

**#1 JFAST PMT Meeting Note**  
**6 October 2011**  
**JAMSTEC Yokohama Institute office**  
**Yokohama, Japan**

**1. Meeting Participant:**

PMT members:

Emily Brodsky (UCSC)  
**Fred Chester (TAMU)\***  
Nobu Eguchi (CDEX)  
Ryota Hino (Tohoku U.)  
Kevin Johnson (IODP-MI)  
Yoshi Kawamura (IODP-MI)  
Shuichi Kodaira (IFREE)  
Nori Kyo (CDEX)  
**Jim Mori (Kyoto U.)\***  
*Demian Saffer (Penn State –  
by Skyp)*  
Ikuo Sawada (CDEX)  
Masaoki Yamao (CDEX)

(\* IODP Exp 343 Co-Chief)

Observers:

Kan Aoike (CDEX)  
Daijiro Ikenomoto (CDEX)  
Issa Kagaya (CDEX)  
Yasuhiro Namba (CDEX)  
Koji Takase (CDEX)  
Moe Kyaw Thu (CDEX)  
Sean Toczko (CDEX)  
Mikio Toda (CDEX)  
Tomo Saruhashi (CDEX)  
Moe Kyaw Thu(CDEX)  
Sanny Saito (IFREE)  
Shigeki Hoshi (CDEX)  
Tadashi Yoshizawa (CDEX)  
Tomoya Inoue (CDEX)

**2. Meeting Agenda:**

1. Introduction

- a. Self introduction
- b. Meeting goals

2. Overall expedition plan

- a. 3<sup>rd</sup> Party observatory plans (including funding situation)
- b. Operation plan (including LWD, drilling, coring, observatory installation)
- c. CDEX preparation status
- d. Site survey, site selection, contingency site (mainly done by “site selection meeting”)
- e. Staffing (mini prospectus, expertise requirements, call for application)

3. External review of technical plan

4. Outreach activities

5. Others

- a. Planning pre expedition meeting
- b. Next PMT meeting

### 3. Meeting Note:

#### 2. Overall expedition plan

Two holes approach at Site JFAST-1; a first hole will be drilled and logged by LWD. A second hole will be drilled and cored. The coring will be focused on the lower formations and fault interval. The observatory will comprise self-contained temperature sensors (MTLs) to be deployed inside casing and retrieved by ROV later. Outside casing sensors, such as pressure sensors and a thermistor string will be installed at bottom 200m of casing. The data will be recorded in loggers at the CORK head, and will be collected by ROV.

##### a. 3<sup>rd</sup> Party observatory plans

Rob Harris, Demian Saffer, Keir Becker and Yasuyuki Kano will take charge of internal temperature, external pressure, and external temperature measurements, respectively.

##### MTLs

- MTLs (RBR) have 2-year-life battery. The recorded data will not be lost, if the batteries run out. They can be recovered 2 or 3 years later.
- Absolute depth of MTLs will be decided, based on the LWD logging. MTL attachment loops on the rope have to be prepared & positioned at the manufacturer with fixed space (1.5m; minimum requirement).
- The present request of MTL is 40 each, but this may be reconsidered by science and budget. The delivery lead-time will be 10-weeks by RBR.
- The MTL spectra rope delivery lead-time will be 3 month.
- ROV *KAIKO 7000* has designed for 400kgf max-pull capability, but the operation pull limit has been set to less than 100kgf, due to equipment aging and JAMSTEC regulations.
- By the rope abrasion tests, the tensile strength of the rope has been confirmed more than 2 tons.
- Discussed the possibility of the formation closing-in and losing the entire MTL string in the casing, and agreed to introduce weak links in the string.
- CDEX showed a sample of the MTL Vectran Rope with test-splices and MTL attachment loop. CDEX requested the scientists to design and prepare MTL to accommodate with the rope set-up.
- The OD of MTL & Spectra rope is about 1.5" (with rubber protection, about 2"). The ID of 4.5" casing is around 3.5".
- Determination of the fault depth is key issue. Can be identified by LWD logging and/or core.
- Two manufacturers for MTL, RBR and Antares. The RBR MTL includes parascientific pressure transducer (can use for depth determination). The Antares one can be customized
- The temperature sampling rate should be about an hour.
- The RBR MTL weight is 500g in air, 220g in water.

##### Exterior Sensors

- CDEX showed core-hole observatory design:  
The hole size is 10-5/8", the observatory casing is 4.5" OD with maximum 8" OD centralizers and protectors.  
The external sensor protectors are flatpack, GCDT protectors and centralizers, and can be added a steel armored sleeve for thermistor.  
Concerns on the observatory stuck while installation.
- Several discussions related to pressure measurements and logger unit;
  - A pressure logger unit (similar to the LTBMS PSU) is available for this expedition. The general structure is completed, but some modification is required to accommodate 7000m deployment water depth. This unit can be installed on the existing CORK head before deployment.

- The existing pressure logger unit is too heavy for *KAIKO* operation. Need to consider additional/externals logger and connections/mating mechanism on CORK head.
    - 900m of flatpack may be required.
  - The specification of the outer thermistor string has to be identified by the end of Nov. The delivery lead-time is estimated one month.
    - The numbers of thermistor are limited to 20, due to data cable coupling size versus space between casing and hole-wall.
    - The external temperature logger system can be installed/replaced by *KAIKO*.
    - Considering deploy the thermistor string in CORK casing, but it will be very difficult, required engineering study.
  - *KAIKO*'s data transmission rate is 9600 baud. Need to investigate high data transmission method to reduce the operation risk.
- b. Operation plan (including LWD, drilling, coring, observatory installation)**
  - CDEX presented operation plan:
    - The expedition will start at 1 April 2012.
    - The feasibility studies including pipe analysis will be completed at the end of Oct. 2012.
    - This will be the first time that *CHIKYU* uses the Under Water TV camera (UWTV).
    - A mid-expedition port-call may be required to offload LWD tools at the anchoring area of Sendai port.
    - LWD drill bit is 8.5" and Core bit is 10-5/8".
    - The hole site will be decided by GPS/sonar and UWTV picture.
  - Recognized the importance of LWD logging data (primary, very high priority), including for observatory sensors emplacement.
- c. CDEX preparation status**
  - The contract for the outside casing (20") has not been established yet but it's ready to go.
  - Drill Pipe analysis will be finished in October.
  - 6-5/8" Drill Pipe will be delivered by the end of March. Most of other equipment will be ready by the end of Feb.
  - Supply boat will be used to deliver 6-5/8" Drill Pipe to *CHIKYU*.
  - UWTV (under water TV) will be tested on board *CHIKYU*, includes pressure test, camera test and a freefalling, prior to the Expedition.
  - CORK has been designed & fabricated by past experience. The detailed design need to be discussed and completed by early November.
  - CDEX will not deploy formation-pressure-measurement LWD to eliminate the hole-loss risk by BHA stuck.
  - CDEX will not employed EcoScope, due to Japanese government safety regulation.
  - Possible LWD tool string:
    - Real-time resistivity-imaging/resistivity/GR
    - Caliper (Ultrasonic or Resistivity)
    - Sonic velocity: concern poor performance in slow/soft formations
  - *STP chair expressed that the scientific goals/needs/requirements should be the prime consideration for LWD down-hole measurement tool selection – BEARING IN MIND the budget.*
  - MTL Hanger will be designed in detail by the beginning of November.
  - CDEX notified 'Decision Turning Points" (go-nogo gate):
    - October 2011: Drill pipe analysis & availability of 3<sup>rd</sup> party equipment (observatory)
    - November 2011: EPSP approval for the drilling sites

- December 2011: JPFY2012 Budget
  - January 2012: CHIKYU schedule (date of arrival)  
Observatory stack-up test
  - March 2012: all equipment & material delivery  
Observatory stack-up test
- Timing for Rope selection/purchase: 1) test Sep, 2) purchase Nov, 3) delivery Feb.
- d. Site survey, site selection, contingency site (mainly done by “site selection meeting”)**
  - Site survey will be carried out in Oct. & Nov. One month will be necessary for processing the obtained data.
  - JFAST 2 site removed from the plan, by not being able to reach CORK head by ROV for future operation.
  - Discussed target total drilling depth (hole penetration from sea floor), PMT consent it is 900mbsf.
- e. Staffing (mini prospectus, expertise requirements, call for application)**
  - Staffing schedule discussed;
    - Publish mini-prospectus: week of 9 Oct
    - Call for application to PMOs: week of 9 Oct
    - Open call period: less than 1.5 month
    - PMO selection time: 1 month
    - Receiving the list of applicants from PMO: early January
    - Invitation sent out: ASAP, after the reception of the lists

### **3. External review of technical plan**

- The External Review Task Force helps to identify and mitigate additional/undiscovered operation risks by CDEX in order to achieve success of the project.
- The role and authority of the ERTF discussed. ERTF will be an advisory structure, not make any decisions on the expedition planning.
- Member selection will be continued by e-mails and/or base camp.

### **4. Outreach activities**

- CDEX expressed the needs of being careful about communication with media & general public regarding the actual plans and science goals, especially respecting public sentiment regarding the Tohoku disaster.
- CDEX requests PMT members and observers to inform CDEX, when they have contact from media.
- CDEX mentioned the sensitivity to “radiation” due to the Fukushima reactor disasters.
- CDEX informed that there will be a “Media session” in AGU on Tuesday 6 Dec and the JFAST project is nominated as one of IODP topics.
- Suggestion using “obligation” instead of “opportunity” or “occasion”.

### **5. Others**

- Safety package for all potential sites must be submitted to EPSP for review.
- CDEX will create and inform scientists the project schedule to avoid any confusion, miscommunication, and work drop-off.
- a. Pre-expedition meeting**
  - Participants: Co-chiefs+ IO (Operators)
  - Purpose: Finalize Science + Operation Plan to publish official documents
  - Date and venue: 14 – 15 November in Tokyo or Yokohama.
  - *Some new site survey results may be ready for the meeting.*
- b. Next PMT meeting**
  - No face to face meeting being planned, but PMT members will communicate via Skype regularly.
  - Mini-PMT, science driven meeting will be held at AGU (evening 8 Dec).