

# **IODP Scientific Technology Panel (STP)**

**10<sup>th</sup> Meeting, 17<sup>th</sup> – 19<sup>th</sup> March, 2010**

**Novotel Brighton Beach Hotel,  
Sydney, Australia**



## **EXECUTIVE SUMMARY**

The IODP Scientific Technology Panel met at the Novotel Brighton Beach in Sydney, Australia with a full agenda (see attachments) for 3.0 days from 17-19 March, 2010. The meeting was expertly organized by Dr. Marty Young, the ANZIC member of STP. The meeting resulted in 20 Consensus Statements and 5 Action Items. 17 members attended the meeting with Tatsuhiko Hoshino as an alternate for Yuki Morono. A major focus of this meeting was the STP Roadmap: completing version 1.0, releasing it via the STP web page on the IODP-MI web site, and a development of implementation options for the most important items (based upon STP ranking).

No conflicts of interest were identified by the membership at the start of the meeting.

### **STP Consensus Statement 1003-01: The New IODP Science Plan**

The STP supports the EDP memorandum entitled “Engineering Development and the New Science Plan” sent to IODP-MI, SPC, IWG+, and SPWC on January 15, 2010. In addition, the STP recommends that both EDP and STP be involved in the review and revision of the new IODP Science Plan once the first draft is available in order to ensure that engineering development and technological innovation are included in the plan that will drive the next era of scientific ocean drilling.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to SPC, IODP-MI, IWG+, EDP, SPWC, and SASEC.**

*Background to STP Consensus Statement 1003-01: Incorporation of engineering development and technological innovation in the new IODP Science Plan is critical for facilitating “transformative science”. Use of the expertise with the engineering development and scientific technology panels can ensure the inclusion of these critical elements that will allow continued development and innovation during the next era of scientific ocean drilling.*

### **STP Consensus Statement 1003-02: EDP Report and Roadmap Development.**

The STP thanks Yoshiyasu Watanabe for his presentation on EDP activities and for his update on the EDP roadmap. The STP expresses its continued support for the EDP roadmap and close coordination with the STP roadmap development, and encourages the continued exchange of liaisons.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to EDP and IODP-MI.**

*Background to STP Consensus Statement 1003-02: In this time of shrinking budgets, engineering development and insertion of new technologies into IODP to facilitate transformative science is becoming increasingly difficult. STP recognizes that close cooperation and coordination between the EDP and STP roadmaps is essential for bringing the latest science and engineering techniques to the IODP.*

### **STP Consensus Statement 1003-03: Modification of QA/QC Reporting Procedures**

The STP recommends the following guidelines for the IOs regarding QA/QC expedition reports. These reports should be submitted prior to STP meetings and contain:

- 1) Information on measurements that could not be made with the current standardization parameters;
- 2) Information on measurements that were made but where the standardization parameters had to be modified;
- 3) Information on measurements that were needed but where standards were not available or unknown, or where equipment was not available;
- 4) All third party tool QA/QC data, which should be provided as part of the expedition report (according to the IODP Third Party Tools Policy);
- 5) Changes to current operating procedures on given platforms.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to the IOs and IODP-MI.**

*Background to STP Consensus Statement 1003-03: This is an update of the STP Consensus Statement 0908-04. There was some confusion at the 10<sup>th</sup> STP meeting with regard to what should be included in the IO QA/QC expedition reports. This consensus statement is designed to remove this confusion.*

### **STP Consensus Statement 1003-04: Modification of the Scientific Technology Panel Terms of Reference**

The STP recommends that the changes to the terms of reference made during the 10<sup>th</sup> STP meeting be approved in order to make these up to date with the current IODP organizational structure.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to SPC and IODP-MI and *maybe* SASEC.**

*Background to STP Consensus Statement 1003-04: Upon review of the STP terms of reference at our Sydney meeting, they were found to be out of date. Modifications were made to fix the Terms of Reference.*

*IO points of contact: USIO = Greg Myers; ESO = Ursula Röhl; CDEX = Chiaki Igarashi.*

**STP Consensus Statement 1003-05: Approval of Expedition Measurement Plan for IODP Expedition 327.**

The STP approves the Expedition Measurement Plan for the Juan de Fuca Ridge Hydrogeology Expedition as presented by the USIO.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to SPC, IODP-MI and the IOs.**

*Background to STP Consensus Statement 1003-05: During its meeting in Honolulu (March 2009, STP8) STP recommended that the IOs present the measurement plan for each scheduled expedition for each of the different platforms (STP Consensus Statement 0903-05). During its meeting at Sydney, Australia (March 17-19, 2010, STP10), STP reviewed the Expedition Measurement Plans for the upcoming expedition to Juan de Fuca Ridge (327) presented by the USIO representative.*

**STP Consensus Statement 1003-06: Shipboard testing of the LA-ICP-MS on Chikyu**

The STP encourages the use and refinement of LA-ICP-MS analytical techniques to improve calibration of key trace elements that are important petrogenetic indicators for which precise determination is critical in making real-time strategic decisions. STP is confident that careful calibration of key trace elements with well-documented internal and external standards will improve analytical accuracy and precision.

In response to the specific questions on LA-ICP-MS raised by CDEX for STP to address, the STP recommends:

- 1) LA-ICP-MS trace element analysis be conducted on fused glass beads that have first been used to determine major and minor elements by XRF. This removes the need to dissolve the glass bead (and the subsequent dilution factor, which could put some elements below detection using conventional ICP solution analysis) and the major elements can be used as internal standards;
- 2) If no internal standard is available, techniques have been developed to allow quantitative analyses (e.g., Gagnon et al. (2008) *Journal of Analytical Atomic Spectrometry* **23**, 1529-1537. Liu et al (2008) *Chemical Geology* **257**, 34-43).
- 3) Fusion of whole rock powders without a flux is possible, but volatile elements (e.g., Na, Pb) are lost so this should not be done on samples where such elements are needed for scientific investigations.
- 4) Elements that should be quantified by LA-ICP-MS are: the REEs, Y, Ba, Zr, Nb, Ta, Hf, Th, Cr, Ni, Sc, Co, Sr, Rb, Pb.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: Medium**

**STP suggests this be forwarded to CDEX, IODP-MI.**

*Background to STP Consensus Statement 1003-06: In response to STP Action Item 0908-23: Test data from Laser Ablation ICP-MS.*

*A trial LA-ICP-MS test was run onboard Chikyu to measure trace elements for standard samples from AIST (Geological Survey of Japan). CDEX presented the procedure and provided test data at the 1003 STP Meeting. The STP commends CDEX for developing and carrying out seagoing tests of the Agilent Laser Ablation-ICP-MS system on the Chikyu and approves the preliminary testing results of the system. Addition of LA-ICP-MS for trace element analysis of fused beads from XRF major element analysis increases the productivity of the analytical laboratory on board the Chikyu. While the results are very promising for routine analytical trace element work, the Panel notes deviations between accepted values and measured values of La and mid-heavy REE, especially for samples with low (sub-ppm) trace element concentrations.*

**STP Consensus Statement 1003-07: Release of Scientific Technology Roadmap version 1.0.**

STP has developed the Scientific Technology Roadmap version 1.0. STP requests SPC and IODP-MI to approve the release of this document to the IODP community. If approved, the roadmap will be posted on the STP page of the IODP-MI website after the SPC meeting in March 2010.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to IODP-MI, SPC, and EDP**

*Background to STP Consensus Statement 1003-07: STP has developed over the last 2.5 years a technology roadmap that is designed to improve the science that can be conducted using IODP cores and boreholes. This roadmap has been coordinated with that of the Engineering Development Panel (EDP). The STP is beginning to work with the IOs and the funding agencies to devise an implementation plan.*

**STP Consensus Statement 1003-08: Support of field testing of the Riserless Mud Recovery System**

The STP reiterates its support of the field testing of the Riserless Mud Recovery System (RMR) on an IODP platform. The testing plan to use the system at a variety of different water depths is important for the evaluation of the system. The RMR system will allow riserless drilling to greater depths in deeper water. Any test results should be reported back to STP.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: Medium**

**STP suggests this be forwarded to EDP, IODP-MI and IOs.**

*Background to STP Consensus Statement 1003-08: EDP Consensus statement 0907-07 endorsed the field testing of a Riserless Mud Recovery (RMR) system and this was supported by STP Consensus Statement 0908-07 at the Jeju Meeting. At that time, STP asked as part of this*



*consensus statement to be kept abreast of development. At the 10<sup>th</sup> STP meeting in Sydney, Greg Myers (USIO) prepared a presentation to STP regarding possible testing of such a system: the essential elements consisting of cone at the top of the seafloor connected to a seafloor bottom pumping system that moved drilling fluids to the surface via a mud return line. The advantage of this is that a riser is not needed to maintain the fluid return, that the environmental impact is reduced, and that the mud fluid pressures within the wellbore are minimized. Disadvantages are that the system deployment requires ROV support and that there is no blowout prevention in place.*

*It is important to note that this system has already been used recently by the petroleum industry in a number of situations and research is supported by the 'DeepStar' consortium. The estimated cost to test this system on the JR is anticipated to be \$25 to \$30M supported primarily outside of IODP. This would require some minor refitting of the JR to accommodate various components of the system. USIO has carried a feasibility project that suggests this can be carried out to 3650 m with a potential timeline for various tests at increasing water depths through 2015.*

**STP Consensus Statement 1003-09: Potential use of Göttingen Borehole Magnetometer (GBM) for Expedition 330 Louisville Seamounts**

The STP recommends that the deployment of the GBM proceed for Expedition 330 knowing that there are several issues that need to be dealt with. These issues will need to be successfully resolved prior to a mutually agreeable date between the IO and the GBM group.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to SPC, IODP-MI and USIO.**

**Background to STP Consensus Statement 1003-09:** *This consensus statement follows the request from Anthony Koppers Co-Chief scientist for IODP Expedition 330 in using the GBM 3<sup>rd</sup> party tool. A primary scientific object of Exp 330 is in documenting the possible motion of the Louisville hotspot, which requires sampling of high quality paleomagnetic data. Obtaining such data in strongly magnetized igneous rocks requires the use of a calibrated high-resolution magnetometer. The Göttingen group is willing to provide a magnetometer that can be calibrated to the ships relative motion to geographic north allowing for an in situ orientation of the tool independent from the Earth's magnetic field as a reference. The German group managing this tool is willing to deploy this tool during this expedition. They have carried out a few successful on land deployment tests over the last months and are willing to make a person available from their group that is trained in this tools deployment. In addition Jeff Gee who will sail on the expedition has stated his availability to travel to Germany to be trained in the operation and deployment of this tool. However, before this tool can be deployed several issues need to be addressed.*

*1) Centralisers need to be developed. Although the tool was successfully deployed during ODP Leg 197 a subsequent deployment during IODP Exp 305 provided unusable data, likely related to the lack of centralisers.*

*2) Funds for personnel, shipping and insurance costs will need to be secured.*

3) This tool will be deployed following the IODP 3<sup>rd</sup> Party Tool Policy.

**STP Consensus Statement 1003-10: Determination of Formation Factor.**

The STP thanks CDEX, ESO, and the USIO for their written reports on the feasibility of formation factor determination. Considering the differences of platforms and equipment, the experiences of IODP Expeditions 323 and 322, and the needs of the microbiological community, STP recommends the standard measurement of sediment resistivity and estimation of pore fluid resistivity for determination of formation factor for soft sediments (APC/HPCS cores). STP further recommends that this be implemented if a consistency of the measurement across the three platforms is confirmed. How often formation factor is determined (e.g. depth range, sampling intervals) should be decided by the expedition science party.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to IODP-MI and IOs.**

*Background to STP Consensus Statement 1003-10: This consensus statement is related with STP Recommendation 0807-10 Formation Factor Determination, and STP Action Item 1003-?? Cross-Platform Consistency of Formation Factor Determination. IODP-MI has requested advice from STP with regard to the best way to routinely determine formation factor and how to conduct QA/QC on its determination. STP realizes that the IODP Measurements Document will need to be updated if the cross platform test proves to be successful.*

**STP Consensus Statement 1003-11: Preservation of Cuttings from Riser Drilling**

The STP wants to ensure that a drill cuttings archive is kept for each expedition, while allowing the science party flexibility in optimizing shipboard research, and preventing over-curating, which will put undue pressure on the core repositories. Therefore the STP recommends that a Cuttings Flow Plan be included in the Scientific Measurements Plan for each expedition where cuttings are expected to be recovered. The Cuttings Flow Plan must include volumes of archive and working portions, sample intervals, and recommendations on which sample fractions should be curated. STP further recommends that as a guideline, cuttings are sampled every 5 m, the archive portions should be 400 cc, and the working portion 1500 to 2000 cc.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: Medium**

**STP suggests this be forwarded to IODP-MI, the CAB, and IOs.**

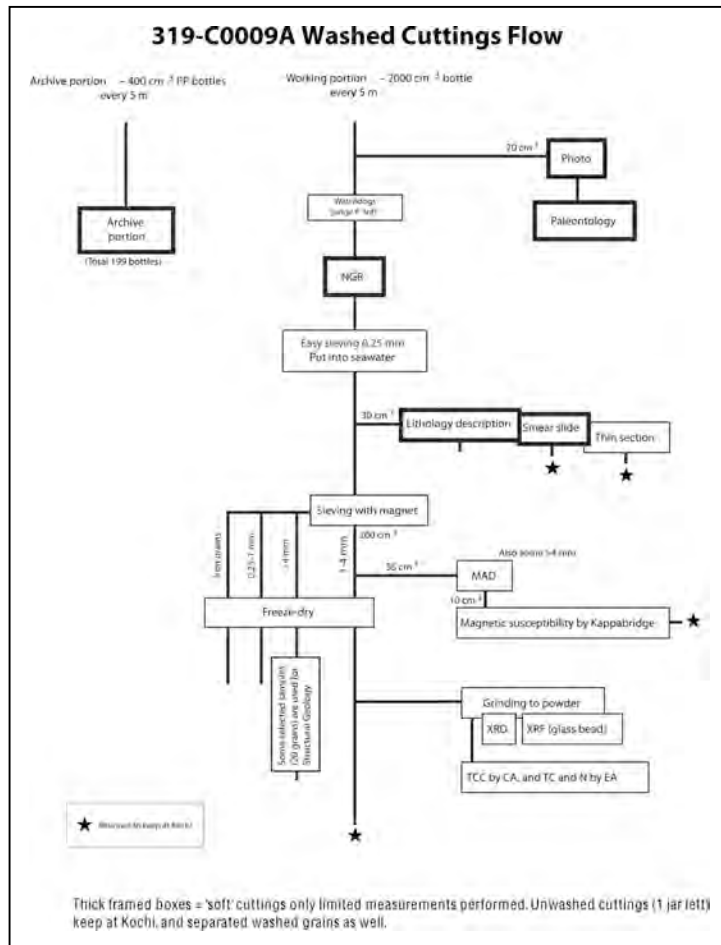
*Background to STP Consensus Statement 1003-11: Drill cuttings policy was originally set according to recommendations by the Drill Cuttings Working Group during the SciMP meeting*

in Nagasaki (2003) and finalized during the SciMP meeting in Boston (2004) as Recommendation 04-06-02. During STP meeting #9 (Jeju) the Kochi Core repository asked STP to revisit the drill cuttings policy in the light of experience by Expedition 319 (see cuttings flow diagram adjacent). Scientists from Expedition 319 recommended that both washed and unwashed cuttings should be archived due to information loss from washed cuttings. STP accepted that recommendation in consensus statement 0908-02. STP#9 reviewed the Cuttings Flow Plan from Expedition 319 (319-C0009A Washed Cuttings Flow), which included storage of an archive portion of 400 cc, and a working portion of 1500-2000 cc, both taken every 5 m. This cuttings flow plan designated specific residues, but not all fractions, for storage at the Kochi core repository. STP consensus

statement 0908-2 did not specifically address which portions should be kept, hence the request for more input by Kochi during STP #10 (Sydney). Because the recommendation is a modification of a standard cuttings policy, Kochi needs input whether this modification should be approved by IODP-MI and/or SPC.

The requirement for a Cuttings Flow Plan, however, is in agreement with Recommendation-3 in the report from the Drill Cuttings Workshop: **Appropriate sampling parameters, such as the sample interval and volume of drill cuttings, should be decided according to the scientific objectives of the expedition.**

This STP recommendation should probably be seen as preliminary, because Roadmap Item B2-8: 'Cuttings analysis for riser drilling' states that 'protocols for handling, describing and curating cuttings should be provided as a handbook; these methods have not been described



under ODP because that program did not do riser drilling.'



### **STP Consensus Statement 1003-12: SCIMPI (Simple Cabled Instrument for Measuring Parameters In-situ) Deployment at Hydrate Ridge Site 1245**

The STP thanks Yoshi Kawamura for his presentation on the proposal for a SCIMPI deployment as a two-day engineering development activity within IODP Expedition 327: Juan de Fuca Hydrogeology. STP finds the deployment and data recovery activities well developed and endorses SCIMPI deployment at Hydrate Ridge Site 1245. STP looks forward to hearing about the deployment activities after Expedition 327 and to seeing data after the first data-recovery operation.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to SPC, IODP-MI, USIO, and EDP.**

*Background to STP Consensus Statement 1003-12: This presentation from Yoshi Kawamura follows STP Consensus Statement 0908-06 which supported SPC's guidelines to automatically set aside platform days during expeditions for other activities, such as APLs or engineering development. EDP received the SCIMPI deployment proposal and endorsed the deployment at the chosen test site assuming that preliminary testing was satisfactory, but also requested feedback from STP on the proposed SCIMPI deployment. During the 10<sup>th</sup> STP meeting, one of the SCIMPI PIs was contacted to obtain more details on deployment and data recovery. It should be deployed following the guidelines set out in the IODP 3<sup>rd</sup> Party Tool Policy.*

### **STP Consensus Statement 1003-13: Open-Water Re-Entry Logging**

The STP thanks Brandon Dugan for his presentation and explanation of open-water re-entry logging. The STP acknowledges this technology as a means to increase logging measurement capability through deployment into an open hole via ROV guidance without going through standard IODP drill pipe. The STP has added this measurement technology to the STP Roadmap.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: Medium**

**STP suggests this be forwarded to IODP-MI and EDP.**

*Background to STP Consensus Statement 1003-13: Increasing the logging capabilities on all platforms has been identified as a need to increase and meet scientific need. One of the primary issues hindering expansion of logging capability is the large diameter of many logging tools that require larger diameter drill pipe. While larger diameter pipe has been identified as a need in the STP and EDP roadmaps, other options are being explored to increase logging capability such as advanced slim line logging tools and open-water re-entry logging.*

**STP Consensus Statement 1003-14: Routine Microbiological Sampling analytical results.**

The STP would like to thank Chiaki Igarashi from CDEX for her presentation on routine microbiology sampling. We acknowledge the efforts of CDEX and KCC to reply to STP recommendation 0908-09 about estimating the cost and time for routine microbiology sampling and storage. STP recognizes that these data are completely new and fundamental for the development of future investigations in this field, and therefore strongly encourages CDEX to publish these results. We encourage CDEX/KCC to examine long-term storage of these samples in liquid nitrogen and to present additional data on these issues at future STP meetings.

**Voting Record: 15 Yes, 0 No, 2 Abstentions (Lin, Hoshino – COI), 0 absent**

**Priority: High**

**STP suggests this be forwarded to IODP-MI, IOs, KCC.**

*Background to STP Consensus Statement 1003-14: This consensus statement follows STP recommendation 0908-09 referencing relevant recommendations generated by the 2003 IODP Microbiology Working Group Report, the IODP Deep Biosphere Workshop held in Vancouver, BC (October 2006) and the manuscript resulting from that workshop (D'Hondt et al. Scientific Drilling.No. 5 Sept. 2007), the Sept. 2007 report to IODP-MI from the Subsurface Life Task Force, and past*

*STP consensus statements including 0708-14, 0807-12, 0807-17, 0807-18, 0903-06, and 0903-07. Following the Subseafloor Life Task Force (SLTF) report at the Edmonton 2008 STP Meeting, STP issued a set of recommendations for routine microbiological sampling on IODP expeditions (including those for which microbiology is the primary scientific objective) so that samples are adequately and consistently preserved for future microbiological analysis.*

**STP Consensus Statement 1003-15: A Cryogenic Magnetometer for future Chikyu operation.**

The STP recommends that a working Longcore Cryogenic Magnetometer be sought for the Chikyu to obtain Standard IODP Measurements. High quality continuous magnetic measurements are central to many issues in ocean drilling, therefore the non-replacement of this capability would be a significant loss to the community.

**Vote: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: High**

**STP suggests this be forwarded to IODP-MI and CDEX.**

*Background to STP Consensus Statement 1003-15: After NanTroSEIZE Stage I operations, the Y- axis sensor on the cryogenic magnetometer lost signal and the system was sent to 2G Enterprises in the US for repair. It was returned during the port-call prior to Expedition 322. However, after returning to Chikyu, all the sensors ceased functioning due to Helium leakage. The system was sent back after Exp. 322 for failure investigation and upgrading to a Liquid Helium-free system anticipating the budget from IODP-MI.*

Shipboard magnetic measurements are a stated IODP Standard Measurement. They are used to determine magnetic polarity and polarity zonations that establish shipboard chronologies, help assess core orientation, assist in making drilling decisions, capture ephemeral properties and are used to assess magnetic potential and reliability for additional post cruise research. The Chikyu contains a state-of-the-art magnetically shielded room and shipboard-produced continuous magnetometer data is fundamental and longstanding component for all IODP expeditions.

#### **STP Consensus Statement 1003-16: 3-D imaging of cores**

The STP would like to thank Mark Knackstedt of the Australian National University for his presentation on the update of technology on 3-D analysis of cores at the pore scale. Volume imaging is useful for assessment of fabric, structural and flow pathway development. It can affect sampling strategy and estimation of original core orientation, and thus has value to IODP science. We are excited about the recent advances in this technology, and hope that the development of the instrument and analyzing software system proceeds forward in a timely manner.

**Voting Record: 17 Yes, 0 No, 0 Abstentions, 0 absent**

**Priority: Medium**

**STP suggests this be forwarded to IODP-MI and ANZIC.**

*Background to STP Consensus Statement 1003-16: Volume imaging is an item in ST Roadmap (ST-14). The medical technology already exists on Chikyu, but its resolution is not enough to identify fine sedimentary structures and pore textures in rocks. In addition, analyzing software for quantitative measurement of 3D images is not available for earth science purposes. The improvement of volume imaging methods are important for quantitative analysis of 3D features of cores. Even 2D X-ray images are helpful for recognizing sedimentary structures such as thin tuff beds or trace fossils. In addition, volume imaging before core splitting is useful for determination of intervals for whole core sampling.*

#### **STP Consensus Statement 1003-17: Hawkesbury Sandstone Field Trip.**

The STP wishes to thank Dr. Marty Young (STP Panel member and local host) for his effort to organize this field trip, and to Dr. Peter J. McCabe from CSIRO for his expert leadership on the field trip to the Royal National Park to examine the sedimentology and sequence stratigraphy of the Middle Triassic Hawkesbury sandstone. During the trip we also enjoyed very much the beautiful scenic sights of the Harbour city, the sexy sandy beach, and the wonderful Aboriginal rock drawings back to 1000 years ago.

**Voting Record: 13 Yes, 0 No, 4 Abstentions , 0 absent**

**Priority: High**

*Background to STP Consensus Statement 1003-17: During the #10 STP meeting in Sydney, Australia, Sedimentologist Dr. Peter J. McCabe organized an excellent pre-meeting field trip for us to the Royal National Park of New South Wales, where occurs the typical Hawkesbury Sandstone sections of Middle Triassic in age. Peter prepared us a detailed field trip guidebook, and introduced us to terrain which was originally believed to represent a large sandy braided river system by most geologists. Following his guide and his argument, many of us start to believe that the Hawkesbury Sandstone likely represented a complex estuarine system. This new depositional model will have strong implications for both predicting the geometry of Triassic sandstone bodies in eastern Australia and for the use of the Hawkesbury sandstone as an analog for sandstone architecture elsewhere in the world. Peter's novel approach to igneous petrology was well received by some in our party.*

**STP Consensus Statement 1003-18: Marty Young and ANZIC.**

The STP expresses its sincere thanks to Marty Young for organizing this very successful meeting in Sydney. In addition to identifying a delightful meeting venue, the panel is extremely grateful for Marty's efforts in providing the panel members with the field trip to the Hawkesbury Sandstone and the delicious seafood banquet. STP also thanks ANZIC for its support of this meeting.

**Voting Record: 16 For, 0 Against, 1 Abstention**

**Priority: High**



#### **STP Consensus Statement 1003-19: Hajime Naruse**

The STP thanks Hajime Naruse for his dedicated efforts to make sure that the quality of IODP sedimentological data were up to standards. His permanent contribution to the debate and his always-calm attitude made him an important component of the core description working group. He surely convinced all STP participants of the value of smear slides and IODP can only wish that the cyclicity observed in the description of smear slides in some expeditions will hopefully level-off in the future. We wish him a very happy post-STP life and a nice uncyclical transition from smear slides to fatherhood.

**Voting Record: 16 Yes, 0 No, 1 Abstentions (Naruse), 0 absent**





#### **STP Consensus Statement 1003-20: Weiren Lin**

The STP thanks Lin-san for his dedicated efforts to the STP and his significant contributions to the physical properties/petrophysics working group. Lin-san's versatility and expertise allowed him to continually expand our scientific drilling horizons from new stress measurement techniques in situ and on cores to microbiology via formation factor evaluation. Not only did Lin-san push forward panel discussions, but he also implemented them as an active member of IODP NanTroSEIZE drilling. STP wishes Lin-san continued success in characterizing stress states in NanTroSEIZE and promises to continue establishing a formation factor protocol, but notes this will be harder without his leadership.

**Vote: 16 Yes, 0 No, 1 Abstentions (Lin), 0 absent**



**STP Action Item 1003-21: Review Panel for the JOIDES Resolution:**

The STP will supply Jay Miller and Greg Myers of the USIO names of experts who should be considered for the Review Panel of Scientists for the JOIDES Resolution that will meet 27<sup>th</sup> June to 2 July 2010. Names will be supplied to the STP Chair who will forward these on as one list. Names of qualified persons along with their expertise areas will be sent to the STP Chair from the panel members by March 31<sup>st</sup>, 2010. The compiled list will be sent on to Jay Miller and Greg Myers by April 1<sup>st</sup>, 2010.

**Priority: High**

**Leads: STP Panel members**

**Deadline: March 31<sup>st</sup>, 2010**

***Background to STP Action Item 1003-21:** At the 10<sup>th</sup> STP meeting, the USIO requested names of qualified persons to review the improvements to the science systems on board the JOIDES Resolution. This review will occur during the Victoria (Canada) port call.*

**STP Action Item 1003-22: Review of the IODP Depth Scale Document**

The STP will review the IODP Depth Scale document version 1.1 and associated materials with the goal to revising this document such that it can be easily understood and implemented. Each STP member will review these documents (supplied by IODP-MI to the STP membership by April 1st, 2010) by July 1<sup>st</sup> 2010 and the STP chair will provide feed back to IODP-MI by July 20<sup>th</sup> 2010 so that this can be discussed at the next STP meeting.

**Priority: High**

**Leads: STP Panel members and the STP Chair.**

**Deadline: July 1st, 2010 and July 20<sup>th</sup>, 2010**

***Background to STP Action Item 1003-22:** The current IODP-MI depth scale document requires revision and updating as feedback from various scientists shows this is difficult to understand. At this time, various depth scales are being used by different expeditions and the conversion between them is not easy to understand. The STP review is intended to make this document easier to understand or to identify qualified members of the ocean drilling community to bring their expertise to this issue.*

**STP Action Item 1003-23: Detection and Control of Contamination Issues.**

The STP thanks EDP and the EDP Microbiology Contamination Working Group for their report and Yoshiyasu Watanabe for his presentation related to understanding and controlling core contamination during scientific drilling. The STP recognizes the need to trace microbiological contamination for QA/QC of core samples especially in riser coring since there is little ODP/IODP experience in this regard. STP will collect information from industrial contacts to be supplied by EDP, and will present a plan for testing tracer at the next meeting (STP #11).

**Priority: High**

**Leads: Morono and Yamanaka**

**Deadline: Next meeting**

***Background to STP Action Item 1003-23:** Drilling fluids contain high levels of active microbial cells and high concentrations of heavy mineral salts (e.g., barium) that are potential contaminants of microbiology and geochemistry, respectively (Action Item 0612-29). STP presented Consensus Statement 0802-06: "Detection and Control of Contamination Issues" and asked EDP to investigate drilling fluids and/or techniques that are less likely to adversely impact interstitial water geochemistry, rock geochemistry, and microbiology. The EDP responded to the STP Consensus and organized Microbiology Contamination Working Group (Rick Colwell and Yuki Morono as STP liaison) at the EDP 7<sup>th</sup> meeting in July 2008. The working group continued to discuss this issue until the EDP 10<sup>th</sup> meeting in January 2010. Then the EDP and working group finalized the discussion and forwarded their report to the STP (EDP Consensus 1001-17).*

**STP Action Item 1003-24: Core Recovery and Quality Report to EDP.**

Upon the request from the EDP, STP will submit a formal report on Core Recovery and Quality before the 11th EDP meeting in July 2010. The report documents a set of examples that illustrate core recovery and quality issues that compromise scientific drilling objectives. Examples include, but are not limited to, alternating beds of chert/shale, carbonates, poorly consolidated sand intercalated with mud, sand/gravel in high latitude oceans, hydrothermal deposits, basaltic lava and sheeted dyke complexes, and fault zones. STP also refers to the IODP-MI scoping study on coring.

**Priority: High**

**Action by:** Lead: Saito (synthesis), Röhl (MSP expeditions), Reichow and Neal (Hard rocks), Schmitt (High latitude oceans and AnDrill), Naruse (Poorly consolidated sands), Miller (Hydrothermal), Saito (Chert, Fault zones), Cedric John (Carbonates)

**Action by: Before #11 EDP meeting (July 1, 2010)**

***Background to STP Action Item 1003-24:** This is an update of the STP Action Items 0903-19 and 0908-28.*

**STP Action Item 1003-25: Next STP vice chair.**

The current STP vice chair is responsible to contact ESSAC to identify the next STP vice chair from the ECORD member countries.

**Priority: High**

**Lead: Saito**

**Action by: End of March 2010**

***Background to STP Action Item 1003-25:** Following the chair rotation scheme, next vice chair of STP should be selected from the ECORD member countries. A vice-chair candidate is requested to attend #11 STP meeting as a regular STP member or observer, then nominated by the panel at the meeting.*

**STP Action Item 1003-26: Coulometer Standards & gas chromatograph procedures.**

Can STP come up with where to get coulometer standards? Can STP help develop standard procedures and calibration for tracers in gas chromatograph. This action is primarily for the USIO.

**Priority: High**

**Lead: STP Panel Members**

**Action by: Next Meeting.**

***Background to STP Action Item 1003-25:** A request came from the USIO on these issues during the 10<sup>th</sup> meeting of the STP.*

**STP Action Item 1003-27: Industry contacts for microbiological contamination of cores issue.**

The STP Chair will contact the EDP chair regarding the industrial contacts for this issue.

**Priority: High**

**Lead: STP Panel Members**

**Action by: March 31<sup>st</sup>, 2010.**

***Background to STP Action Item 1003-25:** This is a follow up to a comment made during the EDP report that STP should be receiving these contacts from the EDP chair.*

**STP Action Item 1003-28: Cross-Platform Consistency of Formation Factor Determination**

The STP requests the three IOs to conduct tests of formation factor determination for soft sediments and to report its results back STP to ensure the data quality of the formation factor routine measurement in near future. STP envisions a testing scenario that uses the same material/core on each platform for cross-platform comparison based on measurement technique. In addition, an evaluation of the impact of measurement frequency should be conducted. Comparisons of laboratory measurements should also be correlated with downhole logging data as available.

**Priority: High**

**Leads: IOs**

**Action by: Next Meeting.**

***Background to STP Action Item 1003-??:***

*This Action Item is related with STP consensus statement 1003-?? Routine Determination of Formation Factor. Currently different methods and different protocols are employed for formation factor determination across platforms. To ensure data quality and consistency, cross-check tests are necessary to confirm the formation factor determinations are generally consistent with each other. The tests should be done by using the same sediments as testing material. At the same time, specific testing parameters such as frequency dependence (Impedance Analyzer 4249A compared to Metrohm 712 Conductometer), probe type (2 or 4-electrode probe), and shape of electrodes also should be examined. In addition, “absolute” resistivity values measured by MSCL need to be discussed and compared with discrete measurements.*

## **Draft Minutes**

**3/17/2010**

08:40

Neal called meeting to order. Introductions, welcome, logistics, and agenda.

08:50

Meeting agenda approved.

Preliminary discussion for next IODP STP Meeting location

- locations proposed are Switzerland or Japan (Sapporo)
- meet late July or early August (before next SPC meeting)
- will return to this discussion on day 3

Panel rotations - will be losing three people after this meeting

Review of agenda

09:10

Kawamura reviewed previous meeting recommendations and consensus statements

09:20

Neal reviewed STP Terms of Reference. We need to amend our terms because they include SPPOC but that no longer exists and because we can communicate directly with the IOs.

Neal proposes that all review Terms of Reference and see where changes need to be made. Saito and Neal will make proposed changes and present for vote. Myers asked why/how STP can communicate with IOs directly now. Neal noted IODP-MI is involved in all communication but IOs can be included in communication for efficiency of information passing. Kawamura just stressed that IODP-MI should be copied on all communication between STP and IOs.

09:30

Saito introduced and reviewed Robert's Rules of Order.

Thomas suggested that we have nametags at meetings to help all with names.

09:35

Neal asked if anybody has any Conflict of Interest (COI) with any items on the agenda. No conflicts identified at this time. All were reminded that if a COI appears at anytime that we will note it in the minutes.

09:40

Hiroshi Kawamura gave SAS Activity Report

- SAS meeting schedule, proposal statistics, submission statistics, proposal distribution, proposed platform distribution
- IODP-MI Tokyo office opened, IODP-MI Sapporo office closed

Hiroshi Kawamura gave SPC Report

- report provided by Filippelli, can pass questions back to Filippelli as necessary
- review of SPC role, review of SPC activities since and including SPC 0908 (Kiel) meeting

- SPC is looking at accommodating more flexible lengths and staffing of expeditions
- Alternate approaches to proposal discussion – streamline by template for presentations, normal watchdogs, add presentation/discussion section of all OTF and SPC proposals by theme and by region
- STP discussed details and meaning of alternate approaches for discussion
- March 10 SPC – discuss and rank proposals, consider forwarding to OTF, discuss status of proposal at OTF, discuss approach to generalized plan for remaining IODP years
- Saito asked about overlap of discussion between SSEP and SPC and how groups are coordinating to fix this. Kawamura said efforts are being coordinated and groups are discussing future options for SAS panel structure

10:00

Meeting break

10:10

Röhl gave the ESO Report

- overview provided to summarize written reports already provided to STP
- IODP Exp 313 drilling and onshore science party completed, 3 sites, overall 80% core recovery in cored interval, preliminary report is out
- IODP Exp 325 is currently drilling, 38 potential sites, ~45 day expedition on *Greatship Maya*, started 11 Feb 2010, coring with two BHAs and also doing some logging, onshore science party starts 2 July 2010
- Neal asked how voids in corals was affecting apparent core recovery on Exp 325; Inwood commented that hopefully logging integrated with coring will help address that as it did in Tahiti
- Thomas asked if onshore parties were using same data/information as normal ship-based parties; Röhl summarized data and moratorium practices

10:30

Myers gave the USIO Report

- expeditions completed and upcoming
- completed: Exp 323, Exp 324, Exp 317, Exp 318
- upcoming: maintenance period, Exp 327, Exp 328, Exp 329, Exp 330
- upcoming: CRISP, Superfast, and Mid-Atlantic Ridge Microbiology are on schedule for 2011
- maintenance period through 5 July 2010, IT upgrades, ergonomics, general laboratory upgrades that are needed, logging system upgrades, addition of some measurements to rig instrumentation system, ODL will do some ship work
- currently operating assuming an 8 month funding model, but looking for alternate funding opportunities
- publication and outreach/education activities during maintenance period are moving forward well
- USIO submitted FY09 Annual Report to NSF in January 2010 (available online)
- Lab and measurement updates – focused on outstanding STP consensus statements
  - 0908-04 (QA/QC) – added QA/QC and Report to Web Tabular Report but looking at new query system that we will see by July 2010
  - Neal reminded that STP only needs to see QA/QC reports when a



- measurement is having a problem
  - Recent problematic measurements – NGR edge effects, core imaging systems, flux jumps in magnetometer (now fixed), discrete analyzer (ammonium analysis not precise)
  - Stoner noted that flux jumps are often situation dependent so we need to keep monitoring them for trouble shooting
  - Neal noted USIO may want to check ammonium standard before rebuilding and fixing machine
  - Are CDEX/ESO capable of making a web interface for QA/QC too? CDEX and ESO think it is implementable
  - Standardization issues - gamma ray attenuation density, NGR, coulometer (low carbonate content), gas chromatograph (tracers), only one high organic material standard, need organic material lean samples
  - Can STP come up with where to get coulometer standards? Can STP help develop standard procedures and calibration for tracers in gas chromatograph?
  - 0908-09 (routine micro-bio measurements) – USIO acknowledges value of the measurements, but cannot make them routine due to lack of funding, if micro-bio community demonstrates need (data/sample requests) perhaps resources could be reallocated, getting a trained microbio scientist sailing is one way to help get samples taken
  - Neal pointed out recommendation is to take routine samples but not to make the measurements
  - Thomas pointed out that even routine sampling could impact other routine sampling and measurements
  - Actions to follow-up on routine microbio sample
    - what time/energy does it take to get a routine m-bio sample? Need hard data/report from IOs (see CDEX Presentation)
  - 0908-11 (microbio contamination) – significant issue and will make efforts to minimize contamination with available resources
  - Protocol for cleaning microbio workspace is established on expedition-by-expedition basis on JR
  - Seems we need comments in QA/QC reports from m-bio people about problems that have occurred or not occurred
  - 0908-13 (SEDIS Support) – all data has been forwarded to IODP-MI
  - 0908-05 (measurement plans) – plans developed in pre-cruise meetings and become the Expedition Prospectus which are published
  - Need to make sure we develop linkage with measurement plan and QA/QC reporting
  - 0908-06 (APL and Engineering Time Scheduling) – implementation plan is being created, hope to have a formal plan by next meeting
- Logging
  - Multisensor magnetometer module – approved by STP, moving forward pending funding

- 0908-03 (MSS) – funding has been found outside of engineering development
- Discussions were revisited about why the MSS was lost; perhaps related to heave or flapper, but discussion continue about it to fix problem
- 0908-12 (Depth Scales – Downhole Logging) – new depth scale will be kept in logging database, depth scale origin is documented, IODP Publications will return to old nomenclature (mbsf, mbrf) as requested by science parties
- 3<sup>rd</sup> Party Magnetometer for Louisville Seamount
  - Goettingen Borehole Magnetometer – successfully deployed on land, centralizers not suitable for offshore, also has a person willing to sail and a member of the science party willing to be trained requirement, co-chiefs request use, would like STP input
  - Need to make sure that we meet the 3<sup>rd</sup> party policy requirements
  - Centralizers don't fit through the BHA and would need to be developed and tested for deployment.
  - Reichow noted there may be some temperature issues with tool based on planning for Exp 312; but we noted this shouldn't be a problem for Louisville.
  - Need information on cut-off date from IO on what is go/no go and get that to the co-chiefs and developer; clear lines as what is needed by those dates.
  - Need a consensus statement on this item (1003-09)
- 3<sup>rd</sup> Party Tool List since Exp 323 was provided (formation factor on 323, fall cone penetrometer on Exp 317). We need to keep track of these and the data they produce.

11:55

Moe presented CDEX report

- IODP Expeditons 319 and 322 – 5 holes, including first riser hole
- Riser drilling to 1600m, cuttings analysis, full wireline logs, coring, WVSP and observatory, mud gas monitoring
- Core-cuttings-log-seismic integration was completed on Exp 319
- Exp 322 C0011 was terminated due to drill bit failure, SET-P pressure measurement was cancelled due to missed interval, wireline logging was cancelled
- Post-expedition activities – moratorium database (big task for riser operations); WVSP data processing (almost finished); CDEX internal review is ongoing and action items are being assigned
- CDEX logging services did LWD and wireline and are being reviewed and actions will be taken
- Developed CCLSI roadmap and detailed tasks including planning for future
- Education and Outreach moving along well
- Chikyū schedule for JPFY10 – drilling Sept 2010-Jan 2011
  - Okinawa (coring, no logging)
  - C0002 Riser (no coring, no logging)
  - C0010, C0002 Riserless Observatory (MWD, observatory)
  - C0011, C0012 Coring (wireline logging?)

- Can we get CCLSI presentation at next meeting? Yes
- Is mud gas monitoring included in CCLSI? Yes
- Still need more WVSP to look at structure for C0002 hole

12:25

Break for lunch. Return at 13:30

13:30

Miller talked about value of Readiness Assessment Team (RAT) evaluation of system at retrofit of ship. NSF has charged USIO with a plan to addresses issues of RAT and sailing scientists. In addition the USIO goes through a 3-year review. Ocean Leadership suggested USIO invite scientists to review measurements for part of this review. Could take advantage of maintenance time to have this review done. Some cores from Adelaide APL will be split and measured in Victoria and this might be a good time for scientists to visit and evaluate equipment after maintenance work is done. USIO requests names of people on STP or others to do the review for USIO. Dates for review are 27 June - 02 July 2010. Suspect it will be approximately 6 people doing the review. Names should be sent directly to Jay Miller who will coordinate with Dave Divins at Ocean Leadership. We will revisit this before end of meeting to make some recommendations to Jay Miller.

13:45

Myers presented on field testing of the riserless mud recovery system

- riserless mud recovery (RMR) = continuous borehole management
- remove cuttings, provide lithostatic and pore pressure compensation, develop mud cake, mitigate fluid flows, limit excess pumping
- existing technology – riser on Chikyu, riserless pump and dupm
- RMR – mud circulation w/o blowout prevention
- completed a feasibility study with industry to put this equipment on the JR, but approach applicable to JR, Chikyu, and MSPs
- JR as presently configured can deploy this mud recovery equipment
- need a deepwater ROV to hook up the equipment
- 2011-2012 want a field trial from and IODP platform in < 3650m water, funded by many organizations much of the money from outside IODP
- 2013-2014 would then be a field trial in >3650m water depth
- 2015 would have ultra-deep hole in hyper-deepwater
- STP can follow up with consensus statement continuing to endorse technology
- Use a standard drill string for operations so normal operations can continue with this system

14:05

Hiroshi Kawamura presented a summary from INVEST

- INVEST report is submitted to Scientific Drilling and should be out next issue
- science plan writing group has been formed and is writing first draft
- new science plan looks a bit different, and it will get reviewed

- SAS in general could/should be involved in the review process; STP would like to be involved in the review to make STP roadmap developments are put into science plan for avenues for development
- STP consensus statement to be drafted that we are willing to review science plan and ensure the plan includes means to include development

14:10

Neal reviewed INVEST Working Group 6.5 on Analytical Needs and Development

- goal – define list of needs that enable transformational science
- summary of analytical measurements, sampling improvements, shipboard facilities, protocols and support necessary

14:30

Neal presented on QA/QC Issues

- how can we use QA/QC task force report to develop way to have IOs efficiently submit QA/QC information to STP
- IO reports should be kept simple emphasizing measurements that could not be made within standards, measurements made that had no standard, all third party QA/QC data
- STP must keep track of QA/QC issues to make sure there is follow-up for future measurement plans
- STP will make a consensus statement on modifications to try to improve efficiency

14:50

Measurement plans – no new information from ESO, USIO only has Juan de Fuca where they are finalizing prospectus but should have all minimum and standard measurements, CDEX is still formulating next expedition so still working on plan. A brief summary of the measurements plan was given and endorsed by STP.

14:55

Yoshiyasu Watanabe presented the EDP report

- presented EDP 1001 consensus statements
- summarized INVEST Implemental and Renewal Process
  - EDP working group spanned as much of the INVEST meeting topics as possible
  - EDP believes many goals of new science plan are obtainable only with new technologies
  - EDP should have formal role in writing new science plan to identify gaps between science goals and feasibility
  - EDP recommends getting engineering expertise involved in proposal development
  - What do IOs feel about engineering development proposals allowing platform-specific developments as suggested by EDP?
  - so far no response from IWG+ or SPWC on comments from EDP
  - STP will continue to share information with EDP regarding our two roadmaps and new science plan

15:20

Hiroshi Kawamura presented time-table for science plan writing committee and timelines for preparing for new drilling program – draft in June 2010, review by Jan 2011, completion by April 2011

15:25

Meeting break

15:35

Yamanaka-san presented on Core Contamination

- presented history on EDP/STP discussions on core contamination and tracers starting from 2006 STP consensus statements
- EDP will provide industry contacts to STP by STP 10<sup>th</sup> Meeting but STP has not received those yet.
- STP needs to follow up to get those contacts (STP chair contacted the EDP chair on March 22 for the details about these contacts)

Watanabe-san gave microbiology contamination report based on EDP report by Thorogood

- series of 11 recommendations based on report by Masui et al. (2008)
- EDP recommends a systematic analysis and planning approach for contamination

Hoshino-san presented comments on EDP WG report

- input from oil industry and mud company on contamination
- changing mud composition is not straightforward and not practical
- 1<sup>st</sup> priority should be assessing severity of contamination
- summarized functions of mud and properties that can be adjusted
- adding tracers to mud is practical approach to assess contamination
- two types of contamination – bacterial and DNA-/RNA-/protein-contamination
- mud cake may help prevent contamination but its formation depends on in situ conditions
- PFT is one of most promising tracers; Morono-san has done cost feasibility for riser drilling
- background PFT could be a contamination issues; Lever conducted experiments during Exp 301 stating background is negligible; Miller pointed out on Leg 201 background contamination was higher
- Miller also noted that costs could be significant to maintain a charge of PFT to continuously use as a tracer
- Can STP start to develop a plan and method to quantify contamination?
- What is the general feedback on ideas from microbiological community?
- STP will generate an Action Item for the Subsea Life Task Force to start developing this plan to quantify contamination in the near term and the long term (Action Item 1003-23)

16:20

Saito presented on core quantity and quality issues

- common theme to EDP and STP
- response to EDP request for information on CQQ
- problems – lithology-dependent, transitional sediments, sea-state dependent

- Marsaglia developed a core photo atlas that is valuable for showing disturbance (ODP Core Photo Atlas)
- STP needs to submit formal report to EDP with examples and expected solutions before 11<sup>th</sup> EDP Meeting (July 2010)
- Action to be led by Saito and STP team to be assembled – Neal can help with hardrocks, Rohl can provide information on MSP expeditions, Schmitt will contribute on what Andriell has done, Naruse can help with mud/sand issues, C. John will be contacted on chert/shale, Miller can help with hydrothermal systems, Saito will do fault zones, Reichow can help with lava/dyke complexes
- Collier pointed out that IODP-MI has done some work on this and Oskvig should be kept in the loop because she has worked on some of this

16:45

Miller gave a presentation on DescLogik

- still no browser program for showing complexity of DescLogik
- developed a set of storyboard/video format teaching aids to show core description processes
- showed first video developed by USIO
- hope to develop 6-8 mini-lessons for teaching/educating users
- need to distribute movie to the panel so all can comment on it

17:00

Meeting adjourned. Will reconvene on 3/18/10 @ 08:30.

**03/18/2010**

08:30

Neal called meeting to order.

08:35

Knackstedt (ANU) gave a presentation on Digital Core Technology

- 3D imaging of pore space of rock
- conventional CT gives resolution of ~0.2 or 0.3 mm, can get porosity maps
- individual pore and grain scale affects porosity, permeability, electrical properties, acoustic properties, so imaging them is important
- previous limitations were imaging technology and computational speed
- digital core analysis is now viable and can integrate disciplines (geophysics, petrophysics, core analysts, reservoir engineer, sedimentologist)
- geological rock typing + petrophysical rock typing + dynamic rock typing + 3D
- goal is to get picture of the rock in 3D at the pore scale
- direct plug to pore scale integration 1.5" plug (20 um resolution) correlatable to 4mm sample (pore-scale resolution)
- examples on pore networks, grain variations, mineralogic variation
- image registration – integrate multiple imaging modes (2D microscopy and 3D scanning) for quality control



- ability to link 2D characterization (mineralogy) to 3D image allows mapping 3D mineralogy of sample
- can make 3D differentiation of different porosity types
- focused ion beam SEM can image at the very fine scale by SEM imaging and ion beam milling sample
- once have pore structure you can solve for pore-scale flow to get permeability and formation factor (based on Archie's  $m, n$  calculations) and anisotropy
- upscaling from 3D pore scale to reservoir scale is a big question/problem – that is where they are working now
- exciting technique that integrates disciplines and integrates scales
- applications to many industries from energy to minerals to contaminant transport
- discussions from STP centered around applicability of techniques to IODP sized cores, linking to log data, mobile systems for use, integration with geochemical characterization

09:50

Meeting break

10:00

Yoshi Kawamura presented on Engineering Development related to STP 0908-06

- history of engineering testing time on IODP platforms
- USIO Logging While Coring (request received), wireline heave compensation (received, Exp 320T), SCIMPI deployment (request received), motion decoupled hydraulic delivery system (anticipating request)
- presented proposal for SCIMPI deployment from URI
- request Sept 2010 full deployment (2 days) during Juan de Fuca exp to 200m depth at Hydrate Ridge Site 1245
- some concern about no formal plan to go back and collect data from the SCIMPI so all we get is you can put it in the hole but no real test on data quality or fidelity
- Dugan and Schmitt will work on a consensus statement with regard to that
- Neal will contact Moran and Kulin for more information on details of data plan for proposed deployment (this was done during the meeting and the input received)
- Reichow and Stoner will develop a consensus statement on the magnetometer (GBM) proposal and the timeline for dealing with note issues

10:30

Lin-san presented on formation factor and resistivity measurements on Chikyu

- info from CDEX report and ESO report based on Exp 322 and 323
- reviewed history of formation factor discussion and what formation factor is
- key is how to do QA/QC on measurements especially if it is to be routine
- Chikyu – measure sediment resistivity with an Agilent 42942A impedance analyzer for sediment resistivity and can estimate pore water resistivity from salinity data; Exp 322 measurements on discrete cubes
- JR – Metrohm 712 conductometer to measure sediment resistivity, estimate pore water resistivity based on salinity; Exp 323 measurements with needle probe
- MSP – measure sediment resistivity with GeoTek MSCL NCR (non-contact resistivity) and estimate pore resistivity assuming is pore water is sea water

- test should be non-destructive is possible and should be easy to do, consistent between platforms, and sampling interval decided by expedition science party
- feasibility for different sediments: soft sediments (HPCS or APC) = almost routine; sediments (ESCS, XCB) = ok for specific expeditions but not for routine measuring; hard sediments (RCB) = possible for measurement but not feasible for routine tests
- more tests before routine measurements are implemented: cross-platform tests using same sediments because measurement tools are different; STP has to revise IODP measurement documents after reviewing tests; IOs need manual for routine tests
- need to look at frequency effects (CDEX), shape of electrodes (CDEX), number of electrodes (CDEX and USIO), examine if absolute resistivity of MSCL is good (relative change is OK) (ESO)
- QA/QC: calibrations with standard sample, measurement direction, quality, full water-saturated samples, temperature equilibration with lab, same temperature conditions for sediment and pore water measurements/determination
- Lin-san, Dugan, and Hoshino-san will develop a consensus statement and action item regarding formation factor
- Exp 323 was using a 3<sup>rd</sup> party tool for sediment resistivity, USIO does not have one.

11:10

Chiaki presented on cryogenic magnetometer and laser ablation

- summarized history of cryogenic magnetometer failures and current situation
- requesting budget from IODP-MI for upgrading to liquid helium-free system (liquid nitrogen)
- still questions of needs for cryogenic magnetometer on Chikyu because facilities at KCC
- request STP to comment on new system for Chikyu using IODP-MI funds
- liquid nitrogen system is new and being developed
- Stoner mentioned liquid helium-free system that doesn't use liquid nitrogen
- Stoner mentioned some interference problems with the liquid helium-free system so it would be worth waiting until tests get done to fix that RF interference
- One question to consider is if system is really required on Chikyu since only operating ~5 mo/yr and often is not coring...so consensus statement should address need of measurements
- Can these measurements be done onshore? Yes if you have the instrument and if nobody has taken lots the core, and there are ephemeral properties
- In time of weakened/lessened budget and potential low amounts of coring on Chikyu, what is the true, immediate value of new system; could have lots of coring in future Chikyu use starting in Sept 2010
- KCC only can measure on u-channels; but sometimes getting u-channels is hard and not a viable substitute for half- or whole-core measurements
- Stoner will coordinate a consensus statement on cryogenic magnetometer with details on discussion and timelines
- Laser ablation ICP-MS on Chikyu to measure trace elements
- can use liquids or solids: liquids require acid digestion, solids have easy prep but both have advantages and disadvantages
- have made measurements on standard rocks from Geological Survey of Japan and showed the REE results

- need light REE values and more basic data for accuracy, need to look at measurement conditions
- request STP to confirm: glass bead approach, priority order of solid or acid fusion, most needed REE and trace elements
- what was being used as the external standard? NIST glass
- STP will generate a consensus statement – Neal will coordinate (Consensus Statement 1003-06)

11:50

Dugan presented on open-water re-entry logging

Myers pointed out that EDP has a similar item

Dugan suggested we add this to STP roadmap

Dugan will write consensus statement (1003-13)

12:00

Break for lunch

13:20

Neal asked all to review changes to STP 9<sup>th</sup> Meeting Minutes. Neal also commented that the STP Terms of Reference have been updated and Neal presented these updates.

Unanimous panel vote to accept STP edits to the STP Terms of Reference.

Motion to approve STP 9<sup>th</sup> Meeting Minutes. Unanimous vote to accept STP 9<sup>th</sup> Meeting Minutes.

13:40

Discussion on Depth Scale document and its implementation. Collier led IODP-MI thoughts on STP's recommendation. IODP-MI couldn't convene a formal review but did put together an illustration helping to summarize the depth scale that has been sent out to the IOs for comments. Document is in the draft stage and will get continual edits. IODP-MI hopes to get more illustrations together for clarification. Eventually they will bring forward information to STP for review.

STP still would like merging of error and corrections document with the depth scale document. STP does not need a change in the scale, but needs clarification in the document to help users (scientists) understand the document and scales. Question about how do we get community feedback and input to depth scale and errors and corrections. Would help STP if we had the draft figures to make comments on how to fix them. STP will work from version 1.1 of Depth Scale document to give feedback.

Issue of implementation of Depth Scale document. All IOs data management systems can capture all the depth scale data. One problem is the scientists are resistant to using new depth scale. After discussions with IOs, IODP-MI is considering a guide that mbsf be used text and graphics and original depth scales be included in Methods section.

Action item for STP to review Depth Scale document V1.1 and make comments. IODP-MI would like STP comments on use of mbsf in main text and figures. STP should think about how big this issue will be to clarify and who are the experts to help come up with a working system.

CDEX pointed out they have a new depth scale problem with riser drilling.

Miller pointed out that different disciplines opt to use different depth scales in publications. The lack of a dictated format or control is creating a problem for publications and editing. This issue needs urgent attention (see Action Item 1003-22)

14:10

Collier presented on minimum metadata for digital imagery (STP Action Item 0908-25)

- reached out to IOs on what metadata they collect and to an image expert on what would be optimal data
- metadata collected by IOs is sufficient for most purposes
- working on making metadata more available which may lead to changes but currently what is being collected is sufficient for SEDIS
- action item can be closed, but we may get updated report at next meeting

14:15

Update on cuttings archiving at KCC (STP Consensus Statement 0908-02) presented by Chiaki

- does KCC need to curate all fractions from SciMP 2004 summary separately?
- Is it one box of cuttings for working/archive and then separate into archive half if half cuttings are lost?
- does KCC need higher resolution cutting samples than 5m?
- does KCC need more sample volume per sample than 400cc?
- is STP recommendation necessary to be approved by SPC and IODP-MI?
- these are the minimum requirements, so on an expedition-by-expedition basis some may require/request that more/less be archived but that is up to the expedition science party
- STP should hear from co-chiefs for specific measurement plans regarding cuttings and volume/spacing of cuttings for archives
- STP will draft consensus statement clarifying what the guidelines are and that it is flexible but it must be presented in measurement plan. Thomas will lead. (see Consensus Statement 1003-11)

14:25

Naruse presented on progress for sets of physical reference smear slides and digital references

- sometimes lack of training can lead to bias or errant interpretation of lithology: need standard references
- expeditions suffer when not enough trained petrographer(s) on expedition; need a tool to help train onboard
- physical and digital references would benefit JR, Chikyu, and MSP
- maintenance of physical references is possible by curator
- working half of cores at KCC are available for production of physical reference set
- need specialist to help produce reference slides

- budget would depend on travel cost for specialists
- Marsaglia and Milliken submitted pre-proposal to produce digital and physical reference materials of smear slides; digital atlas linked with physical sets of 100 smear slides; publish by non-profit society (e.g., SEPM); budget \$150-300k
- creation and maintenance is feasible for physical (small cost) and linked physical-digital (larger cost) sets
- should continue discussion of where to take this when we discuss the STP roadmap

14:45

Chiaki presented on 0908-09 routine microbiological sampling for IODP expeditions.

- focused on establishing onboard process for routine sampling
- time requirement – WRC to -80C freezer (5min); subsampling with syringe to -80C freezer (20-40 min); paraformaldehyde fixation to -20C freezer (20min add reagent, 12 hr fixation, 40 min wash)
- cell counts were shown as function of storage temperature did not show much difference after 2 months
- QA/QC and subsampling – did not observe contamination for HPCS and EPCS; no cross contamination during subsampling
- KCC still working on RMS trial cores, DNS/RNA stability, QA/QC subsampling, and long-term (10+ yrs) storage for future use
- noted the importance of this but still have resource issues associated with it
- STP will encourage publication of these results and provide a statement on the results

15:05

Discussion of DescLogik video provided by USIO. Some of the screen details were hard to see and understand. Sometimes the mouse movement is not in sync with the text and that needs to be scripted better. Future versions will have more detailed information and less emphasis on the dynamic video.

15:15

Discussion of Koppers Expedition 324 Evaluation.

- Miller commented thin section turnaround time should be 24 hrs
- DescLogik predefined intervals is a problem – Miller said the database has some flexibility and you need to have some idea of workflow; did not have a visualization tool as of 324, so people took notes on paper and then entered in paper. That is an acceptable workflow. Fear about writing by hand is that some of that information may get lost. Want new ways to make sure all data are captured. USIO is working on value lists for lithology names to avoid complications with typos in names. Implemented a snap-to tool to increase ease in selecting intervals. Summary is Koppers' DescLogik points have all been addressed now by USIO.

15:30

Thomas inquired about request to IODP-MI on taxonomic name lists. IODP-MI said they are waiting on two more responses and then will compile a list in a database for the IOs. STP needs an official update at the next meeting.

15:35

Meeting break

15:55

STP Roadmap discussion led by Saito; began with overview of roadmap history

- have developed a roadmap and now must work on implementation
- goal is to have Version 1.0 by end of STP 10<sup>th</sup> meeting and release on IODP website
- will have breakouts at this meeting to finalize spreadsheet and document based on INVEST, EDP roadmap, digital core technology, open water logging, physical/digital smear slide references, etc.
- develop a consensus statement on implementation of roadmap
- breakouts need to prioritize items for each working group – think about what are 1-2 transformative improvements
- may also want to send general guidance to other groups like IWG+
- need to develop strategies to approach funding agencies to implement portions of the roadmaps
- must state prioritization and criteria for prioritization
- EDP has developed a process to get proposals for development and present highly ranked ones to IODP-MI; if included in annual plan money can get allocated
- Young inquired if there is a means to get industry involved in funding technology
- should consider that we are entering a new program phase so can develop new models for funding
- another model may be university consortia
- consider if some measurements/techniques are outdated and could be removed to make funds available for evolving needs

16:30

Saito provided a summary of actions items and consensus statements that need to be drafted so far and who would write drafts

16:40

Meeting adjourned. All to review roadmap, work on consensus statements, and action items.

## **03/19/2010**

08:30

Neal called meeting to order. Groups will breakout to work on ST Roadmap and prioritize items. Will reconvene as a panel at 11:00.

11:00

Neal called meeting to order. Each working group presented summary of high quality/ high priority measurements on the Roadmap.

11:40

General discussion based on presentations. Seemed one overarching theme between the groups was the need for enhanced core recovery and quality, which also overlaps with high priorities of

EDP. Should develop a consensus statement of the overarching theme of what to implement first and address how implementable the theme/techniques are. Need to include how this theme of better cores and core recovery overlaps with comments expressed at INVEST.

11:55

Neal presented ideas on ST Roadmap implementation.

- EDP model through IODP-MI, equipment proposals to funding agencies, industry, university consortia, soliciting donations (industry, foundations, individuals, etc), reallocation of base budget, joint implementation of STP/EDP roadmaps, ICDP/NASA/etc collaboration

12:00

Break for group photo and lunch. After lunch return to working groups and finalize roadmap updates quickly and then do consensus statements, recommendations, action items, rotations, etc.

1:30

Breakout groups will continue to add E=existing, M=modification, I=innovation to items on the Roadmap.

2:00

Neal presented consensus statements/recommendations and action items for review by panel and vote, review of panel rotations and panel expertise, and to finalize dates and location of the next meeting.

Note on 1003-04 Consensus Statement – STP will use one point of contact at each IO: USIO = Greg Myers, ESO = Ursula Rohl, CDEX = Chiaki Igarashi.

Note on 1003-10 Consensus Statement – STP may have to update the IODP Measurements Document pending the results of a cross-platform test and will undertake this update as necessary.

Note on 1003-11 Consensus Statement – Thomas noted that some of the problem/concern is to address how much of the residue of working half cuttings need to be kept; originally only some of the residues were noted to be kept (based on plan for Exp 319) but should all residues be kept is the question. This is likely something to be discussed by the science party.

Note on 1003-14 Consensus Statement – Lin and Hoshino abstained because they have a COI as they are from KCC.

Note on 1003-17 Consensus Statement – Abstentions: Young (COI due to inclusion in CS), Schmitt and Krastel (did not attend field trip).

Note on 1003-18 Consensus Statement – Abstentions: Young (COI due to inclusion in CS).

Note on 1003-19 Consensus Statement – Abstentions: Naruse (COI due to inclusion in CS).

Note on 1003-20 Consensus Statement – Abstentions: Lin (COI due to inclusion in CS).

17:05

Consensus Statements and Action Items completed. Reviewed panel rotations. Noted that after 1008 meeting we will be lacking in sedimentology and hydrogeology representation.

Location and timing of the 11<sup>th</sup> STP Meeting. One option is Geneva, Switzerland with Gorin as host. Other option is Sapporo, Japan with Yamamoto as host. Gorin noted that he has to contact tourism organization because late July/early August is high tourism season in Geneva. Gorin can check feasibility in next 7-10 days. Hiroshi Kawamura made a short presentation on Sapporo. We are tentatively selecting the 1<sup>st</sup> week in August 2010 (e.g., 4-6 August) as the time. Gorin will follow up soon with availability in Geneva and then we will have an email vote.

17:20: 10<sup>th</sup> STP Meeting adjourned.



**Final Agenda**  
**10<sup>th</sup> Meeting of the IODP Scientific Technology Panel**  
**17-19 March 2010**  
**Sydney, Australia**

**Local Host:** Dr. Martin Young (Martin.Young@csiro.au)  
CSIRO Petroleum Resources – North Ryde

**Day 1, Wednesday 17 March: Start 8:30 am**

1. Welcome, meeting logistics, safety, introduction, Robert's Rules, COI ([Neal](#), [Saito](#), [Young](#))
2. Approval of meeting agenda
3. Approve Minutes from STP Meeting #9
4. (a) Preliminary discussion of next meeting locations and dates – proposal: Sapporo, Japan. Dr. Masanobu Yamamoto of Hokkaido Univ, ex-STP member, will be able to be a local host;  
(b) panel rotations.
5. Review of the STP Terms of Reference – education of new (and old) members.

6. Review status of previous meeting action items and recommendations ([IODP-MI](#), [Neal](#))  
Action Items ([Neal](#)):

*STP Action Item 0908-21: Smear Slide Reference Materials.* ([see Item 25](#))

*STP Action Item 0908-22: Portable version of DESClogik for STP testing.* ([see Item 17](#))

*STP Action Item 0908-23: Test data from the Impedance Analyzer and Laser Ablation ICP-MS*  
([see CDEX Report](#)).

*STP Action Item 0908-24: Formation Factor measurement on MSPs.* ([see Item 19](#))

*STP Action Item 0908-25: Required Metadata for Digital Images.* ([see Item 23](#))

*STP Action Item 0908-26: EDP White Paper input.*

*STP Action Item 0908-27: Taxonomic Name Lists.*

*STP Action Item 0908-28: Core recovery and quality report to EDP.* ([see Item 16](#))

*STP Action Item 0908-29: Use of cores after freezing using the “magnetic technique”.* ([on hold until next meeting](#))

*STP Action Item 0908-30: Measurements of Formation Factor or sediment resistivity in Exp 323 and 322.* ([see Item 19](#))

*STP Action Item 0908-31: Discussion on Formation Factor Determination.* ([see Item 19](#))

Consensus Statements ([IODP-MI](#))

*STP Consensus Statement 0908-01: EDP Report and White Paper and STP input.*

*STP Consensus Statement 0908-02: Preservation of Cuttings from Riser Sites.* ([see Item 24](#))

*STP Consensus Statement 0908-03: Magnetic Susceptibility Sonde (MSS).* ([see Item 11](#))

*STP Consensus Statement 0908-04: Expedition QA/QC Reporting.* ([see Item 13](#))

*STP Consensus Statement 0908-05: Approval of Expedition Measurement Plans.* ([see Item 14](#))

*STP Consensus Statement 0908-06: Reservation of platform time for non-expedition-specific purposes.* ([see Item 18](#))

*STP Consensus Statement 0908-07: Field Testing of the Riserless Mud Recovery System.* ([see Item 10](#))

*STP Consensus Statement 0908-08: IODP-MI Efforts to Integrate Engineering Activities.*

*STP Recommendation 0908-09: STP Recommendations for Routine Microbiological Sampling on IODP Expeditions.*

*STP Consensus Statement 0908-10: EDP Liaison and Microbiology Contamination Issues.* (**see Items 15 and 16**)

*STP Consensus Statements 0908-11: JOIDES Resolution Microbiology Contamination Issues.*

*STP Consensus Statement 0908-12: Depth Scale Terminology Update.* (**see Item 22**)

*STP Consensus Statement 0908-13: Support for the SEDIS project.*

7. SPC Report ([Filipelli?](#)).
8. SAS Activity: SSEP, EDP ([IODP-MI](#)).
9. Consideration of issues from routine reports, supplied pre-meeting, from IODP-MI, SPC, lead agencies, & IOs; discussion focused on issues raised by Panel Members:  
[ESO](#) Report  
[USIO](#) Report  
[CDEX](#) Report  
(formal presentations required as requested at the 0908 meeting)  
Request for an STP Review of the JR during maintenance in 2010 ([Jay Miller](#))
10. Update on Field Testing of the Riserless Mud Recovery System – STP Consensus Statement 0908-07 ([Myers?](#) [IODP-MI?](#))
11. Update on MSS replacement and MMM tool development from LDEO - STP Consensus Statement 0908-03. ([LDEO](#), [IODP-MI](#))
12. Report from the INVEST Meeting ([Neal](#)).

#### **12:00 – 13:30 LUNCH**

13. Implementation of the QA/QC Taskforce Report and Review of expedition QA/QC reports ([IODP-MI](#), [CDEX](#), [ESO](#), [USIO](#)).
14. Presentation of Measurement Plans for the upcoming expeditions ([CDEX](#), [ESO](#), [USIO](#)).
15. EDP Report ([EDP Liaison](#))
16. Core Contamination and Core Quality Issues;  
(a) Review of past STP actions/recommendations on Core Contamination ([Yamanaka](#), [Hoshino](#))  
Review of EDP Contamination Working Group report and drafting of actions for it ([All](#))  
Review of Core Quality Issues and input to EDP ([Saito](#)).
- (b) Routine Microbiology Sampling and implementation of STP Recommendation 0908-09. Discussion of problems and solutions to these ([IODP-MI](#), [IOs](#), [plus review of SPC Consensus Statement on this issue](#)).
17. DescLogik Presentation – STP Action Item 0908-22. ([USIO](#))

#### **Days 2, Thursday March 18: Start 8:30 am**

18. 3-D Imaging of Cores at the Australian National University ([Senden](#))
19. Review of Ship Time for Engineering Testing - STP Consensus Statement 0908-06. ([Kawamura](#))

20. Formation Factor Issues - STP Action Items 0908-24, 30, 31 ([Lin](#))
21. Use of the Cryogenic Magnetometer on the Chikyu – see Background Information below. Laser Ablation ICP-MS testing on the Chikyu ([Igarashi](#)).
22. Open water logging - A technique to use large diameter logging tools without use large diameter drill pipe ([Dugan](#))
23. Update on revision of the Depth Scale document and its implementation ([IODP-MI](#), [IOs](#)).
24. Update on protocols for recording the minimum metadata for digital imagery (STP Action Item 0908-25)  
Update on Taxonomic Name Lists for micropaleontology (STP Action Item 0908-27) ([IODP-MI](#), [Collier](#)).
25. Update in cuttings archiving at KCC (STP Consensus Statement 0908-02) and review of the IODP/STP Cuttings Document. ([CDEX/Kochi Core Rep](#))
26. Update on progress towards establishing sets of physical reference materials of smear slides + digital references ([Naruse](#), [IODP-MI](#)).

#### **12:00 – 13:30 LUNCH**

27. STP Roadmap Implementation. Discussion of how to implement the STP Technology roadmap. STP has spent a lot of time and effort in putting together it's technology roadmap. Now we would like to take this to the next stage and try to start implementing it.  
**GOAL:** As the funding agencies cannot be present at the STP meeting, the goal is to devise implementation strategies that can be presented to the funding agencies during the SPC meeting.  
Presentation of the STP Roadmap ([Saito](#)).  
Discussion and drafting of implementation plan ([Neal](#)).

#### **DAY 3, Friday March 19: Start 8:30 a.m.**

Continuation of Item 27

#### **12:00 – 13:30 LUNCH**

28. Panel Rotation
29. Select Meeting Location and determine preliminary agenda
30. Finalize Consensus Statements and Recommendations

### **Background to Agenda Item 21**

The Cryogenic Magnetometer onboard Chikyu is out of order after Stage 1 and is in need of repair or an upgrade to a Liquid Helium-free system anticipating the budget from IODP-MI. However, the necessity of the system onboard Chikyu has been questioned in relation to:

- Data relevance for spot coring operations
- Maintenance and support during non-operation time
- Facilities available onshore for setup and measurement of similar data

We, CDEX, ask STP for whether this measurement data is necessity onboard or not, even though this is stated as an IODP Standard Measurement for all IODP vessels.

After Stage I operations, the Y- axis sensor on the cryogenic magnetometer lost signal and the system was sent to WSGI in USA for repair. It was returned during the port-call prior to Expedition 322. However, after returning to Chikyu, all the sensors ceased functioning due to Helium leakage. Discrete samples were measured using the spinner magnetometer onboard, but no continuous remanent magnetism data can be measured on Chikyu at this point. The system was sent back to US after Exp. 322 for failure investigation and for upgrading to a Liquid Helium-free system anticipating the budget from IODP-MI.

This particular measurement is stated as IODP Standard Measurement, used especially to determine paleomagnetic polarity zones to assist establishing shipboard chronologies for stratigraphic sections. If such shipboard-produced continuous magnetometer data is fundamental for all IODP expeditions, or if Chikyu needs the capability to carry out expeditions of the sort the JOIDES Resolution routinely undertakes, a Cryogenic Magnetometer is necessity onboard Chikyu.