IODP Operations Review Task Force Meeting

Expedition 313
New Jersey Shallow Shelf

July 21st-22nd, 2010
British Geological Survey (BGS), Edinburgh

EXPEDITION 313 OPERATIONS REVIEW TASK FORCE PARTICIPANTS

Expedition 313 Task Force Members

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Observers

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MEETING FORMAT

The IODP-MI Operations Review Task Force met on July 21st - 22nd at the British Geological Survey (BGS), Edinburgh to review the operational aspects of IODP Expedition 313 (New Jersey Shallow Shelf). The review concentrated on "lessons learned" from the expedition with an emphasis on "what should be done differently in the future." The Task Force review was based upon confidential reports submitted by the ECORD Science Operator (ESO) and the Expedition 313 Co-chief scientists.

The meeting began with oral presentations by Gregory Mountain and Dave McInroy, summarizing the Co-chief scientist and ESO reports respectively. Following these oral presentations, the Task Force identified specific pre-expedition, expedition, and post-expedition phase's topics for discussion. On the second day of the meeting, the Task Force reviewed the recommendations and came to a consensus on each one. These recommendations are presented in this report.

EXPEDITION 313 SUMMARY

Expedition 313: Offshore Portion, April 30th – July 7th, 2009
Expedition 313: Onshore Science Party, Bremen, November 6th – December 4th, 2009
Co-Chief Scientists: Gregory Mountain, Jean-Noël Proust
Staff Scientist: Dave McInroy
ESO Operations Superintendent: David Smith

In May-July 2009, IODP Expedition 313 used an ECORD "mission-specific" jack-up platform 45-67 km off the coast of New Jersey, in 35 m of water, to core and log Upper Paleogene and Neogene sequences. The goal was to estimate the amplitudes, rates and mechanisms of sea-level change and to evaluate sequence stratigraphic facies models that predict depositional environments, sediment compositions, and stratal geometries in response to sea-level change. Despite the difficulties of coring the sandy material of the shallow NJ shelf, the expedition collected 612 cores at three sites (M0027, M0028 and M0029) with 80% recovery totaling 1311 m in length. The deepest hole (M0029A) reached 757 mbsf; the oldest sediment (uppermost Eocene) was recovered in Hole M0027A. By drilling through midshelf clinoforms, these three holes complement the coastal plain (ODP Legs150X, 174AX) and slope (Leg 150) core datasets, building up a large "New Jersey transect" across the US Atlantic passive margin. Besides the cores, the expedition collected wireline logs at the three sites – gamma ray, resistivity, magnetic susceptibility, sonic, acoustic televiewer and vertical seismic profiles – which, together with multisensor core logs on unsplit cores, provide very precise ties between core, downhole logs and seismic profiles. More than 16 surfaces and/or seismic sequence bounding unconformities mapped around the regional seismic grid are now confidently tied to the cores.

See http://www.eso.ecord.org/expeditions/313/313.php for more details regarding the background and objectives, the preliminary scientific results, and conclusions of Expedition 313.

RECOMMENDATIONS OF THE EXPEDITION 313 REVIEW TASK FORCE

Overall, the Expedition 313 Operations Review Task Force found that the New Jersey Shallow Shelf Expedition was an unqualified success. This success resulted from a combination of factors including, "Lessons Learned" from the previous expeditions, experience gained by ESO working in the "IODP" environment, close collaboration between the Co-chief scientists and operators, and a professionalism, willingness and hard-work shown by all parties to work through issues as they arose at sea and onshore. All parties involved in this operation are to be congratulated on very successful coring, especially high quality core, acquiring high quality downhole logging data and sampling, which the Task Force believes will produce a wealth of scientific knowledge for years to come.

The Review Task Force identified a few areas of improvement for future MSP operations including:

- Pre-expedition
  - Communication/information sharing
- During-expedition
  - Communication/information sharing
  - IODP Depth policy
  - Emergency plan (safety)
- Onshore Science Party
  - Communication/information sharing
  - IODP Standard Measurement Policy
- Education and outreach

Many of the issues discussed during this review were related to communication /information sharing between Co-chiefs/Science Party and Implementing Organization Management. However, the Review Task Force made specific recommendations by the situations to make easy finding solutions.

While the primary focus of this review was on ESO operations during Expedition 313, many recommendations in this report are equally valuable for other IODP operators, IODP management, and to the Science Advisory Structure. As such, some recommendations are also directed to these entities.

Pre-Expedition

Communication/information sharing

This expedition needed long time from the start of planning to the start of the actual operation. Due to several reasons/conditions such as the oil & gas industry market, the vessel ESO planned to use sank prior to a contract being finalised, the available budget, etc. ESO had to face three drilling vessel tender exercises.

Parallel with the drilling vessel tender process, the scientific planning for the expedition started in March 2004, at an ESO meeting in Bremen attended by Co-chief Scientist Greg Mountain. Scientific planning focused on the activities, measurements and expertise needed

to meet the objectives of Proposal 564, and to meet IODP's list of minimum and standard measurements. Scientific planning by ESO and the Co-chief Scientists was done during face-to-face meetings (March 2004, December 2005, September 2006 and March 2009) and by e-mail exchanges.
Because of the prolonged tendering and scientific planning process, the Review Task Force observed several unsatisfactory communication pathways and sometimes a lack of information sharing between Co-chiefs and ESO. As a result, there has been debate over whether some of the perceived high priority science requests had been implemented.

> **Recommendation 313-01:** The Expedition 313 Review Task Force recommends that ESO formalizes project management process by forming/visualizing Project Management Team (PMT) for future MSP operation.

PMT: Project Management Team

The team has to be formed by ESO in FYn-2 (if the operation expected FYn), preferably 24-months before expedition, minimum 18-months.

Members:
- Operations Manager (ESO)
- Staff Scientist (expected EPM)
- EPC representative (expected LSS)
- Lab & curation Manager (BCR, University of Bremen)
- Co-chiefs (potential Co-chiefs)
- IODP-MI operation

Timeline;

PMT meeting #1 (24-months, minimum 18-months before expedition)
+ clarify the scientific goals with priority
+identify technical/operational/contract-service requirement to achieve the science goals

(after PMT m#1, ESO conducts feasibility study, especially availability/combinability of services, fund matching.)

PMT meeting #2 (18-months, minimum 12-months before expedition)
+fix scientific goals based on the feasibility study
+prioritize technology/service requirements

(after PMTm#2, ESO writes solicitations for MSP bid, based on the PMTm#2 result, and conducts bidding process.)

PMT meeting #3 = pre-expedition meeting
(after MSP contract established, 12-months, minimum 6-months, before expedition where possible)
+execute/produce scientific prospectus

> **Recommendation 313-02:** The Expedition 313 Review Task Force recommends Co-Chiefs and ESO carefully discuss and identify a specific software needs, and explore availability/affordability of computer hardware and software during expedition, especially the software that integrates numerous types of information in real time and visually displays downward coring progress relative to a seismic profile would benefit both science and operations.

> **Recommendation 313-03:** Expedition 313 Review Task Force recommends ESO makes Science Party to recognize the nature of MSP operation, in particular requiring a scientist to keep an open schedule, the schedule will be subject to a number of changes with, potentially, short notice embarkation, and the range of dates for offshore commitment provided to the Science Party by ESO should be acknowledged in writing by each scientist.

During Expedition

Communication/information sharing

Overall coring and logging performance were very high. The coring and logging strategy evolved throughout the project, often on daily basis, to take into consideration the penetration rate, geological formation, weather, operational issues and project priorities. This adaptability ensured that 3 holes were completed within the timescales and budget and with excellent results. However, during this process, the Review Task Force found lack of timely information sharing, although there were at least two meetings between ESO and Co-chiefs held daily. These twice-daily meetings were introduced by ESO during the expedition to address keeping the co-chiefs up-to-date. Also due to safety and contract obligations (operation command chain), Co-chiefs' access to the rig floor was limited. It brought misunderstanding/wrong image on timely information sharing.

> **Recommendation 313-04:** The Expedition 313 Review Task Force recommends ESO prudently reconsiders the information sharing procedure, especially drilling and coring operation information in timely manner, without jeopardize safety and contract obligations.

IODP Depth policy

There was some confusion related to depth measurement. One item might be establishing a reliable reference datum for all drill depths. Others were trying to correlate depths measured by drillers, loggers and core curation, and some of it started right with agreeing on the distance from the rig floor to the sea floor. And there was an added issue, unique to jack-ups, and that was that in trying to free a stuck drill pipe, the entire Kayd was jacked up a short distance, thereby changing the height of the rig floor above the sea floor. It seemed that accurate + complete records of this event(s) were not maintained.

> **Recommendation 313-05:** The Expedition 313 Review Task Force recommends IODP-MI requests Scientific Technology Panel (STP) to re-establish, re-clarify and re-announce clear IODP depth policy, include a mechanism to evaluate and guide specific cases.

Emergency Response Plan (Safety)

Despite the very tight quarters and shared facilities there wasn't anything short of hospitality and respect displayed by the ship's crew and officers to everyone onboard. The pre-expedition hazard analysis was conducted by ESO and the Captain and Mate had basic emergency medical training, an Emergency Response Plan was not clearly presented to Co-chiefs.

> **Recommendation 313-06:** The Expedition 313 Review Task Force recommends ESO explains hazard analysis results and Emergency Response Plan to Co-chiefs, prior to an expedition, and makes sure Co-chiefs and Science Party

acknowledge it by safety induction and/or safety passport (guide booklet).

Onshore MSP Operations (Onshore Science Party: OSP)

Communication/information sharing

The Onshore Science Party was held at the IODP Bremen Core Repository (BCR) and Laboratories in the MARUM - Center for Marine Environmental Sciences building on the campus of Bremen University. Under the ESO oversight, several groups were involved. OSP was very intensive, by well organized and managed BCR staff, it went very smoothly. An extraordinary amount of work was accomplished in 29 days. However, there is more room to improve communication and information sharing among the groups.

Recommendation 313-07: The Expedition 313 Review Task Force recommends that prior to the OSP, a specific individual (s) must be identified, through discussion between the Co-chiefs and the Staff Scientist, who will have responsibility for correcting incompletely cored intervals to depths that are consistent with other downhole, e.g., wireline logs. The chosen individual (s) will be advised of the proposed software package (e.g., Correlator) and asked to learn to use the program, if not familiar with it already.

Recommendation 313-08: The Expedition 313 Review Task Force recommends ESO supported by BCR, promote existing data base software such as DIS, to make sure the science party to be trained and familiarized through Web, prior to expedition and/or OSP.

Recommendation 313-09: The Expedition 313 Review Task Force recommends that ESO continues with the daily 'cross-over meeting' that allows entire Science Party to share findings since the previous day should be continued as the integral part of every OSP.

Recommendation 313-10: The Expedition 313 Review Task Force recommends that the staffing for physical properties measurements during the OSP should be reviewed and adapted for each expedition to ensure a balanced workload for the physical properties team.

Recommendation 313-11: The Expedition 313 Review Task Force recommends that the purpose and deadlines of the Preliminary, Expedition + ORTF Reports and their relationship to activity both offshore and at the OSP should be clearer to the entire science party.

IODP Minimum & Standard Measurement Policy

The OSP core work flow was designed by the BCR staff, and is now well established. It allows the core halves to pass through the various workstations in the repository, from core splitting to

final storage, in a logical and efficient manner. The core work flow was detailed in the Expedition 313 Scientific Prospectus. Measurements were made at the OSP to satisfy IODP's requirements for minimum and standard measurements. However, the Science Party were interested in measurements that are not included in the current policy, e.g.XRF core scanning, whole-core magnetometer, shear wave velocity whereas the Science Party was less interested in the color reflectance measurements. To change the minimum and standard measurement requirements there would need to be an STP review and consensus statement.

> **Recommendation 313-12:** The Expedition 313 Review Task Force recommends IODP-MI request STP review the value and demand of IODP minimum and standard measurement to improve future scientific achievements and efficiency operation.

Education and Outreach

Several outreach events were organized by ESO, IODP-MI, including a pre-expedition media conference was organized to coincide with the mobilization of the *L/B Kayd* in Atlantic City on the 29th April. The event was attended by invited guests from IODP-MI, NSF, Rutgers staff and the local media including NBC. IODP-MI organized film coverage and it was made available for promotional material at for example the AGU Fall meeting in San Francisco. Outreach activities during the Onshore Science Party were organized with both the Co-chief Scientists and the BCR management.

> **Recommendation 313-13:** The Expedition 313 Review Task Force recommends IODP-MI considers that including a component to Education and Outreach should be part of each expedition.