extended use of LWD.

F. 3D VSP plan and requirement

- Jin-oh Park presented the 3D VSP plan and preparation status:
 - JAMSTEC *Kairei* ship time has been requested (two weeks) in conjunction with DONET operations.
 - 3D VSP operation requires 5 days ship time, at least 60 receivers (3,600 m – 2,300 m), APG array air gun 15 Km offset spiral grid shooting.
 - Researchers may bring USD \$600K funds, but the total operation may require USD \$1. 5M or more by SR2020 cost estimation.
 - Need to start SR2020 contract negotiation 6 months prior to survey.
 - Initial data process may need one month.
- CDEX will require initial 3D VSP result within a month to decide 11-3/4" Casing set depth-identify the mega-splay fault.
- Funding will be a big issue.
- Zero-offset VSP and LWD Sonic-vision (P-wave velocity) may help to identify mega-splay fault.

3. **JAMSTEC/CDEX update**

- IODP-MI introduced June 2012 SIPCOM results related to Chikyu expeditions in FY13 – 14:
 - In FY13, Exp. 338 from 1 Oct to 13 Jan under the current IODP
 - In FY14, Exp. 348 from Sep 2013 to Jan 2014 under the new IODP

A. Post 2013 Chikyu Program

- CDEX presented a proposed framework for new IODP discussed/presented at IWG+ meeting.
- CDEX also presented Chikyu specific program structures, including:
 - Chikyu overall proposal flow
 - Chikyu proposal nurturing process (including WS driven concept)
 - Chikyu project development structure (including decision making process)
 - Project Partner Office (PPO), and Science & Technical Advisory Team (SAT & TAT)
- However, all are still under discussion in JAMSTEC/CDEX, and JAMSTEC/CDEX will plan to present final/confirmed picture of next/new program at AGU fall meeting (Dec. 2012).

B. International Workshop

- CDEX announced an International Workshop (Chikyu+10) would be held next spring (2013) to identify feasible project candidates out of science themes described in NSP, which are drillable within the next IODP period. A steering committee was selected, including none of the participants from the NanTroSEIZE project.

4. Future NanTroSEIZE operation plan

A. Achievements from past expeditions

- No discussion

B. Scientific update

- Reconfirmed the importance of deep riser hole (C0002) drill through splay fault and plate boundary.
- From 3.11 Tohoku Earthquake, increasing the importance of plate boundary near trench, where it is highly likely to generate tsunami-producing slip.

C. Next Expedition (after Exp. 338) planning and timeline

- CDEX presented next two NanTroSEIZE expeditions' durations and scopes:
 - Exp. 348: 1 Sep 2013 – 31 Jan 2014 (153 days):
 - 22 days contingent time included. The starting date may delay due to non-IODP activities prior to the expedition, and no extension at the end due to fishing window.
 - The Drilling Target is mega-splay fault and damaged zone below (TD around 5,200 m).
 - 11-3/4" casing set at 4,700 m, and open hole section below will be plugged/cemented back and suspended.
 - Operations include 3D VSP at the beginning, LWD through TD, several sections of coring including mega-splay fault, and wireline logging.
 - Exp. XXX: 1 Sep 2014 – Oct/Nov 2014 (60 ~ 90 days)
 - A few observatories installation including near trench
- 3D VSP, Zero-offset VSP, and LWD Sonic-vision are very important tools to identify the mega-splay fault. Based on existing data, including OBS, the depth of the mega-splay fault varies from 4,500 to 5,000 m.
- In situ formation density measurement (LWD, wireline logging) is important,

NMR-LWD or wireline density-neutron logging should be considered in any down hole logging plan.

- Observatory installation at near-trench sites (C0006, C0007), especially cementing operations, will be difficult due to water depth. Need to discuss types of sensors and new installation technologies.
- The observatory hardware may be ready for FY14 operation as a contingency of C0002 deepening, but CDEX will not be able to prepare riser drilling operation and observatory installation together.
An observatory installation cannot be a contingency plan.
- The C0006 site observatory installation can be carried out by JR (transponders will first need to be placed to avoid the DONET cable).
- Although there isn't any agreement between new programs, countries, and/or platform providers regarding of participation balances, need to start Exp. 348 preparation immediately, including start call for participants, ideal timeline is;
 - Form prospectus/fact sheet: now
 - Open Call for participation: 1 Nov 2012
 - Close the call: 1 Jan 2012
 - Form Science Party – PMO nominations
 - Pre-expedition meeting: Feb – March 2013
- The Science party can be formed following the Exp. 338 pattern; each party section needs to cover 54 days operation (on board).

D. Final target and reality check

- With recent scientific developments, and within the current scope of the IODP NanTroSEIZE PMT, PMT re-prioritized the NanTroSEIZE drilling plan, given the limited remaining timeframe (FY14 & part of FY15?). Instead of the original priorities, the following are proposed as more feasible/realistic program:
 - Complete drilling into the clearly-imaged plate boundary fault around the splay fault and into damaged zone below it.
 - Install a borehole observatory in the plate boundary near the trench.
 - Install a borehole observatory in the shallow part of the splay fault.
- The C0002 hole should be kept open for future deepening into underthrust section and basement. A new drilling proposal should be submitted for new IODP as D/V *Chikyu* project.

5. PMT re-organization

- CDEX explained the new *Chikyu* PMT basic concept, including relationships between/among the CIB (Chikyu IODP Board), and SAT & TAT (Science and Technology Advisory Team).
 - The concept is still under discussion, further discussion should be resumed after JAMSTEC/CDEX announcement at AGU fall meeting.
 - How to apply the concept for existing NanTroSEIZE PMT was also presented, include no salary support for all nations.
- Need to have continuous dialog between CDEX/IO and SC/CPS.
- PMT member requested CDEX/JAMSTEC to seek other potential support fund for PMT/SC post 2013 including NSF.

3. Consensus and Action times:

1. Consensus PMT22-01:

The PMT identified feasible and valuable contingency operations for Exp. 338 as below in order of priority:

- C0002 Shallow Coring: 200 – 500 mbsf (8 days)
- C0012 LWD: to 738 m (8 days)
- C0018 LWD: to 350 m (3.5 days)

However, each option requires different resources (operation days, equipment etc.); therefore, Co-chiefs and Science Party on board have right and responsibility for final decision-making.

Action item PMT21-01

CDEX continuously informs Exp. 338 Co-chiefs and Science Party of the status of resources for the contingency options.

2. Consensus PMT22-02:

PMT endorses that CDEX and PI continue 3D VSP operation preparation, including securing funds and establishing a survey contract on time.

3. Consensus PMT22-03:

PMT welcomes and supports the next two NanTroSEIZE expedition planning proposals.

The C0002 Ultra Deep Hole operation (Exp. 348) includes:

- 3D VSP working with JAMSTEC R/V *Kairei*
- Drilling to mega-splay fault and damaged zone below
- Coring mega-splay fault
- LWD and wireline logging including at least a density measurement
- Suspend the C0002 hole for future deepening

Expedition in FY14-15 will conduct a few shallow observatories installation.

Action item PMT22-02

To help ensure successful planning and run-up for Exp. 348, PMT, CDEX and IODP-MI will immediately take the following actions:

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| • Form mini-prospectus/fact sheet by CPS: | now |
| • Open Call for Participation by CDEX/IODP-MI: | 1 Nov 2012 |
| • Close the call: | 1 Jan 2013 |
| • PMO nomination – Form Science Party: | Feb 2013 |
| • Pre-expedition meeting: | Feb - March 2013 |

4. Consensus PMT22-04:

With recent scientific developments, and given the limited remaining time frame (FY14 & part of FY15), PMT re-prioritized the NanTroSEIZE drilling plan as follows in order. The plan is more feasible and PMT strongly recommends CDEX complete the plan before moving onto a new project.

- Complete C0002 Ultra Deep Riser drilling into the clearly imagined plate boundary fault around the splay fault (~5,000 mbsf) and into damaged zone below it (~5,200 mbsf).
- Install a borehole observatory in the plate boundary near trench (C0006).
- Install a borehole observatory in the shallow part of the splay fault (C0010).