4th Meeting of the
IODP Scientific Technology Panel (STP)

7th - 9th December 2006

Hilton San Francisco,
San Francisco, California, U.S.A.

DRAFT MINUTES

Meeting participants:

Name (*chair, **vice-chair)	**E-mail**	**Status**	**Affiliation Notes**
Members:			
Ahagon, Naokazu	ahagon_at_mail.sci.hokudai.ac.jp	M	STP
Basile, Christophe	cbasile_at_ujf-grenoble.fr	M	STP
Castillo, Paterno	pcastillo_at_ucsd.edu	M	STP
Christensen, Beth	christensen_at_adelphi.edu	M	STP
Colwell, Rick	rcolwell_at_coas.oregonstate.edu	M	STP
Ge, Hongkui	gehk_at_cea-igp.ac.cn	M	STP
Ikehara, Minoru	ikehara_at_cc.kochi-u.ac.jp	M	STP
Iwai, Masao	iwaim_at_cc.kochi-u.ac.jp	A	STP (alternate for Suzuki)
Johnson, Paul	johnson_at_ocean.washington.edu	M	STP
Kasahara, Junzo	junz_kshr_at_ybb.ne.jp	M	STP
Korja, Annakaisa	annakaisa.korja_at_helsinki.fi	M	STP absent
Lee, Youn Soo	leeys_at_kigam.re.kr	M	STP
Lovell, Mike *	mtl_at_leicester.ac.uk	M	STP
Neal, Clive **	neal.1_at_nd.edu	M	STP
Nunoura, Takuro	takuron_at_jamstec.go.jp	M	STP
Okada, Makoto	okada_at_mx.ibaraki.ac.jp	M	STP
Sakamoto, Tatsuhiko	tats-ron_at_jamstec.go.jp	M	STP
Sakurai, Shinichi	shinichi_sakurai_at_oxy.com	M	STP absent
Suzuki, Noritoshi	suzuki.noritoshi_at_nifty.com	M	STP absent
Villinger, Heinrich	vill_at_uni-bremen.de	M	STP
Wheat, Geoff	wheat_at_mbari.org	M	STP Local host
Guests, Liaisons, and Observers:			
Allan, Jamie	jallan_at_nsf.gov	L	NSF
Becker, Keir	kbecker_at_rsmas.miami.edu	L	SPC
Blum, Peter	blum_at_iodp.tamu.edu	L	USIO
Eguchi, Nobuhisa	science_at_iodp-mi-sapporo.org	L	IODP-MI
Brewer, Tim	tsb5_at_le.ac.uk	G	ESO
Fox, Jeff	fox_at_iodp.tamu.edu	G	USIO
Gaillot, Phillipe	gaillotp_at_jamstec.go.jp	L	CDEX
Higgins, Sean	sean_at_ldeo.columbia.edu	L	USIO
Inwood, Jenny	ji18_at_leicester.ac.uk	L	ESO
Janecek, Tom	tjanecek_at_iodp.org	L	IODP-MI
Kawamura, Yoshi	kawamuray_at_jamstec.go.jp	O	CDEX
Kuramoto, Shin'ichi	s.kuramoto_at_jamstec.go.jp	O	CDEX
Kryc, Kelly	KKryc_at_iodp.org	L	IODP-MI
Larsen, Hans Christian	hclarsen_at_iodp-mi-sapporo.org	L	IODP-MI
Miville, Bernard	bmiville_at_iodp-mi-sapporo.org	L	IODP-MI
Moe, Kyaw Thu	moe_at_jamstec.go.jp	L	CDEX
Nam, Seung Il	sinam_at_kigam.re.kr	O	Korea IODP
Röhl, Ursula	uroehl_at_allgeo.uni-bremen.de	L	ESO
Shiraki, Masahiro	shiraki_at_jamstec.go.jp	L	CDEX
Söding, Emanuel	esoeding_at_iodp-mi-sapporo.org	L	IODP-MI

EXECUTIVE SUMMARY

The STP forwards the following recommendations, consensus statements, and action items to the SPC or the IODP-MI as appropriate, and for distribution to the IOs as required. STP suggestions for whether items should be forwarded to SPC and/or IODP-MI are indicated, as are priorities for action items, Brief overviews/background are provided where appropriate in italics.

Recommendations

STP Recommendtaion 0612-01: VCD/Lithology
The STP wishes to thank members of the VCD/Lithology working group for their efforts to develop a common solution for a VCD process and common lithologic classification, and Bernard Miville for presenting the results of the meeting. The STP supports the working group's recommendations, and in order to avoid a proliferation of lithologic classifications and to maintain some link with lithologic representations STP recommends the following:

- All IOs should agree on a limited set of common lithologic classifications; science parties can then select from this restricted set of classification schemes, which they can modify if they desire to do so, in order to fit their respective expedition objectives.
- The selection of a limited number of lithologic classification schemes is a complex issue and advice from experts from existing petrologic databases (e.g., IUGS, GEOROC, PetDB) should be sought.
- Lithologic names must be distinguished as either descriptive or interpretative in the database. The STP requests feedback prior to the start of NantroSEIZE.

3 abstentions (Neal, Villinger, Lovell); 2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to IODP-MI

Background to STP Recommendation 0612-01: The IODP-MI working group, including Clive Neal as STP liaison, recommends the following: (1) Observable parameters (texture, grain size, etc.) need to have the same name, units and definition for all IOs. (2) Lithology name always needs to be collected with the lithologic classification it came from. (3) The choice of lithologic classification should be expedition specific and driven by science and not IO specific. (4) All VCD data needs to be collected electronically. (5) VCD data needs an XML-based exchange format, (6) All IOs need to agree on a basic set of graphic representations for the lithology names, (7) Lithology names should never be deduced automatically but be entered by the scientist.

Consensus Statements

STP Consensus 0612-02: Report from CDEX on feasibility study of Measurements at High Pressure and Temperature.
STP welcomed the Report by Dr. Philippe Gaillot on Measurements at High Temperature and Pressure. STP also welcomed the presentation by Junzo Kasahara on measurements of shear wave velocities at high temperatures and pressures. There were several questions raised and STP urges further discussion of these issues, as listed below, by the IOs and IODP-MI, as

appropriate, and that CDEX report back to the next STP meeting.

2 absent (Korja, Sakurai)
Priority: Medium
STP suggests this be forwarded to IODP-MI

Background to STP Consensus 0612-02:

1. We recognize the need to have the capability to measure the in situ seismic properties of returned core samples in order to compare with downhole logging data. There was discussion of whether the ultimate high temperature/pressure measurements must be done at sea or in shore-based laboratories.

2. One option discussed was if there is need for at-sea seismic property data, could this be satisfied by a small low temperature/pressure system (to close cracks in samples), with high temperature/pressure measurements being made ashore.

3. These issues raise a possible broader question; i.e., should there be an established criteria for distinguishing at-sea versus ashore measurements. Possible criteria include.

a. time-dependent samples
b. need for real-time feedback of data that would impact operations during expeditions.
c. safety for shipboard party.

Further background is provided in a previous STP Consensus 0606-08.

STP Consensus 0612-03: ESO Temperature Tool
STP recommends that ESO upgrades its currently used downhole push-in temperature tool to an absolute accuracy of 0.01˚C and a resolution of 0.001˚C. This must be accomplished before the New Jersey Expedition.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to SPC and IODP-MI

Background to STP Consensus 0612-3: A previous *STP Consensus (0606-11: ESO Temperature Tools) was forwarded to IODP-MI requesting ESO to consider the draft T and P accuracy document when deciding which temperature tool to lease for drilling the NJ Transect. STP encourages ESO to explore existing downhole tools used in the program in order to improve resolution and accuracy of its previously used push-in BGS temperature tool. The panel asked ESO to report back on this issue at the next meeting as the platform for the New Jersey Margin will be determined by then. ESO reported to STP in San Francisco requesting advice on accuracy and resolution and this new Consensus Statement addresses these requirements specifically. The present tool is unacceptable given the 0.1°C resolution and absolute accuracy of 0.5 °Cbecause normal geothermal gradients are such that data from this tool may provide ambiguous result and small temperaturedata loggers with much higher resolution (e.g. 0.001°C) and accuracy (up to 0.01°C depending on calibration) are readily available as off-the-shelf items at moderate cost.. In addition the planned holes will be in close vicinity of the ODP Leg 150 where downhole temperature data analysis of holes at site 903 show a dramatic warming of bottom water temeperatures between 6 and 10°C within the*

last 50 to 150 years (Fisher, A., Von Herzen, R. P., Blum, P., Hoppie, B., Wang, K., Evidence may indicate recent warming of shallow slope bottom water off New Jersey shore, EOS, Trans. Am. Geophys. Union, 80: 165, 172-173, 1999). High quality downhole temperature measurements in the planned holes off New Jersey will help to support or refute the hypothesis of Fisher et al.

STP Consensus 0612-04: Uniform depth scale
STP receives the report from the Uniform Depth Models Meeting (Sept., 2006), and acknowledges the participants to this meeting for their work and B. Miville for his presentation. The STP appreciated the effort in clarifying depths definitions and implementation. The STP supports the main principles and definitions of depth scales. Discussion of the report and presentation led to comments and suggestions for continued investigation. The STP requests feedback on these comments (see Background for details) and suggestions prior to the start of NantroSEIZE.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to IODP-MI

Background to STP Consensus 0612-04: uniform depth scale

Discussion on the report and presentation generated the following comments and suggestions:
1) Travel time of seismic waves data (such as MCS, 3D-seismic, VSP and check shots use time in ms for profiles) can be used as a depth scale, if a relevant depth model of seismic velocities is available. Recent data show quite good consistency between meter and ms for crustal structure. Considering those, it is necessary to use time in depth scale with meter, though there is necessity of some interpretation for the relation between reflection records and drilling data.
2) Track the evolution of apparent depth scales and depth maps (i.e., to include post-cruise data).
3) Define a vertical depth scale below sea floor which includes and uses hole deviation measurements (that includes dip (deviation from vertical) and azimuth) to calculate true depths. .
4) Encourage the working group not only to define a system for tracking errors sources, but also for quantifying errors such as wire elongation, pipe dilation, water depth measurements
5) For core depths and logging depths, to indicate the locus of measurement on the side of or centered in the core/hole
6) Curation depth in ODP was not regarded as depth scale in the meeting. The depth of discrete samples and shipboard measurements, because length and intervals in the section often changes during core-processing (sectioning, splitting, sampling, and archiving), are necessary to record intervals of shipboard measurements and samples taken in the section with depth.

STP Consensus 0612-05: Depth scale as a minimum measurement
The STP recommends that depth is a minimum measurement. This includes any measurement used to define depth. The STP requests feedback prior to the start of NantroSEIZE.

2 absent (Korja, Sakurai)

Priority: High
STP suggests this be forwarded to IODP-MI

Background to STP Recommendation 0612-05:The only referred depth measurement in the IODP measurement document is drilling depth as a standard measurement. Other depth scales include water depth measurements, length of wireline, hole deviation, logging tool acceleration (when applicable), and more generally any measurement used to define any depth scale used during a given expedition.

(see http://www.iodp.org/index.php?option=com_docman&task=doc_download&gid=1195 for reference to IODP Measurements Document)

STP Consensus 0612-06: Digital taxonomic dictionary
STP supports the formation of the IODP ad hoc Paleontology Coordination Group. STP participation should be included in this group, as its mission is distinct from the STP Paleontology Working Group.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to IODP-MI

Background to STP Consensus 0612-06: From Paleontology WG 2004 Report Recommendation PALEO-3: Taxonomic Dictionaries with stratigraphic databases IODP must coordinate their efforts regarding digital taxonomic dictionaries and cyber atlases and related issues with other national and international initiatives such as CHRONOS, NEPTUNE and et. al. The Paleontology Working Group recognizes the importance of international cooperation and interaction among the IOs and the micropaleontologists community and encourages collaborations with IMRC curators to develop these dictionaries to be used on the IODP drilling platforms The microfossil groups to be covered should include calcareous nanofossils, planktic foraminifera, benthic foraminifera, diatoms, silicoflagellates, radiolarians, and palynomorphs (dinoflagellates and pollen). The taxonomic dictionaries for the Cenozoic and Mesozoic should be updated and expanded on a regular basis (e.g., at least once per year).

STP Consensus 0612-07: Temperature and pressure resolution, accuracy and calibration
STP asks IODP-MI to circulate the draft report on resolution, accuracy and calibration of temperature and pressure measurements (STP Consensus 0606-13) among the IOs and asks the IOs to report back to STP at the next meeting.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to IODP-MI

Background to STP Consensus 0612-07 This is a follow up request to STP Consensus 0606-13 to IODP-MI to circulate a draft report to the IOs for comment and feedback at the next STP meeting.

STP Consensus 0612-08: LA-ICP-MS
The STP wishes to thank Philippe Gaillot for presenting the results of the evaluation of *in situ* analysis using the LA-ICP-MS system onboard the *Chikyu*. The STP notes that the laser ablation unit (New Wave 213 nm) performed on the ship (while in transit) as well as it did while on shore, but recognizes that more tests of the ICP-MS are needed to ensure the successful interface with the laser ablation unit. The STP requests that CDEX report further LA-ICP-MS test results at future STP meetings.

2 absent (Korja, Sakurai)
Priority: Medium
STP suggests this be forwarded to IODP-MI

Background to STP Consensus 0612-08: This is a continuing item and the presentation is in response to STP Consensus 0606-15 requesting CDEX for ICP-MS test results. Prior to that, SPC Consensus 0603-12 received STP Consensus 0601-2 regarding installation of laser-ablation inductively-coupled plasma mass spectrometers (LA-ICP-MS) on IODP platforms.

STP Consensus 0612-09: STP Mandate.
STP discussed the panel mandate at the December 2006 STP meeting and agreed that it did not need any modification at this time. The current mandate allows STP to restructure its two meetings per year to address immediate issues at one of its yearly meetings, while dealing with future issues and planning at the other (STP Consensus Statement 0612-12). Any specific changes will be addressed after the SASEC working group on SAS Review reports its findings.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to SPC

Background to STP Consensus 0612-09: In order to better serve the community, STP discussed if its mandate should be revised.

STP Consensus 0612-10: STP Working Group Reports
STP will continue to have three working groups within its structure: Chemistry & Microbiology (CMWG); Petrophysics (including Physical Properties, logging, downhole measurements, paleomagnetism, and underway geophysics); Core Description (including Micropaleontology).

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to SPC

Background to STP Consensus 0612-10: In order to better serve the community, STP also discussed if its internal working group structure should be revised.

STP Consensus 0612-11: Operations Review Task Force
STP welcomes the presentation by Thomas Janecek on how the Operations Review Task Force may proceed in future, together with the opportunity for STP to become more involved in considering Expeditions in terms of Scientific Technology. STP agrees with the proposal that the VP Science Operations will report annually on expeditions reviewed in that time frame (in line with the proposed STP Roadmap agenda), and that where appropriate IODP-MI should request specific advice from STP and participation in individual reviews.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to SPC and IODP-MI

Background to STP Consensus 0612-11: Thomas Janecek (IODP-MI-VP) presented how the Operations Review Task Force has worked in the past, how it will probably work in the future and suggested some possible mechanisms for STP to get involved. Discussion took place and the Panel explored the most effective role for STP in the process, such that STP is able to monitor the scientific measurements and technological aspects of Expeditions and provide advice and input to both IODP-MI and IOs in a timely and efficient manner.

STP Consensus 0612-12: STP Meeting Format
STP agrees to change the format of its twice-yearly meetings in the following way: both meetings will deal with immediate issues, while one meeting will deal with regular reports (IO, IODP-MI, etc.) and the other will consider future issues and planning allowing STP to be more proactive.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to SPC

Background to STP Consensus 0612-12: Discussion was held regarding changing the STP meeting format to be similar to that adopted by EDP. In essence, this would give a formal structure to what STP has been doing, to some extent, but it will allow a greater emphasis on planning ahead for future IODP expeditions, developments, and policies. The current STP mandate allows for this change in emphasis at the twice-yearly meetings.

STP Consensus 0612-13: Larger Drill Pipe
STP welcomes the adoption of a plan to implement larger diameter drill pipe on the SODV. STP offers its support for the full implementation of this plan since larger diameter pipe will allow the use of state-of-the-art well-logging tools during IODP. The IOs should provide the scientific community with information about these additional downhole logging capabilities.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to SPC and IODP-MI

Background to STP Consensus 0612-13: A previous STP Consensus (0606-14: SODV - Larger Drill Pipe for Enhanced Well Logging) proposed support for larger diameter drill pipe for the SODV. After reviewing revised plans for a tapered drill string on the SODV at this (San Francisco) meeting, the STP reiterates its support for larger diameter pipe that will allow the use of state-of-the-art well-logging tools during IODP. The STP believes the tapered drill string will considerably enhance the potential of IODP borehole geophysical science for years to come. Further background is provided in support of the earlier consensus statement (0606-14).

STP Consensus 0612-14: Technical Support
STP expresses concern about levels of technical support staff training for delivering IODP Minimum and Standard Measurements across all platforms. STP encourages IODP-MI and the IOs to work together to ensure delivery of these measurements (e.g., Microbiology)

through appropriate technical support at the start of Phase 2 operations towards achieving expedition-specific scientific objectives.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to IODP-MI

Background to STP Consensus 0612-14: STP revisited previous SciMP/iSciMP Working Group reports and one item of immediate concern for Phase 2 is provision of appropriate technical support for delivering the measurements detailed in the IODP-MI Measurements document. STP reiterates that this is vital for the success of IODP in going beyond ODP and in providing the scientific community with accurate and precise data from which well-formulated research proposals can be crafted to work on expedition/discipline specific issues.

STP Consensus 0612-15: SODV Report
STP wishes to thank Jeff Fox for his presentation on a possible design for a non-extended SODV. STP remains willing and able to give advice and input to this process when called upon by the USIO.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to IODP-MI
Background to STP Consensus 0612-15: STP received a request from the USIO in late November to review a revised set of possible plans for a non-extended version of the non-riser SODV. STP reviewed this electronically and provided input to the USIO prior to the San Francisco meeting. This presentation gave STP members an update of progress. The list of comments, questions, and suggestions given by STP prior to the San Francisco meeting can be found in an appendix to the minutes of the meeting..

STP Consensus 0612-16: Chikyu Shakedown Cruise Report
STP wishes to thank Shin'ichi Kuramoto for his presentation on the *Chikyu* shakedown cruise. STP welcomes the invitation to give input to CDEX on the results of this initial test of the *Chikyu*.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to IODP-MI

Background: STP invited CDEX to present an overview of the shakedown cruise: "The IODP community is very excited by the prospect of using the CHIKYU for scientific ocean drilling and these shakedown cruises form an important part of the overall process from designing and commissioning the CHIKYU through to its first IODP operations. STP has been involved with the design of the CHIKYU throughout, although the panel has been through several name changes (iSciMP, SciMP, STP). While the Shakedown cruises are not strictly an IODP operation, we realise that they do provide CDEX with the first real experience of the ship, its facilities and its capabilities. The Scientific Technology Panel is available and willing to provide you with constructive input to help in assessing the outcomes of these Shakedown cruises, including how best practices identified on the Chikyu can be transferred to other Implementing Organisations. Part of the role of STP is to understand what issues have been identified on all platforms and how to facilitate coordination between the IOs regarding lab changes/improvements in time for Phase 2 operations."

STP Consensus 0612-17: Local Crustal Structure – New Technology.
For VSP, cross-hole tomography, and imaging of local crustal structure, a downhole seismic source is necessary. However, it is extremely difficult to obtain such a source under the deep ocean. New technology called *seismic interferometry* (virtual source, daylight imaging) could be applied for borehole source. In this case, receivers can be virtual seismic sources if any noise such as whale calls, drilling noise, natural earthquakes, or airguns are used for external seismic sources. STP brings this new technology to the attention of the IODP-MI and IOs and recommends monitoring of its development with the potential for future use in IODP.

2 absent (Korja, Sakurai)
Priority: Low
STP suggests this be forwarded to IODP-MI

Background to STP Consensus 0612-17: Dr Junzo Kasahara requested the opportunity to present to STP the application of this new and developing technology, at this meeting prior to rotating off STP as a J-DESC nominated panel member.

STP Consensus 0612-18: Core Splitting Techniques
STP thanks Lee for his presentation on the problems related to core splitting in soft sediment. STP requests IODP-MI together with the IOs investigate solutions to this problem and encourages dialogue with other scientific communities (for example, lake sediments and geology groups). STP requests IODP-MI to report on their findings at the next STP meeting.

2 absent (Korja, Sakurai)
Priority: High
STP suggests this be forwarded to IODP-MI
Background to STP Consensus 0612-18: this is recommendation number1 in the Core Description Working Group report available on the STP web page of the IODP web site.

STP Consensus 0612-19 Junzo Kasahara
STP thanks Junzo Kasahara for his contributions to our discussions on all things seismic. His passion has given us all a new appreciation for "Vs-Vp", "CLSI", and many other acronyms. Thank you, Junzo for all your help, comments and dedication, and good luck in your post-STP life.

STP Consensus 0612-20: Annakaisa Korja
STP gratefully thanks Annakaisa Korja for her work and dedication to the IODP over the last 3 years she has served on this panel. Her sharp and appropriate comments have been a great help in making difficult discussions. We all will miss her kind eyes as they often appeared through the bottom of a glass, as well as discussions with her and her sparkling wit.

STP Consensus 0612-21: Tatsushiko Sakamoto
STP wishes to thank Tatsushiko Sakamoto for his tireless service to IODP and this panel. His command of the English language and knowledge of sedimentology has allowed him to make significant contributions to STP during his three years on the panel, although his language skills appear to fail him when it is time for another beer! Despite that, his presence will be missed, although we are sure that he will contribute again to this panel in the near future in a new role.

Consensus Statement 0612-22: Heinrich Villinger
The STP gratefully thanks Heinrich Villinger for his great work and dedication to the IODP over the years he has served on this panel. His strong comments on logging tools, high pressure Vp measurements, and petrophysics were so valuable although his choice of post-meeting beverages has been a cause for concern! As a result he will give us 0.000001˚C absolute precision with the Temperature tool and 0.0000001 Pa with the Pressure tool under 500˚C circumstances. These tools may progress to IODP as the critical measurements package. We hope his contribution to STP will continue from outside the panel.

STP Consensus 0612-23: Sean Higgins
STP wishes to thank Sean Higgins for his tireless service to STP and the IODP. His encyclopedic knowledge of downhole tools, logging, and good beer will be sorely missed by the panel. In addition, Sean's ability to wear many hats is a talent that few others possess, or would want to. STP wishes him well in his new appointment.

STP Consensus 0612-24: Jeff Schuffert
STP thanks the service of Jeff Schuffert to this panel. While his relentless devotion to detail and the intricacies of IODP policy drove most people to drink, it is now recognized that he kept STP on track thus allowing it to play an effective role in the SAS structure.

STP Consensus 0612-25: Geoff Wheat
STP wishes to thank their Alaskan representative for the excellent organization and hospitality offered by the City of San Francisco. The smooth operation and efficient organization by our host made our meeting enjoyable and productive. But we could expect nothing less from a Panel Member who manages to work at Moss Landing while supposedly being in Alaska… but then as Geoff says, it's only a matter of (geological) time before the spatial geography brings Moss Landing north…

Action Items

STP Action Item 0612-26: Third Party Tools.
STP members are requested to provide feedback on the TPT implementation guide from IODP-MI. These should be sent to the STP chair no later than January 24, 2007.

Priority: High
Leads: STP Chair, STP Panel.
Deadline: 31st Jan 2007 to IODP-MI.
Background to STP Action Item 0612-26: this follows on from Agenda item 24 and the discussion that ensued.

STP Action Item 0612-27: Time stamp for measurements & procedures.
The timing of measurement is important for ephemeral properties such as microbiology, fluid, gas, measurements on soft sediments (e.g. core length, color…). There is currently no requirement to record the time of measurement in the IODP measurement document. Basile will investigate if and how the time of measurement may be a minimum/standard measurement in IODP and whether this issue may be resolved by QA/QC procedures.

Priority: Medium
Date/Timeline: Next meeting
Lead: Basile
Background to STP Action Item 0612-27: this follows on from discussion of measurements

under several agenda items.

STP Action Item 0612-28: STP Geochemistry and Microbiology WG report
Geochemistry and Microbiology WG members Rick Colwell and Takuro Nunoura will study the minutes of the SPC and IODP-MI meetings to find out why some of their previous recommendations were not implemented. They will report their findings at the STP's next meeting.

Priority: High
Date/Timeline: Next meeting
Lead: Colwell and Nunoura
Background to STP Action Item 0612-28: The STP reevaluates its WG structure in response to SPC's request to charter its long-term vision or future roadmap. The Geochemistry and Microbiology WG has determined that some of its recommendations have not been implemented. These recommendations are essential to the routine collection, analysis and characterization of the microbiological contents of seafloor sediments. This action item is to ensure a corporate memory of the efforts of the panel and to ensure efficient use of discussion time.

STP Action Item 0612-29: STP will investigate whether the effects of riser drilling on microbiology and chemistry of cores is significant.

Priority: High
Date/Timeline: Next meeting
Lead: Neal and CMWG
Background to STP Action Item 0612-29: riser drilling is a new venture in scientific ocean drilling and STP is concerned that there may be consequences of riser drilling that have not been considered.

STP Action Item 0612-30: Core Description WG
The core description working group is satisfied with the size and expertise of the working group, although we recognize that additional ad hoc membership may be warranted. Watchdog pairs are nominated to follow progress on each of the two laboratory working groups: Paleontology (Suzuki, Christensen) and Core Description (Ahagon, Basile). The watchdogs should be present their findings in a report for the next STP meeting.

Priority: Medium
Date/Timeline: Next meeting
Lead: Suzuki, Christensen, Ahagon, Basile
Background to STP Action Item 0612-30: this follows on form discussions under agenda items 23 and 26.

STP Action Item 0612-31: Legacy Samples
STP will report at the next meeting on the scientific reasons and potential approaches for collecting and storing legacy samples for future Microbiology investigations.

Priority: Medium
Date/Timeline: Next meeting
Lead: Colwell, Nunoura
Background to STP Action Item 0612-31: Legacy sampling has been proposed previously but it is not clear what the scientific rationale is, or what the logistical and practical considerations are.

STP Action Item 0612-32: Stable Isotope Measurements
STP will investigate new technology for on-board stable isotope analysis of rock, sediment, and water samples.

Priority: Medium
Date/Timeline: Next meeting
Lead: Nunoura, Neal
Background to STP Action Item 0612-32: New technology may allow a relatively cheap, accurate, and effective way for shipboard stable isotope measurements to be made on the CHIKYU and SODV. See Appendix 2 for details. Further investigation of the specific application of this technology to IODP is required.

STP Action Item 0612-33: Major element rock analysis problems on the CHIKYU.
STP requests IODP to consult with the IOs and to request the IOs, for the CHIKYU and the SODV (as appropriate), provide a report on their methods for whole-rock major-element analysis by ICP-AES. These reports are requested by March 31st, 2007, for evaluation by STP so we can work together to find the cause(s) of the problems with the ICP-AES major element analyses on the CHIKYU and identify solution(s). A report of our findings will be given at the next STP meeting by Pat Castillo, who will be the STP watchdog.

Priority: Medium
Date/Timeline: Next meeting
Lead: Castillo

Background to STP Action Item 0612-33:Ahagon presented problems with the major element analytical results, particularly with SiO_2, of the ICP-AES at CHIKYU. A reliable instrument to routinely analyze major elements onboard is essential for CHIKYU to carry out its IODP science objectives. Such problems have been resolved on the JOIDES Resolution prior to demobilization for some expeditions, although problems during Phase 1 operations were anecdotally mentioned during the meeting. STP feels this may be an issue of inconsistent sample preparation procedures, instrument set-up and calibration, and inadequate technician training. The request for information from the IOs will allow us to evaluate the current methods of analysis employed for whole-rock major-element analysis by ICP-AES.

STP Action Item 0612-34: Laser Granulometer
STP will investigate the use of a laser granulometer or other granulometer in routinely measuring grain size and shape in soft sediment.

Priority: High
Date/Timeline: Next meeting
Leads: Basile, Sakamoto
Background to STP Action Item 0612-34: New technology may benefit future IODP Expeditions and STP requests appropriate further information to enable discussion by the appropriate STP Working Group.

Proposed next STP meeting: June 3rd – 6th 2007
Location Beijing, China
Host: Hongkui Ge

APPENDICES:

A total of 26 appendices are attached and numbered in ascending order relating to agenda items. The agenda item number is included in the appendix filename.

Additional notes to Executive Summary of the 4th IODP STP Meeting, San Francisco

Thursday 7th December

Numbering refers to original agenda order; notes follow the order of discussion.

The meeting started at 08:30 a.m., Lovell presiding.

1. Lovell welcomed everyone and Wheat provided some logistics of the meeting.

2. Continuing and new members, guests, liaisons introduced themselves. Korja and Sakura are absent and Christiansen will arrive Thursday evening.

3. Proposed agenda was presented; Wheat proposed it to be approved and Castillo seconded the proposal.

4. Minutes from July meeting was reviewed; Neal proposed it to be approved and Villinger seconded the proposal.

5. Conflict of interest policy was discussed, as required by IODP-MI. It was stressed that any COI on any topic must be stated right away during the meeting; there were no COIs noted or stated at the outset of the meeting. The aim of COI to maintain the best knowledge available for decision-making but maintaining that as a fair procedure.

   Everyone was also reminded that the STP meeting follows the principles according to the Robert's (Millard's) Rule of Order. Electronic copies of all of the presentations were to be given to Wheat and Neal.

6. STP mandate was reviewed, and will be revisited in tomorrow's discussion. Copy available on IODP-MI website; should be reviewed because the STP must advise planning for IODP; diverse issues are handled by STP therefore members must be willing to speak up and contribute to discussions on these topics; may need to invite non-STP members to attend certain meetings in order to provide the required expert opinion.

7. Status of STP's previous recommendations and action items, etc. was discussed (see copy of Lovell's previous e-mail). The only action item was Action Item 0606-28: STP members are invited to discuss through electronic means the short- and long-term strategic aims of the STP as IODP enters a new phase of ocean drilling. Then there are the questions such as: SODV update? how is STP advice considered and implemented? WG report updates? There is some discussion regarding the availability of some of these; Microbiology Report of 2003 (Rhode Island meeting) was used as an example; feedback may not be requested in a specific period of time and therefore the WG reports can languish; fundamentally how can communication be improved for the benefit of the program?

   Becker presented a report on most recent SPC meeting (see ppt presentation for details). Some of the highlights are: Approval of science plans from FY08-09; approval of NanTroSEIZE for FY08-09; approval of the mission-specific platforms for the Great Barrier Reef with certain contingencies; approval of science plans and

operations for FY08-09 for SODV - recommendations are consistent with previous suggestions.

Neal questioned the difference between slight and long delays – up to Jan. '08 is considered slight, but beyond that is long; the aim is to preserve NanTroSEIZE schedule; longer delays may require reconvening of the group to reconsider the schedule; New Jersey sea level drilling needs to be inserted into the 07-09 SODV schedule; schedules also estimated out to FY10; however, these are still being developed; refer to graphic representation of the schedule.

SSPOC replaced by SASEC. Initial meeting was in July 06; small (10) voting members; this new group appeared to be more energetic than the previous SPPOC group. Becker highlighted the progress of SASEC in the July 06 and Nov 06 meetings and then detailed the SASEC WG on SAS (see details in Becker's presentation) and reviewed the IODP proposal process.

All STP members requested to respond to SASWG questionnaire in Dec-Jan 07, with primary questions related to questions posed earlier by Lovell, i.e., how can open dialog be developed? how can STP interactions with IODP be enhanced?
should STP have a regular annual cycle for its two meetings leading to input to the August SPC on technical priorities; also summer and winter STP meetings would be structured to address issues in a timely manner (e.g., long-term roadmap for scientific technology improvements [summer] and IODP-MI and IO technological projects [winter])

8. Lovell presented a brief report from EDP (see presentation ppt for details). EDP focuses on technological roadmap. It also established an appropriate sequencing and topical consideration in its meetings that is similar to what has been recommended by Becker. The EDP has established the following structure at its bi-annual meetings. In its June/July meeting, EDP will provide SPC with a prioritized plan for FY+2 engineering developments for the Program Plan; EDP will also examine and define long-term ED needs (FY>2). At its January meeting, EDP will provide guidance to IODP-MI and the Implementing Organizations (IO's) by reviewing the engineering development plan within the Program Plan (FY+1); EDP will also preview long term ED needs.

Break and reconvened _at_ 10:10 – Neal presiding.

9. Allan reminded everyone that a NSF report has previously been circulated by e-mail; Wheat questioned how the continuing resolution affecting NSF budget? Ans. - Previous funding _at_ $42 M (?) is being used. Villinger questioned how the new environmental impact (EI) requirements affect drilling projects? Ans. - Additional requirements have to be met and projects have to follow environmental guidelines, but in general on a "need basis". Key areas of concern are likely to be "marine sanctuaries" - Monterey Bay as an example was discussed. EI must be considered if new drilling activities are proposed and most problematic is the visual impact – i.e., simply the view of the drilling ship from the shore (it is believed that this would be a real problem in a location like Monterey Bay). EI issues do not relate to IODP, only to SODV, but individual IO's must be responsible for each area of operation – e.g., the Great Barrier Reef.

10. Eguchi replaced Schuffert as the IODP-MI liaison officer to STP and presented a report from IODP-MI (see ppt presentation for details). Some of the items discussed include STP members rotating off; post-expedition results will be more integrated in the future; and there are 14 new proposal submissions: 7 solid earth-related and 7 environmental-related. Lovell asked to see full representation of the CAB membership so that members can be referenced for possible review duties. Villinger asked why IOs never received STP recommendation 0606-13. Ans. - Janecek said it "fell through the cracks", but will be followed up on. Roehr also mentioned that new memberships of the Curatorial Board have not been updated.

11. Gaillot presented a report from CDEX (see ppt presentation for details). Some of the items discussed include system integration test graphically represented as a plan; summary of the achievements on drilling offshore Shimokita; several problems during testing which include BOP support, mechanical failure of drilling systems (now fixed), leak of BOP, DPS downtime; bad weather, and bending of riser pipes. Chikyu is now offshore Kenya and planned for offshore Australia. LABSIT - core flow plan is being discussed and participants are expected to present their results on Dec. 8. NantroSEIZE 1 & 2 site selection, pre-cruise meeting and progress on prospectus were discussed. QA/QC task force report is due early in 2007. Engineering development, such as long-term borehole monitoring laid out. Summaries of recent workshops and training sessions were presented.

    Neal asked for the reason for the bending of the riser pipe. Ans. - vertical displacement caused by moderate seas (i.e.., heave compensation locked) was the cause. Wheat also revisited the BOP leak (the problem has been fixed), but would have not been a problem if there was a back up; no core from riser drilling but that was not a part of the goal (goal was to reach 2 km depth). Gaillot asked for minimum measurements done. Ans. – Technical tests for 2 km core were compromised because of the scientific plan.

12. Blum presented a report from USIO (see ppt presentation for details). TAMU director (Fox) will make presentation tomorrow about SODV. JOIDES Resolution currently in Singapore shipyard and completion planned for Dec 07 is still on schedule. DSDP/ODP core redistribution project also occurring. FY08 program plan for riserless vessel schedule was presented – the NantroSEIZE project in the Kumano Basin observatory installation was discussed and considered most complex yet installed by IODP – merging seismic observatory and Cork II. FY09-10 schedule presented with qualification – not included are the LDEO borehole facilities, which is being upgraded. Key personnel updates and changes were presented. Neal asked there are no development projects for FY08? Ans. - Plan presented was generic because preliminary funds provided by NSF are for expedition operation costs only - the plan was developed accordingly. Allan commented that NSF gives fiscal guidance in January for next fiscal year.

13. Rohl presented a report from ESO (see ppt presentation for details). Some of the items presented were summary of recent, current, pending cruises; New Jersey shallow shelf platform drilling permit being sought; technical considerations and constraints will be listed; jointly supported by IODP-ICDP; future drillings in the Great Barrier Reef, New England hydrogeology. Allan commented that according to SASEC, timing for

drilling not scheduled, yet. Neal also commented that EI not completed yet for Great Barrier Reef drilling because site survey still incomplete. Gaillot asked if the absence of LWD affect science objective? Ans. – No, it is too expensive for relatively small scientific return; slim line drilling was selected to maximize science return.

15. Gaillot presented a report from CDEX on feasibility study: STP Consensus 0606-08: Measurements at High Pressure and Temperature (see ppt presentations for details). Among items discussed were wave velocity measurements, targets, conceptual diagrams; results vs. scientific targets; lay outs; results. Items under STP mandate such as tolerance of apparatus, regulation and safety are all OK. Conclusion – measurements at existing high P & T conditions (on land) are feasible. Kasahara asked if P & S wave measurements separate? Ans. – No. Villinger asked if this is a TPT? Ans. – Allan said it could be. Discussion continued - measuring velocities at in situ PT is valuable, especially for coring in NantroSEIZE. This will be reconsider later when discussing 3rd party efforts. RFP might be released by IODP-MI if this seems appropriate and if, for example, SAS recommends it. Discussion also covered consideration of the possibility that the capability could be developed for use on both the ship and on land. Ge expressed concerns regarding how complicated the system might be given the number of samples that must be collected; however, assurances were made that the instrument can achieve this. For example in Japan, 10 samples can be measured simultaneously without any problem. Blum commented that this has been accepted in the past as a useful technology at great depth (high PT) but should we also consider systems that have resolution at low P (2-10-20 MPa) ranges (so that more measurements can be made to compare logs to seismic data); will the system have the resolution to allow making comparisons at lower ranges? Is this a useful thing to consider? Ge commented that such lower P measurements are important. It was confirmed that this is important to measure aboard ship; effective stress implied by pressure not total stress may be the most important. Johnson asked if this will be on board measurement? Ans. Sugihara said it is in Chikyu; Lovell said it was originally designed for on shore study.

    Gaillot then proceeded to present a short report from CDEX on LA-ICP-MS (STP Consensus 0606-15; see ppt presentation for details). Bottom-line is that test was not successful because ICP-MS was not calibrated properly to receive ablated samples. The plan is to continue to analyze solids. Allan clarified that the test was done while Chikyu was in transit, and not when thrusters were being used heavily.
16. Inwood presented a report from ESO: STP Consensus 0606-11: ESO Temperature Tools. Basically, asking guidance from STP. STP was concerned about limited resolution of T tools for the New Jersey Margin - are there tools that can get the requested accuracy of 0.001 deg C when the industry standard is 0.5 to 0.1 deg C? Allan asked that given that there is frictional heating, does this obviate the goal of such precision? Ans. – Villinger said that friction issue "depends" but can observe 0.01 deg C; if the instrument resolution is improved then one can see real temperature variation.
18. Reports from IOs on Resolution, accuracy and calibration of temperature and pressure measurements (STP Consensus 0606-13). This issue is still outstanding and will be reported at the next STP meeting.
21. Ahagon presented an update on SSEP proposal review. A brief overview /summary was presented on the 15 pre- and full proposal reviews as considered in Nov 06 meeting; no proposal forwarded to STP at this time for detailed consideration or

advice. The information in the proposals is still confidential and was not discussed. Next SSEP meeting is May 29 to June 1, 2007.

22. Observatories Task Force updated by Janecek (STP liaisons – Wheat/Villinger) (see ppt presentation for details). Industry community asked to participate in the task force; half of the invitees have responded, but other half has not; late winter, early spring will see the first meeting and thus STP may have more report in its June meeting.

A brief executive session was held before lunch.

Lunch break

Meeting resumed at 1:30 p.m. – Lovell presiding:

17. Miville presented reports from IODP-MI recent workshops:
    a. Uniform Depth Models Meeting (Miville /Sakamoto; see ppt presentations for details). Issues: STP Recommendation 1601-06: IODP Measurements and 0601-01: Common Framework for Depth Scales. There are no clear indication of methods of measurement and relationship of different measurements to each other; STP members should read and check; IO to implement pending STP approval; are the acronyms acceptable? Neal asked why are there too measurements for one reference? Ans. - The method in which the measurement is made may be different and there may be different errors associated with the different methods. Villinger asked who determines the shifts between the different depth scales? Ans. - Most reference depths are rig floor; definition of the depth reference point is essential and considerable discussion followed. Ge commented that oil industry uses rig floor as reference because water depth is constant. However, different methods of measurements come up with values that vary up to ~several meters. Ultimately, clear definition of the values that are used and the assumptions that are made in making them are needed. Also, cores expand at atmospheric pressure. IOs must work out the parameters for how this is resolve.; "mbsf" can still be used as units but it must be stated how the depth was acquired. Basile asked what are the errors associated with the different measurements? How are the differences between depths at the center vs. the sides of the core reconciled? Core expansion and shrinking appear to occur to different degrees in cores and this needs to be accounted for; time is also an important scale. Sakamoto took over and presented acronyms. Villinger commented that vertical depth is problematic. Allan suggested to include both orientation and deviation from vertical in the measurements (this is how industry does it), noting that deviation tends to get worse with greater depth. Blum countered if it is worth to convert to true vertical depth if deviation is only a few degrees, in contrast to directional drilling practiced by the industry. Miville requested constructed comments from STP.

    b. VCD/Lithology Meeting (Miville /Neal – see ppt presentation for details). The IOs need to provide a unified report, so they need to consider the development of "common" terminology. Lithological classification and description tend to be controlled and adapted by particular expedition goals. Recommendations (summarized in the presentation) include uniformity in measuring observables, but choice of lithologic classification is still expedition specific, driven by science. Allan commented that consideration of nomenclature for databases is

an NSF issue too, and so he asked why some outside experts on databases not consulted? Villinger asked how the USGS or BGS deals with this same issue? or more basically, questioned whether it is a good practice to change nomenclature on a mission-by-mission basis as opposed to assigning a single classification system? Allan described multiple terms used to describe the same material. Castillo commented that it would be better to adopt a common, minimum lithologic nomenclature before new, mission specific nomenclature schemes be adopted.

c. Digital Taxa Dictionaries Meeting (Miville – see ppt presentation for details). Allan commented that this is an important issue because data should be archived and thus someone must pay for this in the long run. Discussion followed regarding the limitations of budgets (e.g., should STP make recommendations that are unlikely to be followed through because of a lack of funds. Hans Christian commented that should publication policy be changed to add that all publications must include data report?

20. Kryc presented a QA/QC Task Force Update (Kryc & Neal – see ppt presentation for more details). Topics discussed included review of mandate vision statement, Nov. meeting topics, action items, and next meeting on Feb 12 and 13. STP needs to comment on Terms of Reference and Glossaries by Dec 31 2006. Lovell suggested that that we deal with this while we are here at the STP meeting and come to a recommendation.

23. Neal presented a review of previous STP/SciMP WG and outcomes. These can all be found in the IODP.IO website. Microbiology is also a SAS WG; Chemistry (and Microbiology); Core Description; Database; Paleomag; Physical Properties; Petrophysics; Underway Geophysics. How far have the recommendations/actions progressed? STP must check these; revisit them to determine if they were implemented, obsolete, or need to be re-recommended.

24. Janecek discussed Third Party Tools (see ppt presentation for details). Items discussed include implementation guides; tools that STP to consider such as off-the-shelf tools category, tool status spreadsheet, oversight role of STP, combine implementation guide with one policy documents. Considerations of off the shelf tools that are already in use elsewhere and their usage protocols. The tool should not already exist within IODP, detailed specs should be provided, lead IO should work with proponent to get it going, SAS/STP should notify that the tool is being used, and that the operator should provide a report after use. Developing a TPT status guide and also guide for tools new to IODP or tools changing status (respective conditions for development tools and for certified tools). Villinger asked where are the safety plans for tools located? Ans. – each operator must develop its own. Villinger also asked who requires interaction between IO and the developer and who makes the final decision when a tool is ready? Ans. - the IO is responsible. Higgins added that data must not only be achievable but it must be retrievable, ready for interrogation.

25. Janecek presented STP monitoring of IODP expeditions; input to scientific technology issues. Including Operations Review presentation (see ppt presentation for details). Two reviews: operational and science review which is two parts: preliminary report (~2 months) and science advisory structure (long-term). Janecek's report concentrated

on operational review. Review considers confidential reports from operator and co-chief scientists, focuses on "lessons learned" and recommendations are published on-line. Recurring issues are lead time (~70% of the cases), policies & procedures, roles & responsibilities, and lab/drilling equipment issues (STP related). Possible roles for STP include direct participation in task force, report from IODP-MI to STP (after each review, at STP meetings), others? Neal commented that a report from IODP-MI that will highlight the problems would help. A report will come out in Jan. '07. Johnson asked how many reviews have short time frame constant? Ans. – variable.

Lovell gave the panel overnight homework:

QA/QC: TOR, Glossary, Expert list
WG reports: pick favorites
STP Mandate
Temp data precision for NJ
Depth Scale and VCD report
STP recs, conc, action items
STP input to ORTF

END of session

Reception _at_ 6:30 p.m.

Friday 8th December

08:30, Lovell presiding

26. Allan made a presentation on IODP Funding Structure from NSF Perspective (see ppt presentation for details). The presentation started with the chronology of NSF's involvement in the drilling program, starting with Project MOHOLE (1961-), then through DSDP (1964-) and to the present IODP. Slide re: SAS role is explicit in describing the importance of STP, whose role is advisory, not directive. It is crucial fro STP to develop good working relationship with IODP-MI as CMO, and through and in association with them, and with IO's. There was a discussion that followed.

    Development of a Scientific Technology Roadmap for IODP. Lovell ordered break out sessions for the 3 WGs for about an hour to examine and discuss 3 main items:
    1) Are the WGs too big and does each have enough expertise?
    2) Are the WGs' recommendations being implemented?
    3) Examine STP's mandate and how can a better roadmap be developed?

    The spokespersons are Christensen for Core Description WG, Johnson for Petrophysics WG and Castillo for Geochemistry and Microbiology WG. After the break out sessions, the WGs came back and presented the results of their discussions. As a whole, the WGs are content with the size and expertise of each group. Some of the previous recommendations from WGs were not implemented. A long discussion followed about the mandate, but in general, STP is comfortable with it, save for the lack of clear communication with and sometimes frustrations or issues related to implementation of STP's recommendations by SPC and IODP-MI.

    Lovell, and then Becker, explained what is SPC's vision on STP's long-term vision or roadmap using EDP's new meeting schedule as a model. EDP has developed

their roadmap and scheduled their meetings so that it provides the best feedback 18 months in advance of the actual implementation (FY+2). Under the new roadmap, STP will prioritize advice according to science that it is trying to achieve. Again, a long discussion followed, but in the end, STP realized that despite the new meeting structure, it would do the same job. In fact, the new meeting structure may prove to be more beneficial because it puts STP more in sync with SPC, IODP-MI, EDP or other IODP committees. For example, during the summer meeting, STP can prioritize items for future directions and examine define long-term plans. During the winter meeting, STP can examine proposals, look backwards and examine previous proposals, updates on current issues and project status. One thing that STP can do is to change the weighting (number of days) of the two different meetings i.e., one is longer than the other because there is more to cover. Or it can work on as needed basis.

The long discussion that followed was generally positive regarding making such a change. Comments related to the bringing on and the length of rotation of new members was discussed. New members will be brought together with the rest of the group by communicating with them the corporate memory of STP. They should receive a primer that describes the responsibilities of STP and an update of the specific issues.

More mandate discussions followed: some suggested making the mandate more specific but others want to make it less specific (i.e., to remove some of the workload such as observatories, which appears to be a big time sink, or data management, which may need a lot of IT). However, the general sense is that the existing mandate is OK and not in need of considerable change. STP is thus contented with its present mandate, and will wait to make some minor modifications after the new roadmap is in place.

Gaillot presented the Database WG report (see ppt presentation for details). A discussion followed. Sugihara asked if all databases would be interpreted? Ans. – Phase 3 of the project will include interpretation. Sugihara also asked if site survey data would be linked with drill hole data? Ans. – Phase 2 includes only IODP data. Hans Christian commented that many site survey data already have a databank at the Scripps Institution of Oceanography. IODP has also identified the problem of linking site survey and drill hole data, and is trying to find solutions.

Lunch break

13:05 Afternoon sessions started: Lovell presiding

27. Fox presented an update of the USIO: SODV status (see ppt presentation for details). The presentation started with a comparison between Joides Resolution and new SODV – despite the same lengths, SODV has gained more science space. There are also some expansion/modification capabilites built in the design – e.g., ROV handling capabilities - so that if that they become available, they can be accommodated in the coming years. Allan asked if handicap access has been improved? Ans. Elevator is handicap accessible, but there are still other areas that need improvements, such as tight bulk heads. Johnson informed that there is a task force working disability access and a report is being prepared. Clive asked if the paleomag concern has been addressed? Ans. – Yes. Villinger asked if the living quarters have been improved? Ans. – Yes. Allan reminded that it the whole presentation is about a plan, which may change depending upon budgetary constraints. Wheat asked if the “continuing resolution” will affect the plan. Fox said that the budget is within the framework of the

continuing resolution and so the plan can move forward because it has access to funds. However, delays in signing the contract creates the risk of cost increases and therefore may cause to change the plan entirely.

Higgins then presented an update on L-DEO-BRG (see ppt presentation for details). There are several on-going projects related to SODV, but INGHP is a big activity outside IODP that is providing great learning experience for the group. Some of the projects for SODV include shipboard logging system changes, logging science and large diameter drill pipe, stress engineering drill pipe study, drill pipe purchase, operational consideration of large diameter pipes, and continuing discusiions on open issues.

Blum then followed with an update on USIO Analytical Systems Projects (see ppt presentations for details). Items presented include overview of LIMS and its impact on mamagement process. This is applicable to all IOs. Descriptive and interpretative systems is the most critical issue to be addressed. LIMS architecture is proposed as a way of creating an architecture for data analysis, handling and sharing. Sample request management (web-based, to be beta tested shortly), sample planning, and central inventory are all considered. DESCINFO (Descriptive and Interpretative Information) aims to standardize and automate certain efforts that are routine. The aim is to have a database for all earth materials, ensuring global searchability. Other items discussed were QA/QC (LithoLogik), data visualization, core loggers, petrophysics.

There was a concern raised that when some data are entered, some interpretations will be deduced by the computer – this relevant to a situation when people have too much work to do to enter information. For example, if a scientist enters a rock name then the computer may automatically deduce some observables from the name.

28. Kuramoto presented a report from CDEX on CHIKYU Shakedown cruise. The presentation focused on the experiences encountered during the shakedown runs conducted offshore Shimokita area, Japan. Many of the equipments were working. After the cruise, 28 scientists/participants provided inputs such that improvements on primary sample processing and analysis locations are or wil be made to improve workflow. The CHIKYU will be doing Overseas Drilling SIT (ODS) from Nov., 2006 to Aug. 2007. Lab equipments will be maintained and performance tests will be conducted during ODS. The CHIKYU is scheduled to start the IODP NanTro SEIZE drilling in Sept. 2007.

    Nonuora asked an important question regarding the effect of circulating mud on the geochemistry of pore fluids and on microbiology during riser drilling.

Lovell revived Janecek's request for input on IODP Operational Review. The basic question is how to interact better with IODP-MI in terms of review. The two choices are: 1) a watchdog, and 2) Janecec presenting a report to STP. Discussion followed, resulting in a consensus statement.

Lee presented a report on problems with the wireline cutting method. Core splitting using the method causes:

1. deformation of soft sediments
2. cutting face deformation

3. non-isotropic behaviour of the soft sediments

Lee is asking for a solution/advice from STP. Core splitter on Chikyu is still being developed (w/ and w/o water). Success seems to vary with the nature of the cores: soupy or non-soupy? Method must be fine-tuned on a case-by-case basis. Diatomaceous oozes are very hard to cut. Thin wires will solve some of the problems, but then they break easily. IOs are aware of the problem, but have not come up with a solution, yet.

Saturday 9th December

08.30

Kasahara presented an ad-hoc brief overview of a Roadmap of borehole seismology describing Seismic Interferometry using a virtual source, and Masuda additional items..

29. Executive session: strategic review of STP aims, workflow, and actions

Reconvene with liaisons and guests

30. Review of Recommendations, Consensus Statements, and Action Items
The various items were presented and recorded.

31. Next meeting location and date
Lovell presented the proposed details; Ge had offered to host the meeting in China.
Proposed next STP meeting: June 3rd – 6th 2007
Location Beijing, China
Host: Hongkui Ge

32. Rotation of panelists & panel expertise (Lovell/Neal)

33. Closure

15.00 Close

IODP Scientific Technology Panel (STP)
4th Meeting, 7-9 December 2006
Hilton San Francisco
San Francisco, California, U.S.A.

Agenda

Thursday 7th December

08.30
Routine Business:

1. Welcome and logistics (Lovell/Wheat))
2. Introductions of continuing and new members, guests, liaisons (Lovell)
3. Review and Approval of Agenda (Lovell)
4. Review and Approval of Minutes from July meeting (Lovell)
5. Conflict of Interest Policy (Lovell)
6. STP mandate (Lovell)
7. Brief report from most recent SPC meeting (Becker/Lovell). Discussion of status of STP's previous recommendations and action items, etc.(Lovell)
8. Brief report from EDP (Lovell)

Regular Reports:

9. Reports from MEXT (TBN) & NSF (Allen)
10. Report from IODP-MI (Eguchi)
11. Report from CDEX (Gaillot)
12. Report from JOI Alliance (Blum)
13. Report from ESO (Roehl)

14. Brief executive session of STP Panel Members to discuss short- and long-term strategic aims of the STP as IODP enters a new phase of ocean drilling.

12.30 Lunch

13.30 Further business and issues arising from previous meetings:

15. Report from CDEX on feasibility study: STP Consensus 0606-08: Measurements at High Pressure and Temperature (Gaillot)
16. Report from ESO: STP Consensus 0606-11: ESO Temperature Tools (Inwood)
17. Reports from IODP-MI & liaisons on recent workshops:
    a. Uniform Depth Models Meeting (Miville /Sakamoto)
    b. VCD/Lithology Meeting (Miville /Castillo/Neal)
    c. Digital Taxa Dictionaries Meeting (Miville)
18. Reports from IOs on Resolution, accuracy and calibration of temperature and pressure measurements (STP Consensus 0606-13)
19. CDEX report on LA-ICP-MS (STP Consensus 0606-15) (Gaillot)
20. QA/QC Task Force Update (Kryc & Neal)
21. Proposal Review (from SSEP) (Ahagon)
22. Observatories Task Force update (STP liaisons – Wheat/Villinger)
23. Review of Previous STP/SciMP Working Group Reports (Neal)
24. Third Party Tools (Janacek)

17.00 Close
Reception

Friday 8th December

08.30 New developments:

25. STP monitoring of IODP expeditions; input to scientific technology issues. Including Operations Review presentation (Janacek).

26. Development of a Scientific Technology Roadmap for IODP
    a. Presentation on IODP funding: Program Memorandum, funding and contract structure (Allan)
    b. Presentation on EDP Technology Roadmap and a possible role for STP (Becker/Janacek)
    c. Discussion, possible breakout sessions and reporting

27. SODV status – report from USIO (Fox, Blum & Higgins)

28. CHIKYU Shakedown cruise – report from CDEX (Kuramoto/Gaillot)

17.00 Close

Saturday 9th December

08.30

29. Executive session: strategic review of STP aims, workflow, and actions

Reconvene with liaisons and guests

30. Review of Recommendations, Consensus Statements, and Action Items (Lovell/Neal)
31. Next meeting location and date (Lovell/Neal)
32. Rotation of panelists & panel expertise (Lovell/Neal)
33. Closure (Lovell/Neal)

15.00 Close

4th Meeting of the IODP Scientific Technology Panel
STP

Hilton Hotel

7th -9th December 2006

San Francisco, USA

Welcome and logistics

Introductions of continuing and new members, guests, liaisons

New STP Panel Members:

Colwell, Rick	Oregon State	Microbiology
Johnson, Paul	Washington	Geophysics
Lee, Youn-Soo	Korea Inst. of Geoscience & Mineral Resources	Palaeomag
Neal, Clive Vice chair	Notre Dame (Geochem & everything else… is there anything other than geochem?)	
Sakurai, Shinichi	Occidental Oil and Gas	Core-Log-Seimics
Ikehara, Mnoru Organic geochemistry	Kochi University	Paleoceanography,
Iwai, Masao	Kochi University	micropalaeontology (alternate for Suzuki)

Apologies:

Korja, Annakaisa - Finland (ECORD)

Sakurai, Shinichi – Occidental - new member

Christensen, Beth – will arrive Thursday evening

- Approval of Agenda…

Agenda

Thursday 7th December 08.30

1. Routine Business:Welcome and logistics (Lovell/Wheat))
2. Introductions of continuing and new members, guests, liaisons (Lovell)
3. Review and Approval of Agenda (Lovell)
4. Review and Approval of Minutes from July meeting (Lovell)
5. Conflict of Interest Policy (Lovell)
6. STP mandate (Lovell)
7. Discussion of status of STP's previous recommendations and action items (Lovell). Report from SPC & SASEC meetings (Becker).
8. Brief report from EDP (Lovell)

Agenda

Thursday 7th December

Regular Reports:

9. Reports from MEXT (TBN) & NSF (Allen)
10. Report from IODP-MI (Eguchi)
11. Report from CDEX (Gaillot)
12. Report from JOI Alliance (Blum)
13. Report from ESO (Roehl)

14. Brief executive session of STP Panel Members to discuss short- and long-term strategic aims of the STP as IODP enters a new phase of ocean drilling.

12.30 Lunch

13.30 Further business and issues arising from previous meetings:

15. Report from CDEX on feasibility study: STP Consensus 0606-08: Measurements at High Pressure and Temperature (Gaillot)
16. Report from ESO: STP Cons. 0606-11: ESO Temp. Tools (Inwood)
17. Reports from IODP-MI & liaisons on recent workshops:
    a. Uniform Depth Models Meeting (Miville /Sakamoto)
    b. VCD/Lithology Meeting (Miville /Castillo/Neal)
    c. Digital Taxa Dictionaries Meeting (Miville)
18. Reports from IOs on Resolution, accuracy and calibration of temperature and pressure measurements (STP Cons. 0606-13)
19. CDEX report on LA-ICP-MS (STP Consensus 0606-15) (Gaillot)
20. QA/QC Task Force Update (Kryc & Neal)
21. Proposal Review (from SSEP) (Ahagon)
22. Observatories Task Force update (STP liaisons – Wheat/Villinger)
23. Review of Previous STP/SciMP Working Group Reports (Neal)
24. Third Party Tools (Janacek)

17.00 Close
Reception

Agenda

Friday 8th December
08.30 New developments:

25. STP monitoring of IODP expeditions; input to scientific technology issues. Including Operations Review presentation (Janacek).

26. Development of a Scientific Technology Roadmap for IODP
a. Presentation on IODP funding: Program Memorandum, funding and contract structure (Allan)
b. Presentation on EDP Technology Roadmap and a possible role for STP (Becker/Janacek)
c. Discussion, possible breakout sessions and reporting

27. SODV status – report from USIO (Fox, Blum & Higgins)

28. CHIKYU Shakedown cruise – report from CDEX (Kuramoto/Gaillot)

17.00 Close

Agenda

Saturday 9th December, 08.30

29. Executive session: strategic review of STP aims, workflow, and actions

Reconvene with liaisons and guests

30. Review of Recommendations, Consensus Statements, and Action Items (Lovell/Neal)
31. Next meeting location and date (Lovell/Neal)
32. Rotation of panelists & panel expertise (Lovell/Neal)
33. Closure (Lovell/Neal)

15.00 Close

- Approval of Agenda…
- Proposed & Seconded by…

- Approval of Minutes…
- Proposed & Seconded by…

COI policy

- IODP Conflict of Interest Policy is clearly stated on the IODP-MI website and all attendees are referred to this.

COI policy

- A conflict of interest is a situation in which the interests (for example: personal, familial, professional or commercial) of an IODP SAS member or designated alternate involved in proposal nurturing, evaluation, ranking, scheduling, or assessment processes, or in IODP-related financial or comm ercial enterprises, have a real or perceived impact, either positive or negative, on the results of the nurturing, evaluation, ranking, scheduling or assessment processes, or related contractual work.

COI policy

- Conflict of interest depends on the situation, not the character or actions of the individual.

COI policy

The COI policy is based on the following principles:

- All potential conflicts of interest will be declared at the start of every meeting, or at an otherwise appropriate time during the meeting.

COI policy

- The issues of conflict of interest have three foci:
  - an understanding of who may serve on panels;
  - procedures and safeguards with regard to proposal nurturing, evaluation, ranking, scheduling, and assessment processes;
  - and procedures and safeguards with regard to IODP-related financial or commercial enterprises.

COI policy

- The goal of the COI policy is to maintain the fullest involvement possible by knowledgeable scientists from across the spectrum of IODP member in providing scientific advice to the SAS, IODP-MI, and the IOs.

Roberts (Millard's) Rules of Order

(from Robert's Rules of Order, 2nd Edition, Wiley Publishing Inc., 2001 – available from Amazon.com or any good bookstore….)

- Some basic principles and procedures apply to all decision making processes; these principles and procedures are referred to formally as 'parliamentary procedure'. Parliamentary procedures are the rules that help us maintain order and fairness in all decision-making processes.

- The basic principles behind Robert's Rules of Order are:
  - someone has to facilitate and direct the discussion and keep order.
  - all members have the right to bring up ideas, discuss them, and come to a conclusion.
  - members should come to an agreement about what to do.
  - members should understand that the majority rules, but the rights of the minority are always protected by assuring those members the right to speak and vote.

Roberts Rules of Order

Principles and Salient Points

1) Take up business one item at a time.
   - maintains order, expedites business, and accomplishes the purpose

a. Each meeting follows an order of business - agenda.
b. Only one main motion can be pending at a time.
c. Only one member can be assigned the floor at a time.
d. Members take turns speaking.
e. No member speaks twice about a motion until all members have had the opportunity to speak.

Roberts Rules of Order

2) Promote courtesy, justice, impartiality, and equality.

- ensures that everyone is heard, that members treat each other with courtesy, that everyone has the same rights, and that no individual or group is singled out for special favors.

Roberts Rules of Order

a. Members take their seats promptly when the chair calls the meeting to order, and
conversation stops.
b. Members raise their hands to be recognized by the chair and don't speak out of turn.
c. In debate, members do not 'cross talk', or talk directly to each other, when another member is speaking.
d. Members keep their discussion to the issues, not to personalities or other members‘ motives (unless COI).
e. Members speak clearly and loudly so all can hear.
f. Members listen when others are speaking – the majority rules, but the rights of individual, minority, and absent members are protected.

Roberts Rules of Order

This principle ensures that, even though the majority rules, the minority has a right to be heard and its ideas are taken seriously. Similarly, the minority doesn't leave the organization because it didn't win; it knows that it may win another day. Following this principle preserves the unity and harmony of the organization.

STP Mandate

1. General Purpose.

The Scientific Technology Panel (STP) reports to the Science Planning Committee and may communicate directly with IODP-MI.

The panel shall contribute information and advice with regard to handling of IODP data and information, methods and techniques of IODP measurements (including factors that impact measurements, such as sample handling, curation, etc.), laboratory design, portable laboratory needs, downhole measurements and experiments, and observatories to the SPC; through the SPC, to the Science Planning and Policy Oversight Committee (SPPOC) and IODP-MI; and, through IODP-MI, to the implementing organizations (IOs).

STP Mandate

The STP Mandate is available on the IODP-MI website and al members and attendees are referred to this.

During the meeting we will have discussions on how STP can develop best practice in delivering for IODP the broad range of functions described in the mandate. This is particularly important as we enter Phase 2 of IODP wtht both the riser and non-riser vessels due to set out on Expeditions in late 2007.

STP Mandate

2. Mandate.

STP recommendations shall be sent to the SPC. The STP shall provide advice on scientific measurements made onboard IODP platforms, within and around boreholes, and on samples collected by the IODP and associated programs.

The STP shall develop guidelines concerning said measurements and shall furnish advice about scientific measurements, equipment, and on certain policies and procedures in the IODP.

Specific responsibilities for the panel shall be advice on databases, sample handling, curation, computers, shipboard equipment usage and needs, as well as borehole and observatory measurements, equipment, usage, and needs.

STP Mandate

3. **Decisions.** Decisions shall be made either by consensus or voting, as decided on a case-by-case basis. Votes shall be decided by a majority of all members present and eligible to vote. A quorum shall consist of at least two-thirds of the voting members. Voting records shall be kept and reported in the meeting minutes.

4. **Meetings.** The panel shall convene biannually, generally approximately mid-way between SPC meetings, and additional electronic meetings may be held as appropriate. Robert's Rules of Order shall govern its meetings. Conflicts of interest shall be declared at each meeting, and treatment thereof shall be recorded in the meeting minutes.

The SPC chair shall approve meeting **agendas, dates, and locations**, and the IODP-MI Vice-President for Science Planning and Deliverables shall **authorize the meetings**.

STP Mandate

5. **Membership.** Members shall have expertise representing the four core areas of the panel mandate covering information handling, downhole measurements, scientific measurements, and observatories.

The STP chairs shall work with IODP-MI and the national and consortia committees to **maintain scientific balance and breadth of expertise** in the panel's membership, and to ensure regular rotation of its membership.

With SPC approval, the panel may augment the expertise required to address its mandate by setting up ad hoc advisory committees whose lifetimes are mandated by the SPC. STP members shall normally serve for terms of three years. If a STP member misses two meetings in succession, the STP chair or vice-chair shall discuss the problem with the SPC chair or vice-chair.

STP Mandate

6. **Chair and Vice-Chair.**

The STP chair and vice-chair shall be nominated by the STP membership and approved by the SPC. Their terms shall be two years. The STP chair shall be responsible for providing the IODP-MI Sapporo Office with meeting minutes within one month of each meeting.

7. **Liaison.**

The STP chair shall be liaison to the SPC, with the vice-chair as alternate. The STP shall have liaison(s) from the SPC. Liaisons to SAS panels and working groups may be requested by the SPC. A science coordinator from the IODP-MI Sapporo Office shall attend each STP meeting. Representatives from the IOs shall also be invited to attend the meetings.

Outcomes from STP Helsinki Meeting presented at SPC Meeting in Bergen (August 2006)

Requested by SPC Chair to present:

STP recommendations 3, 4

Consensus Statements 6, 9, 10, 14 for information

Consensus Statements 19 for approval

(Other recommendations and consensus statements in Executive Summary: discussion welcome – statements direct to IODP-MI)

STP Recommendation 06-03: Post-Expedition Results

The STP recommends that the IOs include post-expedition generated results (data and processed data) in the expedition database.

SPC Consensus 0608-12: The SPC receives STP Recommendation 0606-03 on including post-expedition results in the expedition database and supports this recommendation in principle. The committee recommends that the IODP-MI proceed in working on this issue together with the implementing organizations (IOs) and the Scientific Technology Panel (STP) and report regularly to the SPC on any progress.

STP Recommendation 0606-04: QA/QC Task Force

The STP thanks the IODP-MI for establishing a QA/QC Task Force…

STP Consensus 0606-06: SODV review – design and analytical facilities

Chris House attended on behalf of PAC

& STP provided feedback to PAC and the USIO

Plus STP made specific additional consensus statements…

STP Consensus 0606-09: SODV CORK installations

STP recommends that adequate heave compensation (either enhanced passive or active) must be considered …

STP Consensus 0606-10: SODV seafloor visualization

STP Consensus 0606-14: SODV - Larger Drill Pipe for Enhanced Well Logging

STP Consensus 0606-19: Chair & Vice Chair

Should Clive Neal be appointed by USAC to the STP, the STP recommends Clive as vice chair starting with the first meeting in 2007….

Additionally…

Action Item:

STP Action Item 0606-28:

STP members are invited to discuss through electronic means the short- and long-term strategic aims of the STP as IODP enters a new phase of ocean drilling.

Priority: High

STP suggests this be noted.

Background: IODP is at an exciting stage in its development and a new era of ocean drilling beckons. As the plans for the SODV are finalized it is opportune to consider the strategic aims of STP in parallel with the detailed terms expressed in the STP mandate.

1. Action Item: strategic short an long term aims
   a. Monitor progress and provide input to IOs & IODP-MI (e.g. observatories, 3rd Party tools, QA/QC)

1. Action Item: strategic short an long term aims
   a. Monitor progress and provide input to IOs & IODP-MI (e.g. observatories, 3rd Party tools, QA/QC)
   b. Monitor ship & shore operations – shakedown cruises – minimum & standard measurements, lab flow, integration, cross platform developments: what is STP role between IOs & IODP-MI? how can we improve communication?

STP wishes to work with IODP-MI and the IOs to develop the most effective and implementable measurements plan for existing, new and innovative equipment (as it becomes available) to advance ocean drilling science.

But how?

1. Action Item: strategic short an long term aims
   a. Monitor progress and provide input to IOs & IODP-MI (e.g. observatories, 3rd Party tools, QA/QC)
   b. Monitor ship & shore operations – shakedown cruises – minimum & standard measurements, lab flow, integration, cross platform developments: what is STP role between IOs & IODP-MI?
   c. Continue to give input & advice to proposals – SSEPS, SPC

2. EDP Liaison: joint meetings?

a. When appropriate

b. Maintain communication-
agendas/minutes/attendance as appropriate

c. Panel expertise

– some though very little overlap

- generally separate mandates

Specifically… SODV Update

a. What has been achieved?

b. How has STP advice been considered and what are the effects of any changes implemented?

Specifically… CHIKYU Update

a. What has been achieved in shakedown cruises?

b. How has STP advice been considered and implemented?

Specifically… WG Reports Update

a. How have WG Reports, forwarded to IOs been considered and implemented?

For example: Microbiology Report from the Rhode Island Meeting (2003)

Requested by SPC Chair to present:

STP recommendations 3, 4

Consensus Statements 6, 9, 10, 14 for information

Consensus Statements 19 for approval

(Other recommendations and consensus statements in Executive Summary: discussion welcome – statements direct to IODP-MI)

STP Recommendation 06-01: Seismic source

STP Recommendation 0606-02: Downhole T&P Tools

STP Consensus 0606-05: STP Panel Expertise

STP Consensus 0606-08: Measurements at High Pressure and Temperature

STP Consensus 0606-11: ESO Temperature Tools

STP Consensus 0606-13: Resolution, accuracy and calibration of temperature and pressure measurements
…The draft report is forwarded to IODP-MI to circulate among the IOs for input.

The STP requests the IOs to provide detailed feedback prior to the next STP meeting.

STP Consensus 0606-15: LA-ICP-MS
…The STP requests that CDEX report further ICP-MS results at the next STP meeting.

Plus various consensus statements nominating people for various meetings…

STP Action Item 0606-28: STP members are invited to discuss through electronic means the short- and long-term strategic aims of the STP as IODP enters a new phase of ocean drilling.

Items of report from EDP Meeting

Technology Roadmap

Items of report from EDP Meeting

The EDP has established the following structure at its bi-annual meetings. In its June/July meeting, EDP will provide SPC with a prioritized plan for FY+2 engineering developments for the Program Plan; EDP will also examine and define long-term ED needs (FY>2). At its January meeting, EDP will provide guidance to IODP-MI and the Implementing Organizations (IO's) by reviewing the engineering development plan within the Program Plan (FY+1); EDP will also preview long term ED needs.

Items of report from EDP Meeting

EDP Consensus 06-06-5: EDP Meeting #4

EDP proposes EDP Meeting #4 in New York, Jan 17-19, 2007.

*

- Shielded Twisted Pair

Wikipedia

The 3-Letter Acronym STP can have several meanings:

- Standard Temperature and Pressure
- 2,5-dimethoxy-4-methylamphetamine is a psychedelic chemical known as STP
- Shielded Twisted Pair
- Shovel test pit
- www.stp-norway.com - where ships & planes meet in cyberspace

Wikipedia

STP (engine additive) website

http://stp50.com/uk/

..."Tired? STP means performance;
the ultimate thrill could be yours!"

SPC/SASEC Report to STP #4

SF, Dec 2006, K. Becker

1. Update on FY07-09 schedule development
2. Report from first two SAS Executive Committee (SASEC) meetings
3. SASEC WG on SAS - STP evaluation
4. Update on mission implementation

FY07/08/09 Schedule Development - Chikyu and MSP

SPC Consensus 0608-04: The SPC approves the science plan and operations schedule of the Chikyu for NanTroSEIZE non-riser and riser operations (Proposals 603A-Full2, 603B-Full2, 603C-Full) in FY2008 and early FY2009 as recommended by the NanTroSEIZE Project Management Team in July 2006 and the Operations Task Force (OTF) in August 2006.

SPC Consensus0608-5: The SPC approves the mission-specific platform operations for the Great Barrier Reef component of Proposal 510-Full2 South Pacific Sea Level in FY2008-09, provided that (a) the proponents complete the proposed site surveys and submit the site-survey data in a timely and satisfactory manner and that (b) a successful EPSP review is completed in a timely manner as defined by the Operations Task Force (OTF).

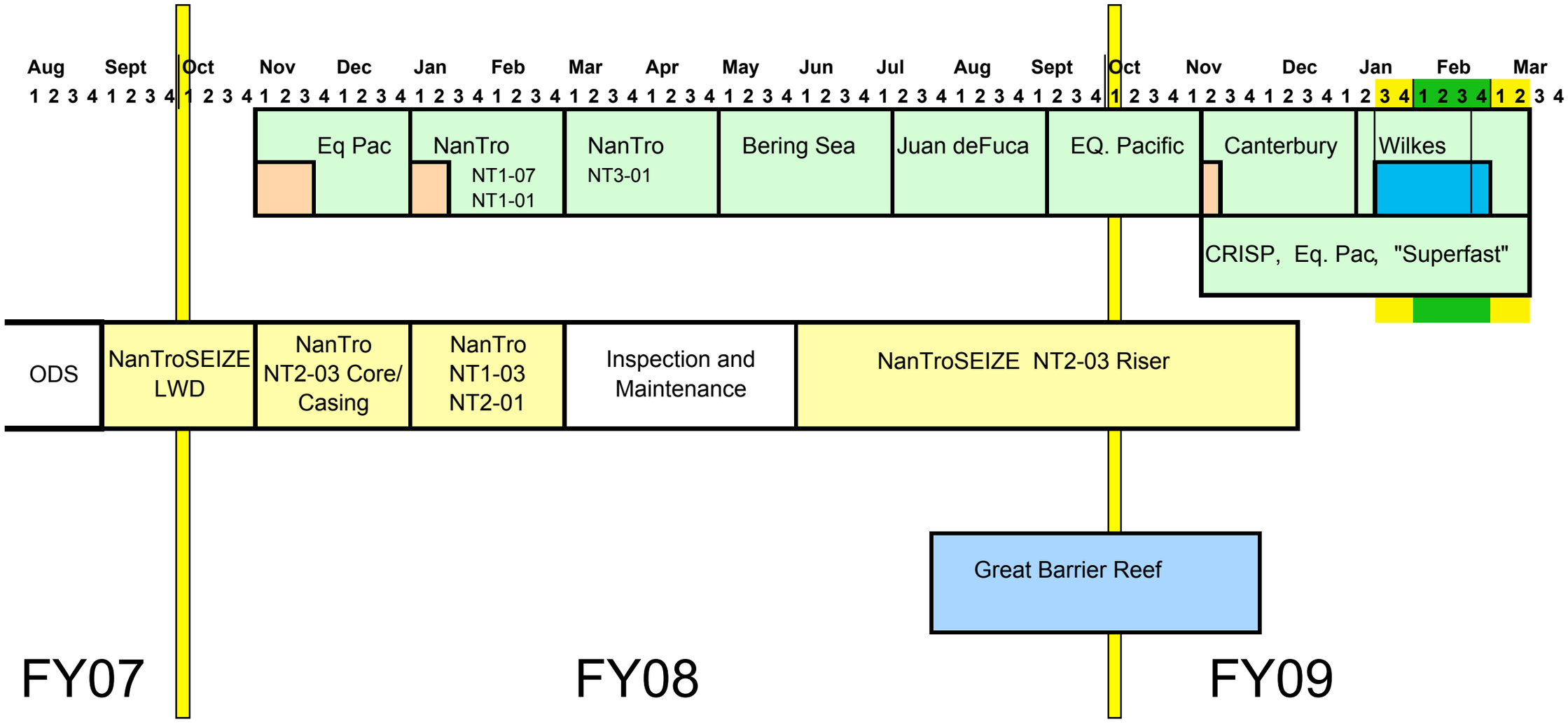
FY07/08/09 Schedule Development - SODV (start date delayed to Nov 1 2007)

SPC Consensus 0608-03: The SPC approves the science plan and operations schedule of the U.S. scientific ocean drilling vessel (SODV) as recommended by the Operations Task Force for FY2008 and earliest FY2009, as well as the readjustments required in the event of a delay in the starting date for SODV operations. The recommended expeditions will begin in November 2007 and proceed as follows:

- Equatorial Pacific Paleogene Transect I (626-Full2)
- NanTroSEIZE Stage 1 (603A-Full2, 603B-Full2, 603C-Full)
- NanTroSEIZE Stage 1 continued
- Bering Sea Plio-Pleistocene Paleoceanography (477-Full4)
- Juan de Fuca Flank Hydrogeology II (545-Full3)
- Equatorial Pacific Paleogene Transect II (626-Full2)

In the event of a slight delay in the start of SODV operations, the entire schedule should simply shift later, as long as good weather windows remain open for the Bering Sea and Juan de Fuca expeditions. In the event of a longer SODV delay that would preclude such a simple shift, the first Equatorial Pacific expedition would be deferred until later and the schedule would begin with NanTroSEIZE Stage 1 operations.

Summary FY07-09 Schedule as of August SPC



FY09/10 Schedule Development

Projected SODV Operations

OTF presented trade-offs for several ship-track models based on existing pool of approved proposals. One model was a clear favorite, based on the critical mass of highly-rated proposals and the imperative to maximize IODP science.

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

FY09/10 SODV schedule to be developed from pool of proposals remaining at OTF plus those ranked and forwarded at the March 2007 SPC meeting.

Projected Chikyu and MSP Operations

Chikyu: Some combination of further NanTroSEIZE work and riserless operations in Indian and W. Pacific Oceans, to be developed by OTF.
MSP - to be determined after March 2007 rankings.

Replacement of SPPOC by SASEC

- SPPOC was chartered both as SAS Executive Authority and as a committee of the IODP-MI Board of Governors (BoG)
- At its April 1 meeting, the IODP-MI BoG approved a motion to replace SPPOC with a smaller SAS Executive Committee (SASEC)
- SPPOC was then formally disbanded, and SASEC membership nominations solicited for an initial meeting July 11-12 (when SPPOC had been scheduled)
- SASEC mandate similar to that of SPPOC, but membership differs:
  - Voting membership of 10, those being 2 from IODP-MI BoG (1US, 1Japan), then 3,3,2 appointed from US, Japan, and ECORD
  - 2 non-voting members: IODP-MI President, SPC Chair
- At its initial meeting July 11-12, the smaller SASEC was much more energetic and effective than SPPOC had been

Highlights of First SASEC Mtg

- SASEC formally approved FY07 program plan (MSP: New Jersey Sea Level, Chikyu: initial NanTroSEIZE LWD operations)
- SASEC formed a WG to reevaluate SAS structure, to report at March 2007 SASEC meeting
- SASEC decided to update Initial Science Plan by 2008, building on IODP workshops in 2006/2007 (This is a separate activity from process that will start in a few years to write a new science plan for the second 10 years of IODP.)
- For IODP-MI sponsored workshops in 2007, SASEC recommended proposed geological hazards workshop, and asked for a revised proposal for LIPs workshop
- SASEC asked SPC to continue with expedition science assessments and approved a process for long-term IODP evaluation via thematic review committee(s)

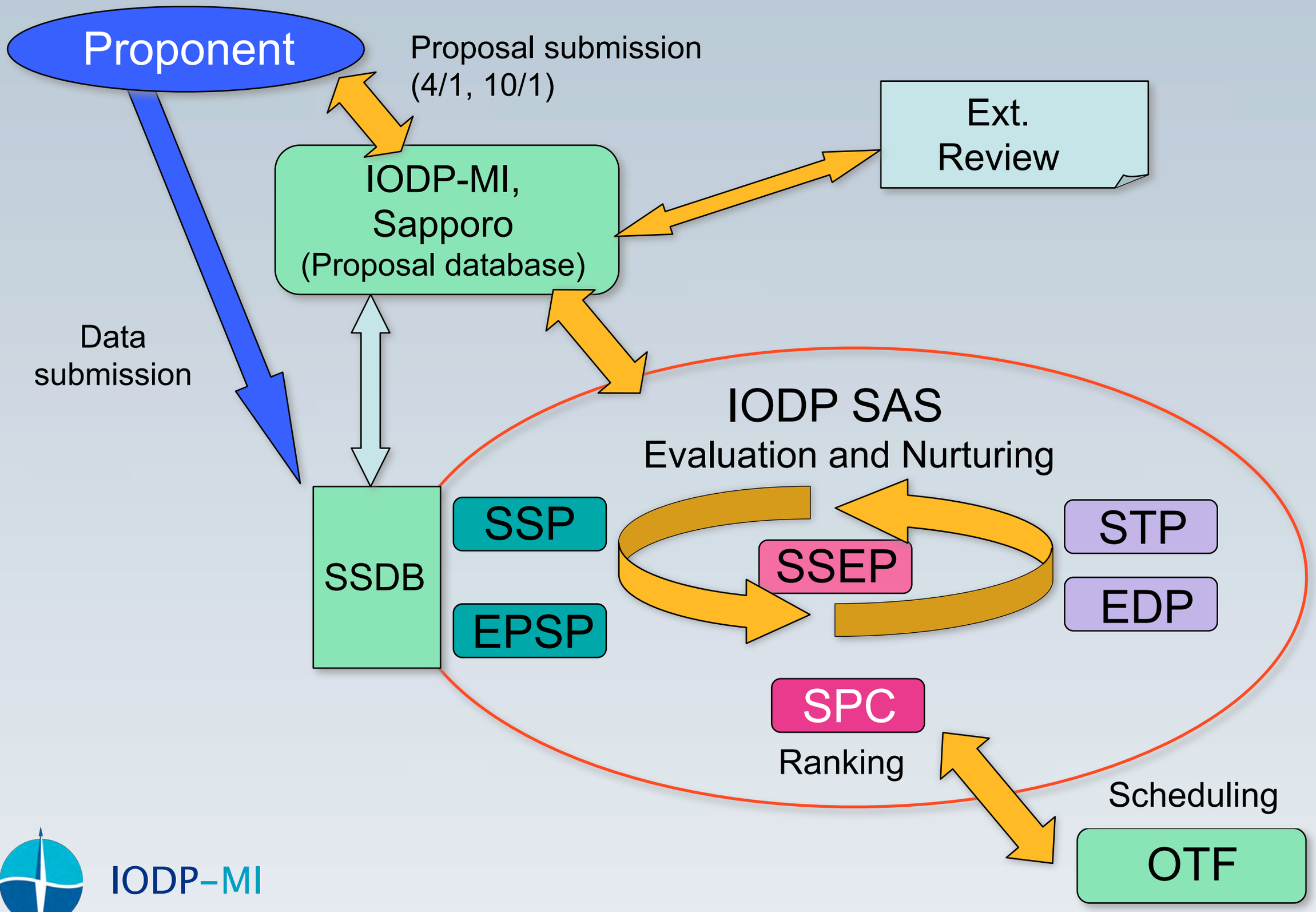
Highlights of Second SASEC Mtg

- Mission Implementation: SASEC modified slightly and then approved the draft implementation plan produced by the mission implementation WG. Lead agencies have since asked for two wording changes.
  - Call for mission proposals (and normal proposals) to be issued over winter with April 1 deadline
  - SSEP will be asked to review these proposals at May 2007 meeting - SSEP may ask for STP and EDP advice as needed
- SASEC discussed its plan to update Initial Science Plan by 2008, building on IODP workshops in 2006/2007 (This is a separate activity from process that will start in a few years to write a new science plan for the second 10 years of IODP.)
- SASEC asked its SAS WG to poll the IODP community in considering how SAS should be best structured for Phase II.

SASEC Working Group on SAS

- SASEC Consensus 0706-07: SASEC appoints a subcommittee consisting of Yoshi Kawamura (non-voting), Mike Bickle, Keir Becker, Jim Mori, David Divins (non-voting), and Hans Christian Larsen (non-voting) to review the Science Advisory Structure and recommend any changes to optimally configure its activities as IODP enters Phase II. The subcommittee should also recommend any changes in structure necessary to integrate missions into the IODP proposal review process. The subcommittee should submit its recommendation to SASEC at its spring 2007 meeting. The committee should select a chair at or before its first meeting.
- KB elected chair; first meeting Oct 31 before Nov 1-2 SASEC.
- Mission implementation working group did <u>not</u> recommend any signficant changes to SAS for implementing missions.
- IODP-MI BoG formed committee to review IODP-MI (chaired by past SPC chair Mike Coffin), and that mandate includes reviewing "efficiency" of SAS and SAS/IODP-MI relations.

IODP Proposal Process



IODP–MI

SAS WG and STP Evaluation

- STP members will be invited to respond to SAS WG questionnaire during December-January timeframe. (Questionnaire to be finalized by end of Fall AGU.)
- Would STP recommend changes in its mandate or meeting schedule?
- How can STP interactions with IODP-MI and IO's be improved?
- How can STP interactions with IODP-MI Task Forces be improved?
- Begin to consider these questions at this STP meeting - in open and/or executive session?

Recommendations for STP Focus

- Should STP have a regular annual cycle for its two meetings leading to input to August SPC on technological priorities for FY+2 program plan and long-term vision for shipboard technological improvements? (This is recommended by SPC and IODP-MI regardless of SAS WG.)
- This suggestion arises from the SPC mandate to deliver priorities for engineering and technology at the same time as the recommended science plan. It's already been applied to the biannual EDP meetings.
- If we apply the EDP model to STP:
  - winter STP meeting would emphasize feedback to IODP-MI and IO's on short-term (FY-1 to FY+1) technological projects
  - summer STP meeting would emphasize developing a long-term vision ("roadmap") for scientific technology improvements, and specifically recommend to August SPC priorities for FY+2 scientific technology developments
- Return to this tomorrow during Agenda #26

Scientific Technology Panel Report to SPC

Mike Lovell, STP vice chair

The 3-Letter Acronym STP can have several meanings:

- Standard Temperature and Pressure
- 2,5-dimethoxy-4-methylamphetamine is a psychedelic chemical known as STP
- Shielded Twisted Pair
- Shovel test pit
- www.stp-norway.com - where ships & planes meet in cyberspace

Wikipedia

Scientific Technology Panel

3rd Meeting, 26-28 June 2006
Academy of Finland
Helsinki, Finland

Requested by SPC Chair to present:

STP recommendations 3, 4

Consensus Statements 6, 9, 10, 14 for information

Consensus Statements 19 for approval

(Other recommendations and consensus statements in Executive Summary: discussion welcome – statements direct to IODP-MI)

STP Recommendation 06-03: Post-Expedition Results

The STP recommends that the IOs include post-expedition generated results (data and processed data) in the expedition database.

STP Recommendation 06-03: Post-Expedition Results

The STP recommends that the IOs include post-expedition generated results (data and processed data) in the expedition database. The original data should be maintained in the database. Submissions should address methodology, QA/QC, and if necessary, include an explanation of how the added dataset differs from previous versions. The IODP-MI QA/QC taskforce should develop a policy for ensuring QA/QC of these results. The IOs would determine if data submission is voluntary or obligatory.

Vote: 15 Yes, 0 No, 1 Abstention (Villinger), 2 absent (Lyons, Screaton)

Priority: Medium

STP suggests this be forwarded to SPC and IODP-MI

Background to STP Recommendation 0606-03:

Currently, changes to age models and other data are not recorded in the database.

This has led to a reduced quality of science in quite a few post-cruise investigations, particularly by those scientists who aren't part of the working groups associated with the expedition.

Modifications to data performed post-cruise aren't incorporated in current database. For example, post-cruise research discoveries from techniques such as oxygen isotopes concerning drilling and data quality are not incorporated into the database. Thus, even though the science party may be aware that there problems with the data (e.g., a re-cored interval from a slump; a significant unconformity not identified on ship; error in measurement, a revised age model based on post-expedition bio-magneto-iso-stratigraphic data), other investigators will not know except through personal communication. Even if a literature search is performed, it is rare that manuscripts highlight bad data.

Furthermore, there is often a significant publishing delay (up to a few years) before it is available to the community.

The practice of omitting post-cruise analyses from the database, particularly in the case of age models, has the potential to degenerate the quality of the science. So, important information concerning the data is lost to the community, particularly as time passes.

This refers to a previous STP Action Item 0606-04. The STP will explore the potential inclusion of post-cruise data by the IOs to enhance the value of the database. A significant impact of database development is efficient data delivery but STP recognizes that the shipboard data are preliminary and need to be updated through shore-based studies. The data, such as refined age models, would be treated not as a replacement, but as a supplement with good metadata and quality control. The emphasis would be on voluntary acquisition of datasets rather than developing a policy that emphasizes enforcement. Leads: Christensen, Suzuki, Ahagon and Basile

STP Recommendation 0606-04: QA/QC Task Force

The STP thanks the IODP-MI for establishing a QA/QC Task Force.

STP Recommendation 0606-04: QA/QC Task Force

The STP thanks the IODP-MI for establishing a QA/QC Task Force. However, the STP believes the task force mandate should be reformulated to include the following points. 1) The STP recommends that the task force address the general policies for the QA/QC procedures, including the issues of complex documentation and data management. 2) These should be aimed at assuring quality across a range of platforms and expeditions. 3) The task force should address IODP minimum and standard measurements across the full range of disciplines (e.g., petrophysics, geochemistry and microbiology, core description). The IOs should then implement QA/QC policy and develop protocols for individual sets of measurements in conjunction with SAS input.

STP Recommendation 0606-04: QA/QC Task Force

The STP thanks the IODP-MI for establishing a QA/QC Task Force. However, the STP believes the task force mandate should be reformulated to include the following points. 1) The STP recommends that the task force address the general policies for the QA/QC procedures, including the issues of complex documentation and data management. 2) These should be aimed at assuring quality across a range of platforms and expeditions. 3) The task force should address IODP minimum and standard measurements across the full range of disciplines (e.g., petrophysics, geochemistry and microbiology, core description). The IOs should then implement QA/QC policy and develop protocols for individual sets of measurements in conjunction with SAS input.

STP Recommendation 0606-04: QA/QC Task Force

The STP thanks the IODP-MI for establishing a QA/QC Task Force. However, the STP believes the task force mandate should be reformulated to include the following points. 1) The STP recommends that the task force address the general policies for the QA/QC procedures, including the issues of complex documentation and data management. 2) These should be aimed at assuring quality across a range of platforms and expeditions. 3) The task force should address IODP minimum and standard measurements across the full range of disciplines (e.g., petrophysics, geochemistry and microbiology, core description). The IOs should then implement QA/QC policy and develop protocols for individual sets of measurements in conjunction with SAS input.

STP Recommendation 0606-04: QA/QC Task Force

The STP thanks the IODP-MI for establishing a QA/QC Task Force. However, the STP believes the task force mandate should be reformulated to include the following points. 1) The STP recommends that the task force address the general policies for the QA/QC procedures, including the issues of complex documentation and data management. 2) These should be aimed at assuring quality across a range of platforms and expeditions. 3) The task force should address IODP minimum and standard measurements across the full range of disciplines (e.g., petrophysics, geochemistry and microbiology, core description). The IOs should then implement QA/QC policy and develop protocols for individual sets of measurements in conjunction with SAS input.

STP Recommendation 0606-04: QA/QC Task Force

The STP thanks the IODP-MI for establishing a QA/QC Task Force. However, the STP believes the task force mandate should be reformulated to include the following points. 1) The STP recommends that the task force address the general policies for the QA/QC procedures, including the issues of complex documentation and data management. 2) These should be aimed at assuring quality across a range of platforms and expeditions. 3) The task force should address IODP minimum and standard measurements across the full range of disciplines (e.g., petrophysics, geochemistry and microbiology, core description). The IOs should then implement QA/QC policy and develop protocols for individual sets of measurements in conjunction with SAS input.

The STP is prepared to provide liaisons as appropriate to this newly reformulated task force.

Vote: 16 Yes, 0 No, 0 Abstention, 2 absent (Lyons, Screaton)

Priority: High

STP suggests this be forwarded to SPC and IODP-MI

Background to STP Recommendation 0606-04: STP Recommendation 0601-05: QA/QC was forwarded to IODP-MI.

In it, STP recommended that IODP-MI coordinate the QA/QC efforts across all platforms in cooperation with the IOs and where necessary STP. STP requested a QA/QC plan for the IODP minimum measurements to be presented by the IOs/IODP-MI at the next STP meeting. Background to STP Recommendation 0601-05 stated that QA/QC is an important issue, especially given multiple platforms and the desire of scientists to integrate data acquired by different platforms across the IODP.

This recommendation follows on from previous discussions at SciMP and STP, and provides a route towards addressing this in a timely manner for Phase 2 of IODP. STP understands that IODP-MI received STP Recommendation 0601-5 on QA/QC and proposed at SPC (March) to establish a task force to develop the framework for the IODP shipboard and shore-based QA/QC laboratory procedures.

At SPC (March) IODP-MI indicated it would discuss with STP post-SPC meeting the mandate and constitution of the task force.

Immediately prior to the STP meeting in Helsinki (0606) STP was asked through the SPC chair to provide a liaison to the IODP-MI task force. By this stage the task force mandate appeared finalized with 5 geochemistry specialists invited to participate.

STP is concerned that QA/QC applies to all IODP minimum and standard measurements and that the task force membership should reflect this (if anything geochemistry QA/QC is relatively well understood and documented compared to the majority of IODP measurements).

STP is also concerned that the general QA/QC policy should be defined first prior to detailed procedures, that the issues concerning documentation, data management, and enforcement should be addressed, and that the community should be represented across the full range of IODP measurements.

STP is concerned that as representatives of the IODP stakeholder community for IODP scientific measurements it was not further consulted as to the proposed detailed constitution and mandate of the task force. STP is pleased with the involvement of independent specialists and specialists from the IODP scientific community but believes the task force must define the measurements it aims to consider from the outset, and that this range must address the whole range of IODP minimum and standard measurements.

UPDATE: IODP-MI & STP have recently made progress on this issue:

A core membership comprising 1 representative from each IO, 1-2 external experts, 1 STP member, and 1 IODP-MI representative (will) meet as soon as possible to define the scope of the taskforce and identify areas where action is required…

IODP-MI & STP have also revised the mandate….

Specific additions:

The Taskforce is charged with defining QA/QC guidelines to be followed by the IOs for at least the IODP minimum and standard measurements across the full range of disciplines (e.g., geochemistry, petrophysics, microbiology, core description, logging, etc.) including, but not limited to:

Establishing general policies for the QA/QC procedures, including issues of handling complex documentation and overall data management….

While w appear to have resolved the immediate issues, this raises questions about Task Forces and the relationship between IODP-MI and SAS Panels…

a. Ownership v Interest (TF is an IODP-MI entity);

   - no obligation to involve SAS participation and/or advice

b. Identifies the need for an established structure for dialogue between IODP-MI and the SAS in the efficient and timely establishment of Task Forces, and with respect to communication generally on appropriate IODP issues.

STP Consensus 0606-06: SODV review – design and analytical facilities

The STP thanks the US Implementing Organization for the opportunity to review the plans for the SODV. In response, the STP has attached the following documents in order to provide feedback on the future design and analytical facilities of the SODV for the following three major disciplines; chemistry and microbiology, petrophysics and sedimentology. Additional consensus statements concerning specific issues are attached below.

Priority: High/Medium/Low

STP suggests this be forwarded to SPC and/or IODP-MI

STP Consensus 0606-06: SODV review – design and analytical facilities

Chris House attended on behalf of PAC

& STP provided feedback to PAC and the USIO

Plus STP made specific additional consensus statements…

Background to STP Consensus 0606-06: The STP invited the SODV Project Advisory Committee (PAC) and the USIO to present an update on the SODV development following on from previous STP input at the STP Kochi meeting in January 2006. Chris House from PAC attended the Helsinki STP meeting and gave presentations, together with additional material presented by Peter Blum for the USIO. Based on these presentations and outline plans of the rearranged decks of the SODV, STP held breakout sessions to discuss the developments under the three working groups (Petrophysics, Geochemistry and Microbiology, and Core Description).

STP Consensus 0606-09: SODV CORK installations

STP recommends that adequate heave compensation (either enhanced passive or active) must be considered for CORK installations and for hydrologic testing (e.g., pump tests with packer deployments).

Part of this analysis should include the costs involved in the potential loss of a CORK (drilling time and hardware). "Loss" ranges from losing a hole (Leg 205) to losing hardware (Leg 301) to possibly destroying a seal thus allowing fluid exchange at the seafloor (e.g. 1026B) to losing an opportunity (e.g., remedial cementing operations for 301).

STP

appreciates this is a complex issue but believes that additional expert comments are required to address the issue of the importance of active and/or passive heave compensation (HC) on the SODV before the PAC statement is endorsed by STP. Several experts have been notified, (Pettigrew, Fisher, Davis, and Storms) and their consistent response indicates that the lack of a proper HC unit would comprise the capabilities and needs to achieve high-priorty IODP objectives.

Priority: High

STP suggests this be forwarded to SPC and/or IODP-MI and EDP

Background to STP Consensus 0606-09: This consensus arose as part of the SODV discussions. While STP believes this to be important the panel does not have sufficient appropriate expertise to address the details. Several experts have since provided comments consistent with the need for heave compensation and the importance for heave compensation to accomplish scientific goals. STP asks for SPC's support in seeking further advice for the USIO and IODP-MI.

STP Consensus 0606-10: SODV seafloor visualization

The PAC's discussion of seafloor visualization is a good summary. The STP takes a stronger stance than the PAC. The VIT (Vibration Isolated Televiewer) system should be greatly improved with additional lighting, a good-quality digital camera, pan, tilt, gyro, etc. A fiber-optic cable (such cables do not necessarily result in a larger winch footprint) will open up opportunities in the future for greater bandwidth applications. A heave compensation unit should be considered for this system.

Priority: High

STP suggests this be forwarded to SPC and IODP-MI

Background to STP Consensus 0606-10: This consensus arose as part of the SODV discussions ands builds on the previous STP Recommendation 0601-010: Improved seafloor visualization for SODV. The STP recommends the USIO acquire an improved seafloor visualization system for routine deployment on the SODV. Vote: 15 Yes, 0 No, 0 Abstentions, 4 absent (Castillo, Korja, Mandernack &Yamamoto). Priority: High. STP suggested this be forwarded to IODP-MI (and be copied to PAC SODV). The background to STP Recommendation 0601-10 included: STP have considered the potential benefits of an ROV for the SODV and in discussions identified a clear need to improved seafloor visualizations for scientific observations. STP believes improved seafloor visualization (Better camera system (better lights, pan and tilt, orientation)) would impact many areas such as:

– locating all sites and geologic context (e.g., in vent/hydrate/fault area)

– addressing issues connected with CORKs:

- are valves open or closed?
- inspection during and post-installation
- better fishing (dropped equipment, blocked hole, dropped drill string)

STP Consensus 0606-14: SODV - Larger Drill Pipe for Enhanced Well Logging

STP Consensus 0606-14: SODV - Larger Drill Pipe for Enhanced Well Logging

After reviewing revised plans for a tapered drill string on the SODV, the STP reiterates its support for larger diameter pipe that will allow the use of state-of-the-art well-logging tools during IODP. The STP believes the tapered drill string will considerably enhance the potential of IODP borehole geophysical science for years to come.

Priority: High

STP suggests this be forwarded to SPC and IODP-MI

Background to STP Consensus 0606-14: This is in response to SPC Consensus 0601-11: The SPC receives STP Consensus 0601-1 on larger diameter drillpipe for the new scientific ocean drilling vessel (SODV) and awaits an analysis of the benefits and drawbacks by the U.S. implementing organization (USIO).

Many of the well logging tools currently in use are generally 20-30 years old and no longer represents state of the art technology. These constraints are imposed by the diameter of the drill pipe currently used for deep sea drilling. Moving to a larger diameter (6 5/8 inch) pipe will allow for deployment of industry standard logging tools.

The advantages of moving to industry standard tools are several:

New tools will be available for measurements not currently possible

Downhole sampling will be possible (formation fluids, sidewall cores)

Existing measurements will be made at higher resolution

Modern logging tools are faster

A logging bit can be fixed to the bottom of the logging pipe (bridge busting)

Short of moving completely to a larger drill string, it has been proposed to deploy a tapered system consisting of up to 3,000m of larger diameter pipe above a smaller diameter coring string. Logging tools will be run through the larger pipe after coring is completed.

The downsides of a tapered drill string are:

A pipe trip will be needed between coring and logging

Industry standard tools will be limited to holes in <3,000m water depth

The time needed for a pipe trip will be somewhat mitigated by the increased speed of logging using state of the art tools. The 3,000m limitation may be overcome by the addition of another 1,000m of reserve pipe during selected expeditions. However, even without this provision, 77% of all holes proposed in 26 active proposals requesting/requiring larger diameter tools are within the 3,000m range of the tapered drill string.

STP Consensus 0606-19: Chair & Vice Chair

Should Clive Neal be appointed by USAC to the STP, the STP recommends Clive as vice chair starting with the first meeting in 2007.

Priority: High

STP suggests this be forwarded to SPC

Background to STP Consensus 0606-19: Makoto Okada's term as chair ends with the STP 0606 meeting and Mike Lovell becomes chair. The panel is unanimous in recommending Neal as the next vice chair, should he be appointed to the panel. STP currently has no vice chair.

Additionally…

Action Item:

STP Action Item 0606-28:

STP members are invited to discuss through electronic means the short- and long-term strategic aims of the STP as IODP enters a new phase of ocean drilling.

Priority: High

STP suggests this be noted.

Background: IODP is at an exciting stage in its development and a new era of ocean drilling beckons. As the plans for the SODV are finalized it is opportune to consider the strategic aims of STP in parallel with the detailed terms expressed in the STP mandate.

1. Action Item: strategic short an long term aims
   a. Monitor progress and provide input to IOs & IODP-MI (e.g. observatories, 3rd Party tools, QA/QC)

1. Action Item: strategic short an long term aims
   a. Monitor progress and provide input to IOs & IODP-MI (e.g. observatories, 3rd Party tools, QA/QC)
   b. Monitor ship & shore operations – shakedown cruises – minimum & standard measurements, lab flow, integration, cross platform developments: what is STP role between IOs & IODP-MI? how can we improve communication?

STP wishes to work with IODP-MI and the IOs to develop the most effective and implementable measurements plan for existing, new and innovative equipment (as it becomes available) to advance ocean drilling science.

But how?

1. Action Item: strategic short an long term aims
   a. Monitor progress and provide input to IOs & IODP-MI (e.g. observatories, 3rd Party tools, QA/QC)
   b. Monitor ship & shore operations – shakedown cruises – minimum & standard measurements, lab flow, integration, cross platform developments: what is STP role between IOs & IODP-MI?
   c. Continue to give input & advice to proposals – SSEPS, SPC

2. EDP Liaison: joint meetings?

   a. When appropriate

   b. Maintain communication- agendas/minutes/attendance as appropriate

   c. Panel expertise

      – some though very little overlap

      - generally separate mandates

Specifically… SODV Update

a. What has been achieved?

b. How has STP advice been considered and what are the effects of any changes implemented?

Specifically… CHIKYU Update

a. What has been achieved in shakedown cruises?

b. How has STP advice been considered and implemented?

Specifically… WG Reports Update

a. How have WG Reports, forwarded to IOs been considered and implemented?

For example: Microbiology Report from the Rhode Island Meeting (2003)

STP (engine additive) website

http://stp50.com/uk/

..."Tired? STP means performance;
the ultimate thrill could be yours!"

- Shielded Twisted Pair

Wikipedia

NSF report

Activities related to converting the *JOIDES Resolution* to the riserless Scientific Ocean Drilling Vessel (SODV) for IODP are continuing. Overseas Drilling Limited (ODL), as part of their IODP drilling contract with Texas A&M Research Foundation, is negotiating with three shipyards to undertake a refit of the *JOIDES Resolution.* ODL is overseeing an engineering design effort by Glosten Associates of Seattle to provide significant improvements in scientific capability and habitability to the JOIDES Resolution. Glosten has integrated scientific requirements and laboratory arrangements developed by the JOI Alliance, in partnership with the scientific community, that would replace the labstack and rebuild facilities within the existing hull. With additional upgrade and life-cycle extension projects, the rebuilt vessel will be able to effectively serve as the riserless platform through the current term of the IODP and beyond.

The investment required for this conversion is budgeted at $115 million, with delivery expected to IODP for scientific duty by November 15, 2006. The first $73 million in funding has been approved in FY05 and FY06, with the remaining $42 million in the FY07 budget that has yet to be approved by the U.S. Congress. Further information about the SODV conversion and capabilities, laboratory arrangements, status, organizational structure, and supporting documentation is available on the recently updated SODV website at www.joiscience.org/sodv/index.html. John Walter is the principal point of contact for the SODV conversion project within NSF.

A new Environmental Impact Statement (EIS) for IODP SODV operations is being produced, with an initial draft EIS recently delivered to NSF. JOI, working together with contractor, Metcalf and Eddy, is producing the document, with the National Oceanic and Atmospheric Administration/National Marine Fisheries Service serving as a cooperating agency. The draft EIS is expected to be available for public comment in early 2007.

The NSF Ocean Drilling Program recently bid adieu to Carolyn Ruppel, who departed for the U.S. Geological Survey in Woods Hole after serving brilliantly as the rotator overseeing the ODP Grants program. Kevin Johnson of the University of Hawaii arrived in August 2006 to become her replacement. NSF also welcomes Adam Schultz of Oregon State University as the new rotator in the Marine Geology and Geophysics Program.

FY07 funding for the NSF/OCE is expected to be slightly better than in FY06, with ship operations support again remaining tight. At the May Marine Geosciences Section panel, several NSF/ODP proposals were recommended for awards. These include projects to study the seismic structure and petrology of the Kane

Megamullion on the Mid-Atlantic Ridge, thermal environment of the South Pacific Gyre, microbial observatories at North Pond on the Mid-Atlantic Ridge, CORKs for Nankai Trough, and an EOR project related to Arctic drilling during IODP Expedition 302.

The U.S. Science Support Program (USSSP), which funds the participation of U.S. scientists in all aspects of IODP planning and at sea expeditions, is being re-competed. A solicitation (NSF 06-575) with a proposal deadline of September 20, 2006 describes the new program in detail.

Scientific Technology Panel

4th Meeting, 7-9 December 2006
San Francisco, California, U.S.A.

IODP-MI Report

Nobu Eguchi
Science Coordinator

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Outline

- Status of STP Recommendations
- Proposals
- SAS Meeting Schedule
- FY07/FY08 Workshops

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Status of STP Recommendations

0606-01	Seismic sourse	IOs
0606-02	Downhole T&P tools	IOs
0606-03	Post-expedition results	IODP-MI
0606-04	QA/QC task force	IODP-MI

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Status of STP Consensus Statements

0606-05	STP panel expertise	PMO
0606-06	SODV review - design and analytical facilities	USIO
0606-07	SODV review - computers	USIO
0606-08	Measurements at high P&T	CDEX
0606-09	SODV CORK installations	USIO
0606-10	SODV seafloor visualization	USIO
0606-11	ESO temperature tools	ESO
0606-12	Uniform depth models meeting participants	IODP-MI
0606-13	Temperature and pressure measurements	IOs
0606-14	SODV - larger drill pipe	USIO

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Status of STP Consensus Statements

0606-15	LA-ICP-MS	CDEX
0606-16	CAB nominations	IODP-MI
0606-17	VCD/Lithology meeting participants	IODP-MI
0606-18	Digital taxa dictionaries meeting participants	IODP-MI
0606-19	Chair and vice chair	IODP-MI

Status of STP Action Items

0606-28	Aims of STP	STP

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

STP Recommendation 0606-3
Post expedition results

SPC discussed this recommendation and received it.

SPC Consensus 0608-12: The SPC receives STP Recommendation 0606-03 on including post-expedition results in the expedition database and supports this recommendation in principle. The committee recommends that the IODP-MI proceed in working on this issue together with the implementing organizations (IOs) and the Scientific Technology Panel (STP) and report regularly to the SPC on any progress.

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

STP Recommendation 0606-4
QA/QC Task Force

IODP-MI convened first QA/QC Task Force meeting on 6-7 November 2006 at Washington D.C.

Members attending 1st meeting;

Kelly Kryc (IODP-MI)

Philippe Gaillot (CDEX)

David Houpt (USIO)

Clive Neal (STP)

See agenda item 20 for detail

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

STP Consensus 0606-12, -17, -18
Meetings

IODP-MI convened

• **Uniform Depth Models meeting**: 26 - 27 September 2006

Co-chairs; Miville (IODP-MI) and Gulick (U.Texas)

19 participants plus 8 observers

• **VCD/Lithology meeting**: 27 - 28 September 2006

Co-chairs; Miville (IODP-MI) and Neal (STP)

24 participants plus 13 observers

• **Digital Taxa Dictionaries meeting**: 29 - 30 September 2006

Co-chairs; Soeding (IODP-MI) and Lazarus (MRC)

12 participants plus 13 observers

See agenda item 17 for detail

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

STP Consensus 0606-16
CAB nominations

CAB is formalized as a IODP-MI Task Force, co-chaired by two vice presidents.

New member;

Masanobu Yamamoto at Hokkaido University accepted IODP-MI invitation for CAB member.

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

STP Consensus 0606-19
Chair & Vice chair

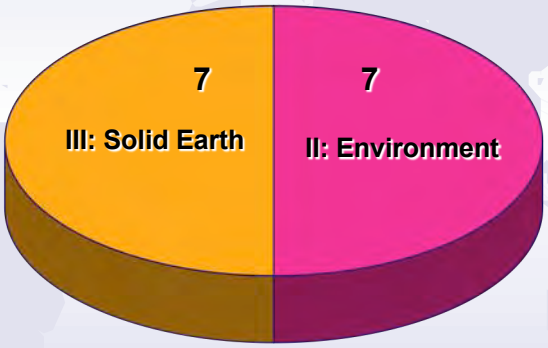
SPC made following consensus at its August 2006 meeting.

SPC Consensus 0608-13: The SPC promotes Mike Lovell to chair of the Scientific Technology Panel (STP) effective immediately. The SPC also accepts STP Consensus 0606-19 and appoints Clive Neal as the new STP vice chair, effective as of the beginning of his appointment to the panel on 1 October 2006.

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Submissions for October 2006 deadline: 14

By ISP Themes



INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

SAS Meeting Schedule

STP	7-9 Dec 2006	San Francisco, Calif., U.S.A.
EPSP	09-10 Jan 2007	Yokohama, Japan
HG DPG	12-13 Jan 2007	Honolulu, Hawaii, USA
EDP	17-19 Jan 2007	New York, N.Y., USA
IIS PPG	19-20 Jan 2007	Houston, Tex., USA
SSP	20-22 Feb 2007	La Jolla, Calif., USA
SPC	*4-7 Mar 2007*	*Osaka, Japan*
SASEC	*22-23 Mar 2007*	*videoconference*
SSEP	*29 May-1 Jun 07*	*Houston, Tex., USA*
STP	*4-6 Jun 2007*	*TBD, China*
EPSP	*11-12 Jun 20077*	*La Jolla, Calif., USA*
SASEC	*25-26 Jun 2007*	*Bremerhaven, Germany*

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

FY07/FY08 Workshops and Topical Symposia

FY07 Workshop

Addressing Geologic Hazards Through Ocean Drilling

Chair; Julia Morgan — August-Sep. Hawaii or NW Pacific US

Large Igneous Provinces

Co-chair; Mike Coffin and Clive Neal — Late July, N. Ireland

FY08 Workshop

Proposal submission deadline; 1 Feb. 2007

FY07 Topical Symposium

North Atlantic and Arctic Climate Variability

Bremen, Germany, August 2007

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

STP rotations

06-12	07-06	07-12	08-07	08-12	09-07
Kasahara	Basile	Ge	Castillo	Nonoura	Colwell
Korja	Suzuki		Christensen		Ikehara
Okada	Wheat		Lovell		Johnson
Sakamoto					Lee
Villinger					Sakurai

China ECORD IAC Japan USA

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Scientific Drilling

- **No.3, September 2006**
- **Science Reports**
- IODP Expeditions 304 & 305, Expedition 308, Expedition 311, Lake Petén Itzá Drilling Project

and more

- **Next Issue (No. 4), March 2007**
- Expedition 309&312 science report
- IODP workshop white papers
- Iceland Deep Drilling Project

and more

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Jeff Schuffert

- Jeff Schuffert resign IODP-MI
- Start working at JOI

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Regular report from CDEX

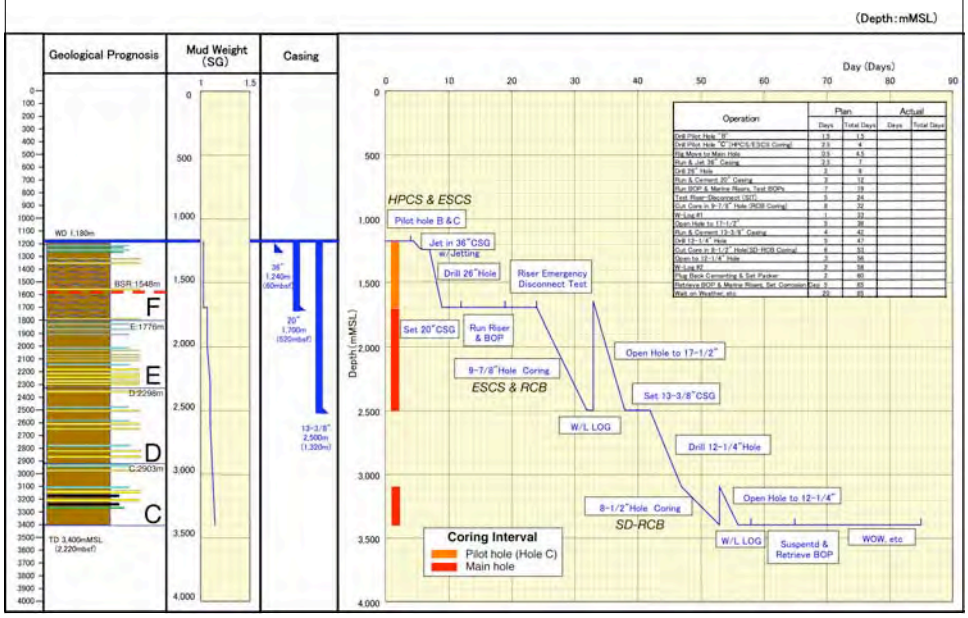
July: System Integration Test Preparation

Aug-Oct: System Integration Test

Nov: NantroSeize Stage 1 Expedition 1 Pre-cruise meeting
QA-QC

Workshops **Trainings** **IO meetings**

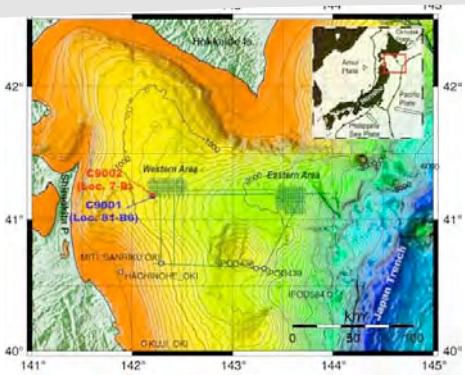
System Integration Test - Plan



System Integration Test – Plan vs Achievements

Water depth ~ 1200m
Target Depth : 2,220 mbsf
Duration 85 days

Location Offshore Shimokita



Hole B	Wash out (safety hole)	0 – 540 mbsf
Hole C	Coring (riserless mode)	0 – 365 mbsf
Hole D	Wash-out	0 – 525 mbsf
	Drilling riser mode	525 – 647 mbsf

No core – collection of cutting

System Integration Test – Problems

Circulation loss when cementing casing (BOP support)
Mechanical failure drilling system
DPS down time
Leak of BOP

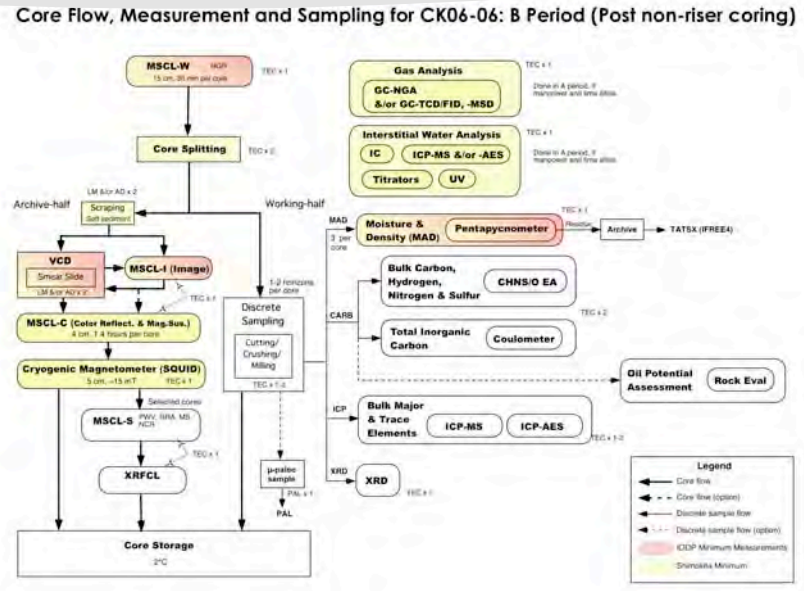
Bad weather (Typhoon)

Bending of riser pipes

OverSeas Driling SIT Woodsides
Off shore Kenya – Off shore Australia

International Ops Sept 2007

LAB SIT - Core Flow Plan



System Integration Test - Participants

Prinz-Gentry	Morita	Hayashi	SuzuKi Nori
Acton	Oda	Yun	Zhao
Ashi	Nishi	Kopf	Rumford
Firth	Culberson	Underwood	Lallemant
Lin	Kinoshita	Tobin	Wilson
Schaffer	Saito		

+ JAMSTEC scientists – MBio

+ Cdex Staff and MWJ Technicians

Lessons learnt – Review of Lab

Review of Lab set-up
Equipments
Procedures (measurement / curation)

On-board management

General facilities

Kuramoto Friday Dec. 8th

NantroSEIZE Stage 1 and Stage 2 planning

Site selection EPSP – approaval

Pre-cruise meeting of Chikyu Stage 1 Expedition 1 (LWD)
Prospectus in progress

Pre-cruise meetings of Chikyu Stage 2 Exp. 2 &3 Jan 2007

Inter IO - CDP

Staffing
Inter lab calibration
Sampling process
Ship communication capabilities
…

QA-QC taskforce and CDEX Roadmap

QA-QC Taskforce Report (Kryc & Neal)

1. The QA/QC taskforce requests that the IOs provide their plans and measurement-specific protocols for implementing QA/QC for the IODP Minimum and Standard Measurements by February 2, 2007. Those protocols that are not ready by the deadline can be provided to the taskforce at a later date, which must be specified by the IO.

2. The QA/QC taskforce requests that each IO suggest a method by which they would implement cross-platform comparisons of data to be submitted on February 2, 2007.

SIT Review - Procedures

Enginering development – Long Term Borehole Monitoring

17 Mar. Contracted with IODP-MI for feasibility study
15 Jun. 'System Architecture' document submitted
20 Jul. Peer review for 'System Architecture' document completed
30 Sep. 'High Level Design' document submitted
2-3 Oct. Reviewed in Engineering Task Force @Washington D.C.
13 Oct. 'High Level Design' document finalized

Engineering Design phase

Workshops and Trainings

Mission Moho – Sept 7-9

Continental Break-up - Sept 15-18

Subseafloor Life – Oct 3-5

<u>IODP-MI report</u>

Uniform Depth Models Meeting (Miville /Sakamoto)

VCD/Lithology Meeting (Miville /Castillo/Neal)

Digital Taxa Dictionaries Meeting

USIO

United States Implementing Organization (USIO) Report

(Updated December 5, 2006)

STP Meeting, San Francisco

December 7-9, 2006

USIO

Outline

- USIO operational and planning activities
  - Excluding SODV project update - will be presented separately
- Riserless vessel schedule
- USIO expedition planning and staffing
- Key personnel updates

USIO Recent Operational Activities

USIO

- ODL undertook independent commercial enterprise with India using the *JOIDES Resolution*.
- *JOIDES Resolution* in Singapore for shipyard work.
  - Life extension work currently underway: derrick removed.

USIO Planning Activities

USIO

- Riserless vessel re-deployment
  - Scheduled for November 1, 2007 (despite announced delay in October issue of Science (v. 314, p.577).
  - SODV project update provided in separate presentation
  - Shipboard analytical systems updates provided in separate presentation
- DSDP/ODP Core Redistribution Project implementation continues.
- Started preparations of FY08 Program Plan.
  - Lean operational budget
  - No significant development other than those directly related to hole completions on scheduled expeditions

Riserless Vessel Draft Schedule[1]

USIO

Expedition	Port	Dates[2]	Days Port/Sea	Days at Sea Transit/Ops
Equatorial Pacific	Singapore[3]	1 Nov 2007 - 1 Jan 2008	61 (6/55)	34/21
NanTroSEIZE	Honolulu[4]	1 Jan 2008 - 2 Mar 2008	61 (6/55)	16/39
NanTroSEIZE	Yokohama	2 Mar 2008 - 2 May 2008	61 (5/56)	4/52
Bering Sea	Tomakomai[5]	2 May 2008 - 2 July 2008	61 (5/56)	15/41
Juan de Fuca	Victoria	2 July 2008 - 1 Sep 2008	61 (5/56)	5/51
Equatorial Pacific	San Diego	1 Sep 2008 - TBD	TBD	TBD
Canterbury[6]	TBD	TBD	TBD	TBD
Wilkes Land [7,8]	TBD	TBD	TBD	TBD

1 - This operational schedule is a draft issued for planning purposes.
2 - Dates for each expedition WILL CHANGE. Specific dates will be adjusted in Spring 2007
3 - Scientists will board the vessel in Honolulu on or about 30 November 2007.
4 - Scientists will board the vessel in Yokohama on or about 20 January 2008.
5 - Tomakai is tentative.
6 - A hazard assessment is pending for Canterbury Basin, which will determine schedule
7 - Schedule may need to be extended about 2-3 weeks to provide the best environmental window for Wilkes Land
8 - Wilkes Land schedule is subject to change pending Canterbury hazard assessment and scheduling

USIO Expedition Planning and Staffing

USIO

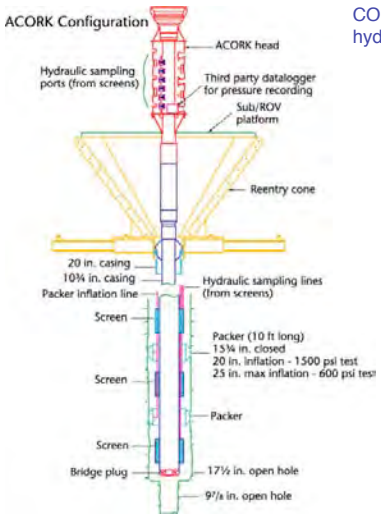
Expedition	Expedition Planning Meeting	Co-Chief Scientists	Science Party Staffing
Equatorial Pacific	Early 2007	TBD TBD	Closing 18 Dec 2006
NanTroSEIZE (Subduction Input)	7-8 Dec 2006	Mike Underwood Achim Kopf	Closed - selection ongoing
NanTroSEIZE (Kumano Basin Observatory)	6-8 Nov 2006	Demian Saffer Wonn Soh	Closed - selection ongoing
Bering Sea	TBD	TBD TBD	
Juan de Fuca	TBD	TBD TBD	
Equatorial Pacific	Early 2007	Heiko Palike TBD	Closing 18 Dec 2006
Canterbury	TBD	TBD TBD	
Wilkes Land	TBD	TBD TBD	

NanTroSEIZE Kumano B. Observatory

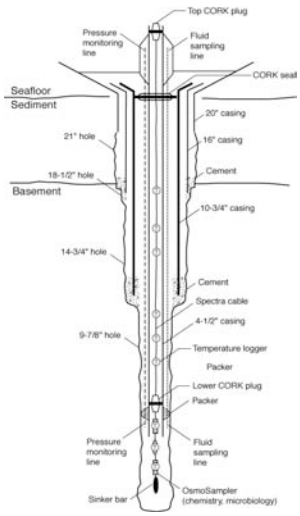
USIO

Nested 4-1/2 inch “CORK-II” in 10-3/4 inch “ACORK”

196-style ACORK



CORK-II hydrogeology

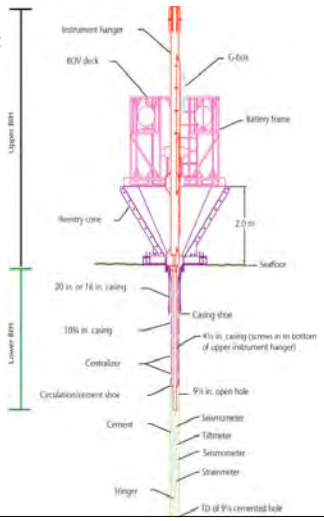


NanTroSEIZE Kumano B. Observatory

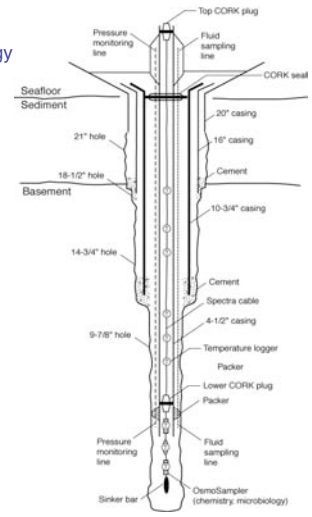
USIO

Merging of Seismic Observatory and CORK-II

“Seis-CORK”: Borehole Instrument Hanger seismometer cemented in hole



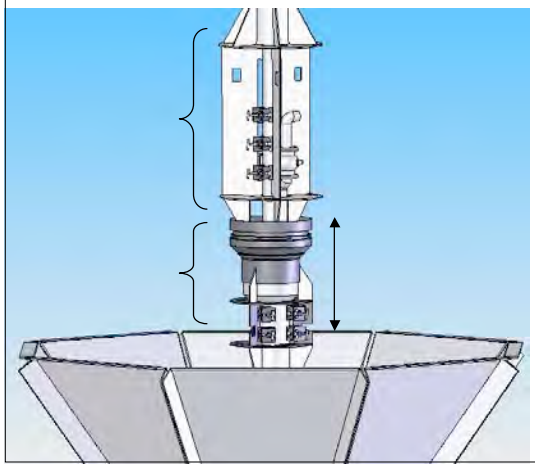
CORK-II hydrogeology

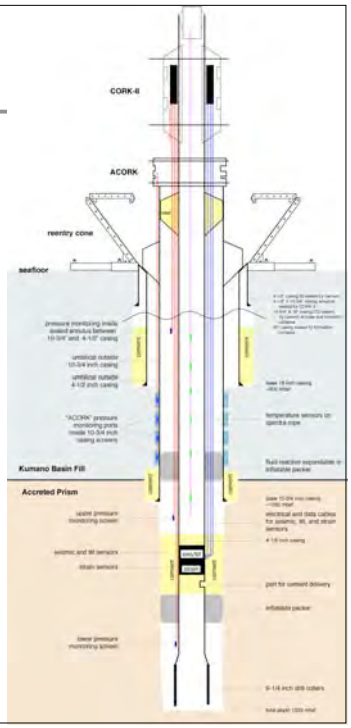


NanTroSEIZE

USIO

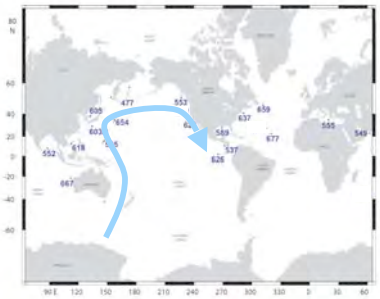
Kumano Basin Observatory





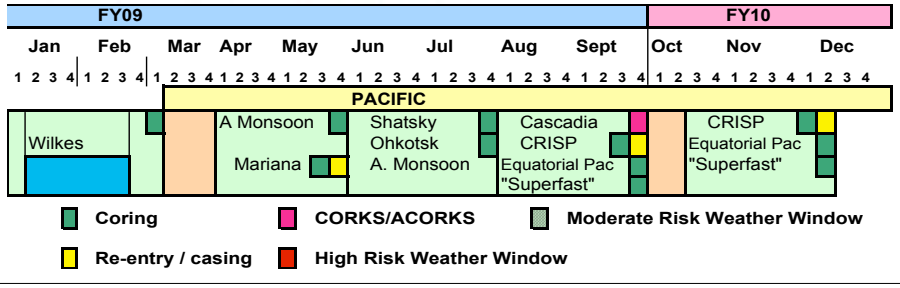
Riserless Vessel Schedule FY09/10

USIO



Issues

- Weather windows
  - *Typhoons (Mariana, A. Monsoon)*
- Clearance
  - *Okhotsk, Asian Monsoon*
- Proposal status
  - *Superfast*
- Cost
  - *FY09/10 Budget targets unknown*



Other

USIO

- LDEO Borehole facilites
  - Renovation and expansion of BRG offices is ongoing. Phase 1 of 3 is complete which includes 10 new offices, conference room, and video conferencing capability.
  - Machine shop capabilities significantly increased with computerized tool making machine and downhole tool testing equipment.

Key Personnel Updates

USIO

- Eric Meissner hired as LDEO Manager of Engineering and Technical Services replacing Greg Myers.
- Tarik Hussein hired as Electrical Engineer to replace Will Keogh
- Michael Herron (Schlumberger) is visiting as FTIR and geochemical logging specialist
- Jill Weinberger hired as new LDEO logging staff scientist.
- Interviews for three Logging Staff Scientists ongoing
- Sean Higgins will start as Associate Director at JOI in January 2007.
- Jörg Geldmacher will start as a new staff scientist in January2007.
- Interviews for Manager of Tools and Analytical Services recently concluded - decision imminent.
- Interviews for Supervisor of Science Support and Staff Scientist positions recently concluded - decision imminent.
- Interviews for Staff Scientist ongoing

ECORD Science Operator

Update to STP

4th STP Meeting
7th – 9th December, 2006
San Francisco, USA

Ursula Röhl
ESO Curation & Lab manager
Bremen University, Germany

Expedition 302 (ACEX): Publications

- Brinkhuis, H., *et al*. (2006). Episodic fresh surface waters in the Eocene Arctic Ocean. *Nature*, 441(7093): 606-609.
- Moran, K., *et al*. (2006). The Cenozoic palaeoenvironment of the Arctic Ocean. *Nature*, 441(7093): 601-605.
- Sluijs, A., *et al*. (2006). Subtropical arctic ocean temperatures during the Palaeocene/Eocene thermal maximum. *Nature*, 441(7093): 610-613.
- Pagani, M., *et al*. (2006). Arctic's hydrology during global warming at the Palaeocene-Eocene thermal maximum. *Nature*.
- Stein, R., *et al*. (2006). Anoxia and high primary production in the Paleogene central Arctic Ocean: First detailed records from Lomonosov Ridge. *Geophysical Research Letters*, 33.

Expedition 310 ("Tahiti Sea Level"): Within moratorium

- Onshore Science Party ended 4th March 2006.
- Editorial meeting July 2006.
- Expedition Report production currently in galley review period (with Co-Chief scientists, Staff Scientist, and handled by USIO Publication Services).
- Expedition Report to be published in March 2007.

Expedition 310 (Tahiti Sea Level):

Tahiti Operational Review (REVCOM)

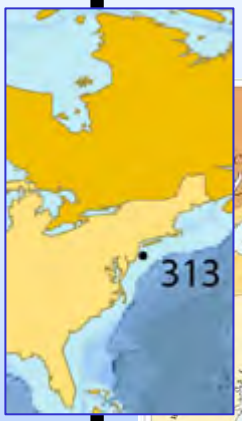
2nd - 3rd August Washington DC

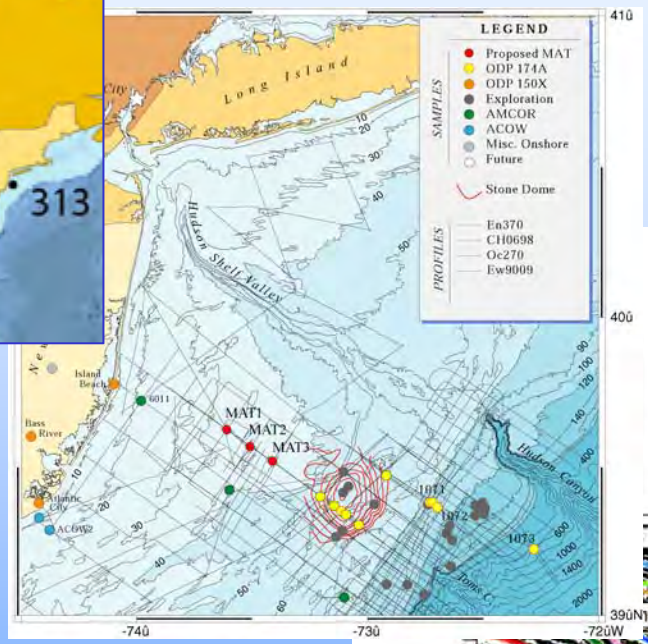
"Overall, the Expedition 310 Operations Review Task Force found that the Tahiti Sea Level expedition was a huge success. This success resulted from a combination of factors including, "Lessons Learned" from the ACEX expedition, experience gained by ESO working in the "IODP" environment, close collaboration between the co-chief scientists and operators, and a willingness and flexibility 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 drilling venture, which the Task Force believes will produce a wealth of scientific knowledge for years to come"

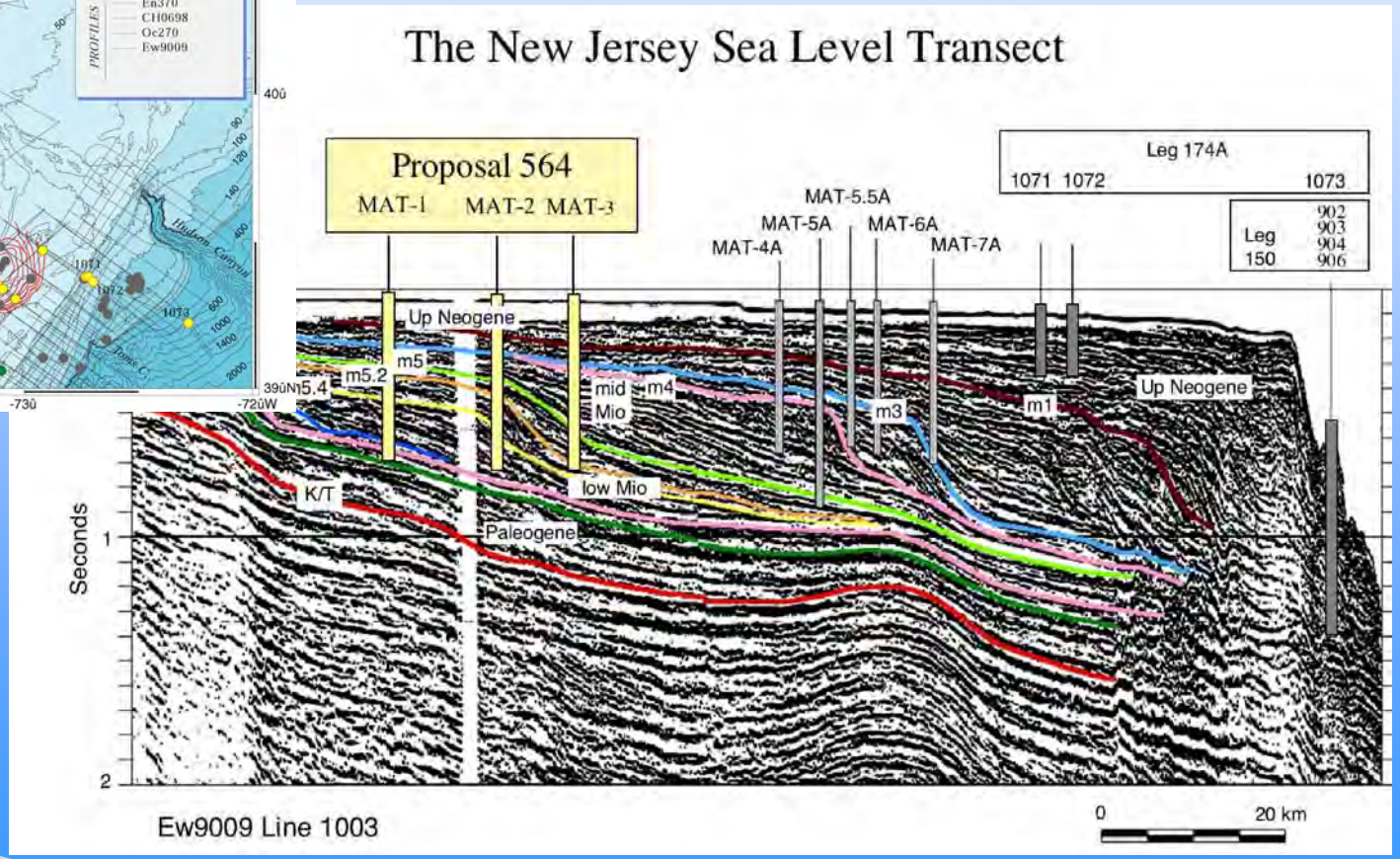
Expedition 310 Review Task Force Report

New Jersey Shallow Shelf

IODP Expedition #313







New Jersey Shallow Shelf
IODP Expedition #313

- Tenders were issued to 5 contractors that submitted expressions of interest via OJEU
  - 4 Contractor responded 10th March
- ESO held meeting in London on 20th March
  - Decided to delay offshore operations until 2007
- Contractual meeting was held with the 'preferred contractor', DOSECC, on July 18th
  - Intend to use a jack-up platform with limited accommodation space

New Jersey Shallow Shelf

IODP Expedition #313

- Remaining issues prior to contract signature
  - Need geotechnical survey that will satisfy insurance for post-Katrina regulations – implementation under discussion
  - Permits – ongoing, including mammal issues
  - Confirm platform availability – still awaited

Logging update:

- LWD not considered due to pipe size, which would limit the choice of tools.
- OJEU notice submitted with 27th November as the end date for responses
- 2 responses received and being evaluated prior to request to tender

New Jersey Shallow Shelf
IODP Expedition #313

- Co-chief are Greg Mountain, USA and Steven Hesselbo, UK
  - Pre-cruise meeting held 22nd September in London
- Science Party complete
  - 6 Japan,10 US, 9 ECORD,1 China,1 Korea
  - ECORD places are 2 – 2 – 2 – 3 (3 are from Finland, Canada and Denmark)
  - Offshore team, a subset of the Science party, yet to be defined
    - Envisage scientists are offshore for ~2-week periods

New Jersey Shallow Shelf
IODP Expedition #313

- Aim for May 2007 start offshore, for up to 90 days
- Onshore Science Party
  - starting 16th January 2008 at BCR.
  - duration to be defined

- ICDP have approved joint finance of $0.5M

Future Expeditions

- ?2008/2009 - Great Barrier Reef (#519)
  - Site survey incomplete
  - Funding from Australian government confirmed
  - Further site surveying Sep / Nov 2007
  - ESO is planning for implementation in Sep / Nov 2008
  - Meeting in Jan 2007 with GBR Marine Park Authority

- ?2009 - New England Hydrogeology (#637)
  - No site survey
  - Other technological issues
  - IODP-MI are forming a Scoping Group

Report from CDEX on feasibility study: STP Consensus 0606-08: Measurements at High Pressure and Temperature

Reported by Sugihara

sugiharat@jamstec.go.jp

Scope

Feasibility study focus on Wave velocity measurements

Electrical resistivity TABLED

Target specification Scientific objectives (100-200 Mpa)
Tolerance of equipment to ship's environment (vibration, weigth, …)
Regulation
Safety

Conceptual design – development needed
Budget estimation

Under investigation

Results - Scientific target

Scientific target - (Kasahara Masuda Report)

200 Mpa crack-free state – No change of Vp Vs with presure

Temp. Second order parameter

Focus on Pw

* Temperature monitoring

External heating system (50 x 50 x 50 cm3)

Time for thermal equilibrium – room temperature

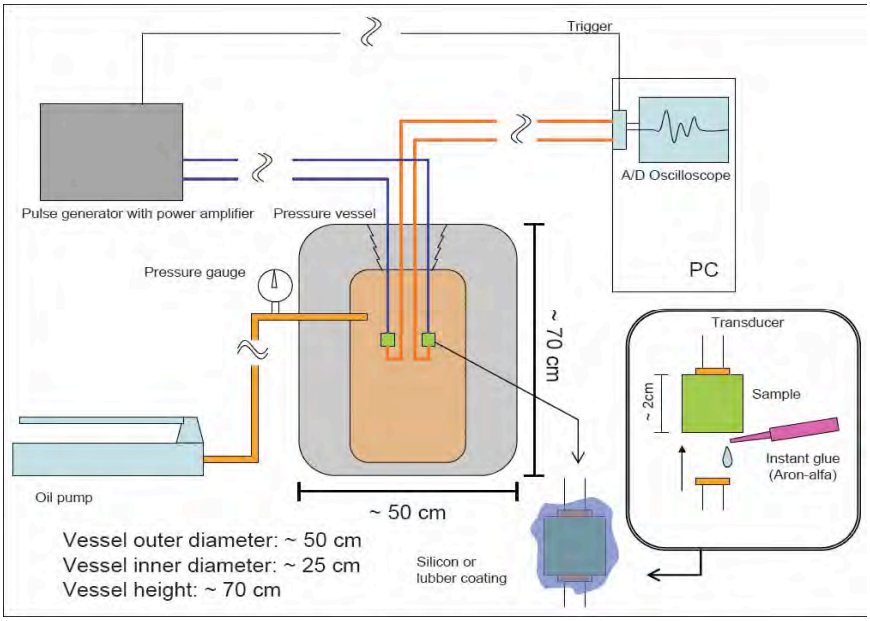
* Record full waveform (P – S receiver)

S receiver also record P component

Graphical interface for interactive picking

Several plugs measured simultaneously – 5

+ pass through patented system



Results – Feasibility 1/2

Pressure – Hydraulic system OK available

Temperature monitoring (surface of sample – pressurized chamber)

Heating system – Not investigated / Not reported

Tsokuba GSJ

Pressure vessels (fluid / gas)

Heating system up to 700°C

Equilibrium time

Measurement time (~ 2h)

STP recommendation

Results – Feasibility 2/2

Tolerance of the apparatus to ship's environment: OK

Ambient P-T system proven on board

P-T controlled system proven on land

Regulation: OK

Hydraulic pressurizing system

Still be investigated/confirmed in details !

Safety: OK

Pressure vessel + hydraulic oil pump used on land

Oil pump has emergency safety valves

Pressure vessel has pressure release valve

Higher safety standards

Safety margin (300 MPa for 200 MPa target)

Prevention of oil leakage

Conclusion

Feasible – existing P-T system on land
Safety
Regulation requirements

P (200 MPa)
P+ Tchange monitoring
P-T controlled
N – pass through

STP recommendation

Design – Cost – Scientific Benefits

ESO Temperature Tools

STP Consensus 0606-11: ESO Temperature Tools

STP would like ESO to consider the draft T and P accuracy document when deciding which temperature tool to lease for drilling the NJ Jersey Transect. STP encourages ESO to explore existing temperature tools used in the program in order to improve resolution and accuracy of its previously used push-in temperature tool. The panel asks ESO to report back on the issue at the next meeting as the platform for the New Jersey Margin will be determined by then.

ESO will use a push-in tool (1 m ahead) to enable recording of values as close as possible to the in-situ temperature values on the New Jersey Expedition.

Given that the T and P accuracy document is a draft, ESO seeks guidance from STP that the required precision for the temperature should be 0.001^{o}C.

Once this is confirmed we can ensure that the tool conforms to this value by changing the internal components of the existing BGS tool.

STP Meeting
San Francisco, USA
December 7-9, 2006

IODP Data Management Update

Bernard Miville
IODP Data Manager
IODP-MI Sapporo Office

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

STP Meeting – San Francisco, USA – December 7-9, 2006

Topics

- IODP Measurements
- Depth Scales
- VCD/Lithology
- Paleontology

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

IODP Measurements

- **STP Recommendation 0601-06: IODP Measurements**
- The STP recommends the document IODP Measurements, which was updated at the STP Kochi meeting and corrected post-meeting, is adopted by all IOs and implemented in the program.

Actions:

- Document was distributed to IOs for final comments
- Final document now online on IODP web site:
  - http://www.iodp.org/index.php?option=com_docman&task=doc_download&gid=1195

Depth Scales

- **STP Recommendation 0601-01: Common Framework for Depth Scales**
- The STP recommends the **IODP-MI** Data Management Group together with the IOs develop guidelines for a **common framework for depth scales** and investigate **software implementation** across all platforms. STP requests IODP-MI report back to STP at their next meeting.

- **Actions:**
  - Depth Scale meeting hosted at TAMU, September 25-26, 2006
    - Co-chairs: Sean Gulick and Bernard Miville
  - Produce a document with name, definition and acronyms for of each depth scales:

    http://campanian.iodp-mi-sapporo.org/Meetings/Depth_Scale/Presentations_Documents/Depth_Scale_Terminology.doc

  - Document presented to STP for comments

Depth Scales

- **Conclusion/Implications:**
  - Depth unit is in meters, not mbsf or mbrf
  - Depth measurements needs to relate to the scale used (e.g. DRF, WSF, …) in:
    - Publication
    - Database
- **Next step**
  - IO implementation upon STP approval of main principles
  - Complete document: define method, source of errors and corrections (with QA/QC task force)
- **Questions**
  - Are the new acronyms appropriate?

STP Meeting – San Francisco, USA – December 7-9, 2006

VCD/Lithology

- [SciMP Nagasaki (Dec. 2003) Action Item 03-12-08]
- IODP needs to address the issue of core description terminology and its standardization across the program. This standardization has to be linked to ongoing database efforts, and based on objective observations and descriptions of cores. We request a coordinated single report from the IOs discussing:
- -Current data model for classification of lithologies,
- -Cross-correlation between objective observations (composition, texture, alteration, deformation) and existing classifications (USGS, BGS, etc...),
- -Implementation of a common model across platforms and databases within IODP,
- -Specific recommendations to SciMP in order to implement a common, objective classification system..
- Core Description Working Group Report (2003)

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

VCD/Lithology

- **Main Recommendations**

- Observable parameters (texture, grain size, etc.) need to have the same name, units and definition for all IOs
- Lithology name always needs to be collected with the lithologic classification it came from
- The choice of lithologic classification should be expedition specific and driven by science and not IO specific
- All VCD data needs to be collected electronically
- VCD data needs an XML based exchange format
- All IOs need to agree on a basic set of graphic representations for the lithology names

- Lithology names should never be deduced automatically but be entered by the scientist
  - Automated deduction can be used for QA/QC purposes
  - Observable parameters can be deduced but flagged as such

STP Meeting – San Francisco, USA – December 7-9, 2006

VCD/Lithology

- **Actions:**
  - Data Management Coordination Group meeting (Kochi, 2006)
  - VCD/Lithology meeting hosted at TAMU, September 27-28, 2006
  - Co-chairs: Clive Neal and Bernard Miville
- **Action Items**
  - **Observable Parameters**
    - Common name, units and definition
    - IO discussion under progress
    - **Timeline:** This is currently under progress. It should be completed by February 1, 2007.
  - **Lithology Classifications**
    - Choice should be expedition specific according to science needs and not IO specific
    - Lithologic Classification catalog
      - Initial list created, need to link to expedition
      - **Timeline:** Catalog should be available before NanTroSEIZE operation starts in September 2007.

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

VCD/Lithology

- **Action Items (continued)**
  - **Data Exchange format**
    - Initial format proposed by IODP-MI for discussion
    - **Timeline**: Need to have an initial format by April 1, 2007 so it can be implemented in software development in time for NanTroSEIZE
  - **Graphic representations**
    - Need common graphics to represent lithologic names in software and publications
    - **Timeline**: Before NanTroSEIZE operation starts
  - **System generated lithologic name and Observable Parameters**
    - Investigate as a tool for QA/QC process
    - **Timeline**: Before NanTroSEIZE operation starts

STP Meeting – San Francisco, USA – December 7-9, 2006

Paleontology

- **STP Recommendation 0601-09: Digital taxonomic dictionaries**
- The STP recommends that **IODP-MI coordinate** the development of a **paleontologic taxonomic/stratigraphic reference standard**, with MRC involvement, to ensure continued effective use of DSDP-ODP legacy sites, as well as to improve IODP's own paleo data resolution and reproducibility.These dictionaries are required across all platforms and should be developed with appropriate funds provided by IODP-MI to the MRCs. The MRCs, while outside the IODP structure, can provide significant input to this process, including digital taxonomic dictionaries (DTDs) for microfossil taxa, linking DSDP-ODP and current taxonomic concepts. This is an important part of the QA/QC process and the STP is seriously concerned that further delay will adversely impact IODP science.

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Paleontology

Actions:

- Paleontology Meeting in Houston Texas, September 29-30, 2006
- Co-Chairs: David Lazarus and Emanuel Soeding

Terminology

- **Taxon Name Lists (TNL) and Digital Taxonomic Dictionaries (DTD)** are Taxonomic Reference Standards in any format, containing taxonomic (and for IODP, particularly species) information.
- **#1. TNL**: As a list of fossils containing the following information
  - Genus, subgenus, species, sub species, variety
  - Reference (Author, Year)
- **#2. extended TNL**: like #1. +
  - synonyms
- **#3. DTD**: like #2. +
  - Original description, remarks, repository (curatorial Information. Type locality, type level)
  - Differential diagnoses (Comparative), Pictures
  - stratigraphic information, spatial distribution
- **#4. extended DTD**: like #3. +
  - More advanced information like
  - ecological information
  - morphologic descriptors
  - and others....

STP Meeting – San Francisco, USA – December 7-9, 2006

Paleontology

- **Action Items:**
  - **Check existing Databases**
    - Contact maintainers
    - Find out status, negotiate usage of data
    - Coordinated by IODP-MI
    - Timeline: January 31, 2007 (First draft)
  - **Start on TNL**
    - Collect Neptune/ODP data to compile core list (partly level 1, partly level 2)
    - Coordinated by IODP-MI and MRCs
    - Timeline: February 28, 2007
  - **Community web portal concept**
    - To discuss taxa names
    - Wiki type, moderated?
    - IODP-MI to devise a plan
    - Timeline: February 28, 2007

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Paleontology

Action Items (continued):

- **Creation of a Paleontology Coordination Group (PCG)**
  - Liaison with the MRCs and broader community
  - Preliminary list created with input from the meeting participants
  - Timeline: January 31, 2007 (first meeting second quarter 2007)
- **IODP-MI establish policy about referencing**
  - For publication
  - Data in times to be checked against TNL and future DTD
  - Timeline: First quarter of 2007
- **IODP-MI and PCG setup process to keep TNL and DTD up to date**
  - Addition of new names
  - Modification/Correction to existing names
  - Timeline: After first PCG meeting

CDEX report on LA-ICP-MS (STP Consensus 0606-15)

Reported by Sugihara

sugiharat@jamstec.go.jp

Scope

Feasibility study regarding the use of ICP-MS on board

Status

Use of Laser Ablation (LA) coupled to ICP-MS was reported last STP Meeting

-Sea trial (transit) conducted
- Pinpoint sampling on solid materials was achieved
- LA capability confirmed (transit – no drilling /thruster)
- Analysis of data collected was not succesful due to improper setting of the ICP-MS for solid material

Investigation of ICP-MS under varying condition was requested

ICP-MS used for solution sample during SIT

Plan

Spring – Summer 2007

ICP-MS for solid sample

How to prepare for sample

Check and examine on board in ODS period

Determination of REEs and more elements

Check and examine on board in ODS period

CK06-06 solid sample

Analyze them and IW in ODS period

Microwave equipment

Check and examine on board in ODS period

Making out of cookbook about REEs analysis.

QA/QC Task Force Update

IODP-MI

Taskforce Terms of Reference

Mandate. The Taskforce is charged with defining QA/QC guidelines to be followed by the IOs for at least the IODP minimum and standard measurements across the full range of disciplines (e.g., geochemistry, petrophysics, microbiology, core description, logging, etc.) including, but not limited to:

a. Establishing general policies for capturing all relevant QA/QC data and metadata;

b. Establishing general policies for ensuring quality of data across all IODP platforms and expeditions and including shorebased laboratories (e.g., that all data generated by IODP platforms/labs are traceable);

IODP-MI

Taskforce Terms of Reference

c. Establish a general policy that, where practical/appropriate, reference materials be used and their data captured;

d. Establishing general policies for data transfer and integrity protocols to ensure quality control of the IODP databases.

e. Recommend that the IOs develop and implement protocols for calibration, determining uncertainty, and traceability in all IODP measurements, and that the IOs report these protocols to the taskforce for review.

IODP-MI

Task Force Core Members

Tim Brewer, ESO*
Philippe Gaillot, CDEX
John Hayes, SASEC liaison*
David Houpt, USIO
Kelly Kryc, IODP-MI
Mike Lovell, STP*
Clive Neal, STP
Ursula Roehl, ESO*

IODP-MI

* Unable to attend November meeting

Vision Statement

The IODP QA/QC Task Force seeks to establish policies to ensure that the highest quality data possible are produced on all IODP platforms and associated shore-based facilities. These policies will define guidelines for traceability of measurements, documenting procedures, recording results, and determining uncertainty for all data generated by IODP.

IODP-MI

November meeting topics

- QA/QC terminology glossary
- Minimum requirements for a successful QA/QC program
- Nonstandard Methods Policy
- Proficiency of IODP Staff
- Data violating QC parameters
- Communication pathways
- Establish strategy for CDPs and missions.

IODP-MI

Action Items

1. IOs will provide their plans and measurement-specific QA/QC protocols for the IODP minimum and standard measurements to the task force by February 2, 2007.
2. IOs will suggest a method to implement cross-platform comparisons of data, also due on February 2.

IODP-MI

Action items, cont.

3. Revised Terms of Reference, QA/QC glossary, and list of experts were circulated to IOs, STP, and IODP-MI for comment by December 31, 2006.
4. Establish a general policy for flagging questionable data (Gaillot). Draft was circulated to the taskforce on December 1.

IODP-MI

Action items, cont.

5. Request input from NanTroSEIZE PMT and Specialty Coordinators regarding their concerns about multi-platform QA/QC issues (Gaillot). Result - agenda item at the PMT meeting this weekend.
6. IODP-MI and IO management to consider granting QA/QC personnel access to moratorium data for the sole purpose of QA/QC.

IODP-MI

Next Meeting (Tentative)

Date: February 12-13, 2006

Location: To be determined

Participants: Core members and scientists selected from the list of experts.

Purpose: Review the QA/QC protocols/procedures submitted by the IOs and continue writing QA/QC roadmap for the program.

IODP-MI

IODP Expedition Review

Roles for STP??

4Th IODP STP Meeting
San Francisco
December 7-9, 2006

Thomas Janecek
IODP-MI

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Expedition Review Process

Operational Review

- Conducted by IODP-MI Task Force
- First-year post expedition

Science Review

- Two part process:
  - Preliminary Report: 2-months post expedition
  - Science Advisory Structure: longer term

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Review of Expedition Operations

- Evaluation conducted by IODP-MI Operations Review Task Force (ORTF)
- Review Task Force consists of:
  - IODP-MI President
  - IODP-MI VP Operations (chair)
  - Co-Chief Scientists
  - Operator Representatives
  - Community Scientists
  - Industry Experts

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Review of Expedition Operations

- Review based on confidential reports from Operator and Co-Chief Scientists
- Focus on "lessons learned" and "what to do differently next time"
- Format
  - Oral reports by Co-chiefs and Operator
  - Identification / Discussion of issues
  - Recommendations
- Recommendations published online

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Review of Expedition Operations

Oct 2004	ACEX - (302)
Dec 2004:	Juan de Fuca (301)
Aug 2005:	Oceanic Core Complex - (304/305)
Feb 2006:	North Atlantic Climate - 303/306
	Porcupine Carbonate Mounds - 307
May 2006:	Gulf of Mexico - Expedition 308
Jun 2006:	Superfast Spreading - Expedition 309/312
Aug 2006:	Tahiti - Expedition 310
TBD	*Cascadia Gas Hydrates*

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Review of Expeditions

Recurring issues for Phase 1 operations

- Lead Time!!!
  - Science Planning
  - Operational Planning
- Policies and Procedures
  - Communications
  - Publications
  - Staffing
- Roles and Responsibilities
  - Operators, Scientists, Management, PMOs
- Laboratory / Drilling Equipment

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

STP related issues at Ops Review

- Laboratory -
  - Curatorial - Sampling
  - Lab Environment - Operating protocols
  - SODV
- Drilling and Coring -
  - Geotechnical tools
  - Magnetic overprinting
  - SODV
- Downhole Tools -
  - Tool calibration
  - Prioritization of needs

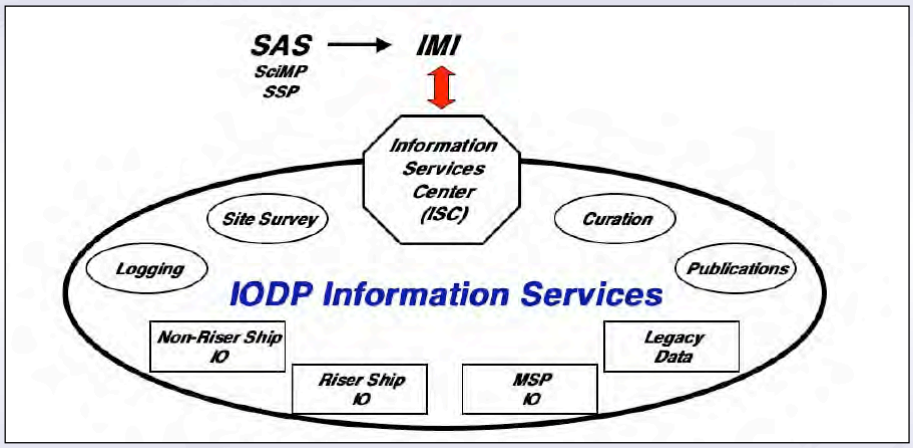
INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Role for STP??

- Direct participation in Task Force
- Report from IODP-MI to STP
  - Following each review
  - At STP meetings
- Other?

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Database Working Group Report



IODP-MI – STP Meeting – December 7-9, 2007 – San Francisco, USA

SEDIS

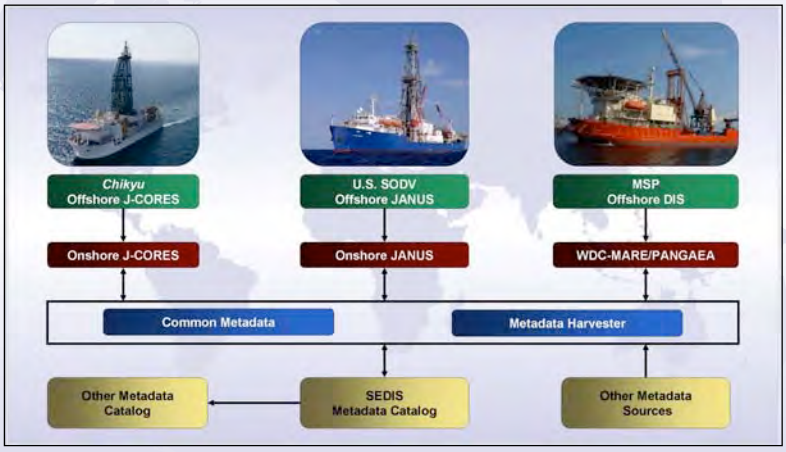
Scientific Earth Drilling Information Service

- Web portal: http://sedis.iodp.org
- **Phase I**: Metadata catalog providing a searchable inventory of all data collected for each drilling hole in IODP and legacy data.
- **Phase II**: Addition of scientific publications to the metadata catalog. Provide tools to efficiently search IODP publications independent of format and location.
- **Phase III**: Advanced search and extraction of data from distributed databases. Provided advanced mapping and data visualization tools.

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Scientific Earth Drilling Information Service

SEDIS Phase I



INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

SEDIS: Timeline

- March 2006: Creation of Task Force
- April 2006: Issue RFP SEDIS Phase I
- Summer 2006: Review of Bids
- November 2006: Contract awarded
- December 2006: Development Start
- Summer 2007: SEDIS Phase I online

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Review of Previous STP/SciMP Working Group Reports

One official "SAS" Working Group Report:
Microbiology (2003).
http://www.iodp.org/sas-working-group-reports/

Nine SciMP/STP Working Group Reports:
Chemistry (including Microbiology)
Core Description
Database
Downhole Measurements/Tools;
Micropaleontology
Paleomagnetism
Petrophysics
Physical Properties
Underway Geophysics

http://www.iodp.org/stp/

Review of Previous STP/SciMP Working Group Reports

Microbiology:	4 main Recommendations.
Chemistry (inc. Microbiology):	11 Recommendations, 6 Action Items.
Core Description:	5 Recommendations.
Database:	No specific Recs. Needs to be revisited.
Downhole Measurements/Tools:	3 Recommendations, 3 Action Items, 1 Consensus Statement.
Micropaleontology:	6 Recommendations, 2 Action Items.

Review of Previous STP/SciMP Working Group Reports

Paleomagnetism:	No specific Recs. Needs to be revisited.
Physical Properties:	4 Recommendations.
Petrophysics:	4 Recommendations.
Underway Geophysics:	No Specific Recs. Needs to be revisited.

Review of Previous STP/SciMP Working Group Reports

How far have the Recommendations/Action Items progressed?

Are they now out-dated?

If so, do they need to be updated/revised?

Third Party Tool Implementation

4Th IODP STP Meeting
San Francisco
Dec 7-9, 2006

Thomas Janecek
IODP-MI

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Implementation Guide

Purpose:

- Provide a step-by-step guide (text, graphical)
- Clarify roles and responsibilities
  - Proponents
  - IO's
  - IODP-MI
  - SAS
- Develop a detailed list of tools/status
- Set up monitoring program
- Keep community informed

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

TPT Topics For STP Consideration

- Addition of “Off-the-Shelf” tools category
- Tool Status Spreadsheet
- Oversight role for STP
- Combine “Implementation” guide with “Policy” into one document?

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

TPT categories

Development Tools:

(1) A new technology
(2) Modifications to existing technology
(3) An existing prototype tool untested at sea, or
(4) An existing prototype tool that has been used at sea, but has not been certified

Certified Tools:

(1) A new or modified existing technology that has been tested at sea on an IODP Expedition (following the steps described for Development Tools)

But what about LWD tools, Specialty wireline tools, commercial lab instruments, etc?

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Off-the-Shelf Tools

(1) A technology new to IODP that has been utilized routinely in other markets,

(2) Leased or purchased tools/instruments from recognized providers.

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

Off-the-shelf tool usage protocols

1) Ensure that no other similar technology exists with known IODP tools

2) Procure detailed specifications of the desired tool or instrument

3) A lead IO will be assigned to work with the proponent to develop a deployment plan

4) The SAS (STP/EDP) informed by the proponent/Lead IO of the potential use of the technology.

5) The results of the initial deployment are evaluated by SAS and the IODP-MI Operations Review Task Force

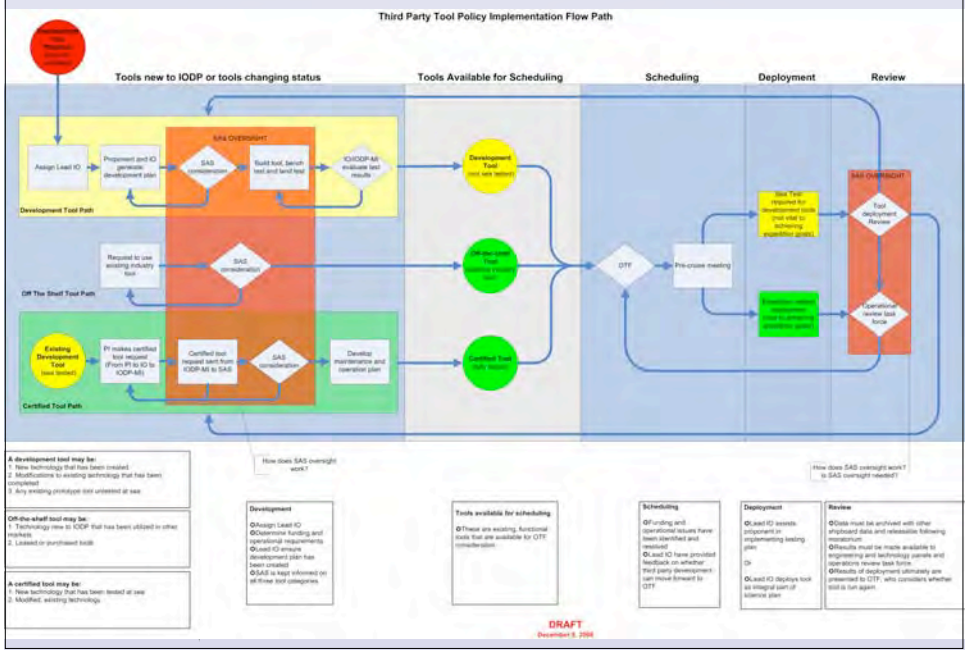
INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL

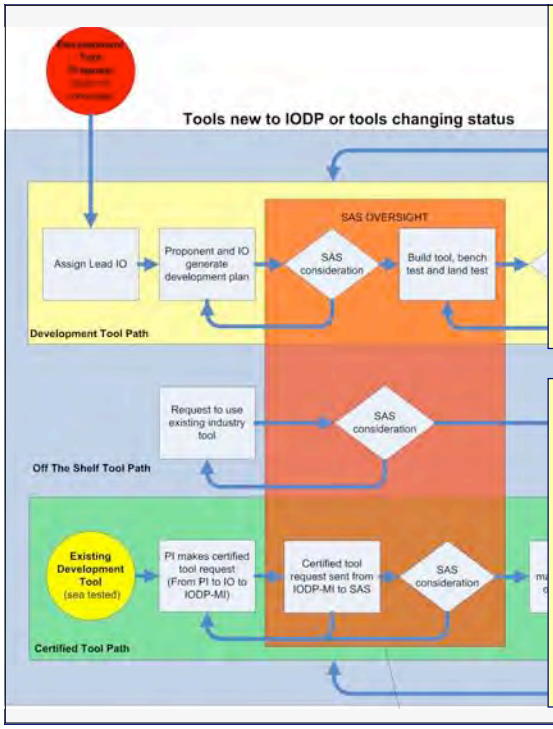
TPT Status Guide

Category	Tool/Instrument Technology	Deployment / Conveyence Method	Third Party Tool Classification	Tool Status	Available for Scheduling	SAS Approval	Lead IO	Principle Investigator		URL of Detailed Information
								Investigator (PI)	Institution	
Downhole	APCT						USIO			
Downhole	APCMethane						USIO			
Downhole	DVTP Davis Villinger Temperature Probe	Coring Line	Certified				USIO		TAMU	
Downhole	DVTPP						USIO			
Downhole	Los Alomos Water Sampler (?)	Logging Line					USIO			
Downhole	Fissler Tool						USIO			
Downhole	Adara - Water Sampler	Coring Line	Certified				USIO		TAMU	
Downhole	WSTP	Coring Line	Certified				USIO		TAMU	
Downhole	IWS (Instrumented Water Sampler)						USIO			

- Category
- Tool/Technology
- Deployment /Conveyance Method
- TPT Classification
- Tool Status
- Available for Scheduling
- SAS Approval
- Lead IO
- PI /Institution
- URL of Detailed info

INTEGRATED OCEAN DRILLING PROGRAM
MANAGEMENT INTERNATIONAL





Development Tools:

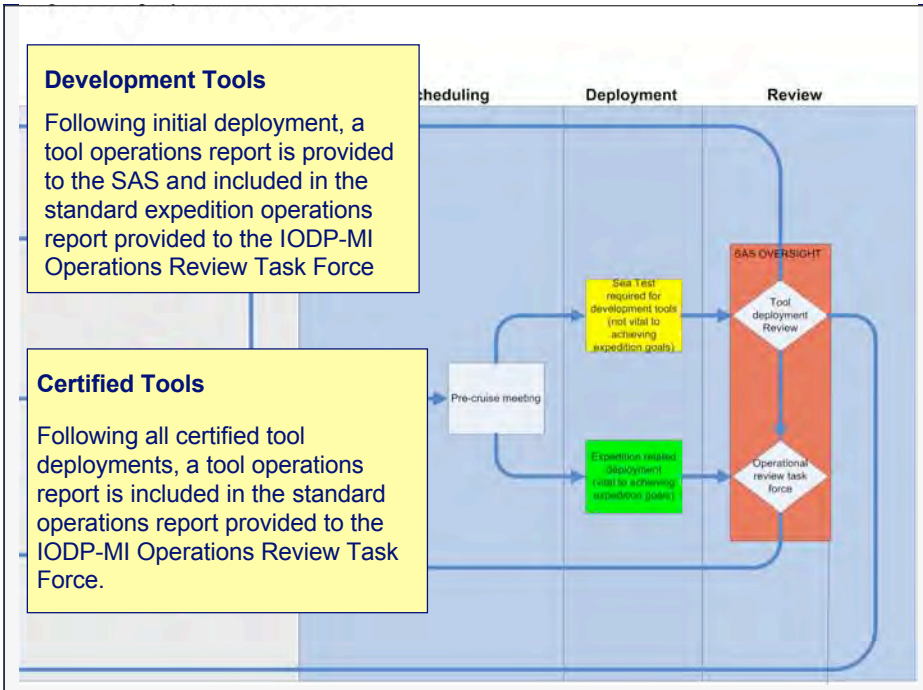
The IO will report the submission of development and deployment plans to the STP, the EDP, the OTF, and IODP-MI. **The STP will determine the action on these submissions in accordance with the panel mandate** and will provide advice to the IO regarding further tool development

Certified Tools

Upon STP and/or the EDP **endorsement** of the certification request, IODP-MI will issue a certificate confirming the satisfactory conclusion of tests and compliance with all requirements to the proponent (with copies sent to the STP and EDP chairs)

Development Tools

Following initial deployment, a tool operations report is provided to the SAS and included in the standard expedition operations report provided to the IODP-MI Operations Review Task Force



Certified Tools

Following all certified tool deployments, a tool operations report is included in the standard operations report provided to the IODP-MI Operations Review Task Force.

IODP Funding Structure from NSF Perspective

DSDP Support 1968-1983

- **Project Mohole** 1961-1966
  - American Miscellaneous Society, with funding from NSF
- **DSDP**
  - Scripps was Prime Contractor under contract to NSF
  - Planning under JOIDES, formed in 1964
  - IPOD 1975-1983; NSF commingled funds under intergovernmental Memoranda of Participation
  - JOI, under contract in latter portion of DSDP to NSF, funds site surveys and supports science advisory structure and improve oversight

ODP Support 1985-2003

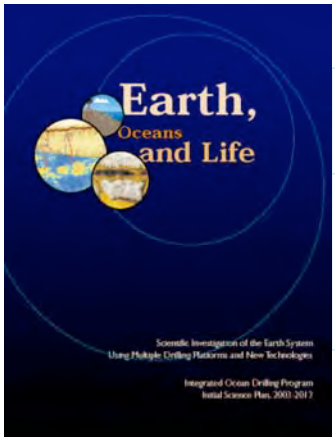
- JOI Prime Contractor
  - Direct contract with NSF
  - Subcontracts operations to TAMU and LDEO
  - Supports JOIDES planning
- Participant and funding contributions under Intergovernmental Memoranda, sometimes with Consortia
  - Operations supported by commingled funds
  - Participation costs are national costs

IODP Planning 1990-2003

- STA/JAMSTEC started riser ship technical development in 1990
  - OD21 Proposed 1994, with riser drillship as centerpiece
- Decade of planning by international community followed
  - **Riser Drilling - CONCORD (Conference on Cooperative Ocean Riser Drilling), Tokyo, 1997**
  - **Riserless Drilling - COMPLEX (Conference on Multiple Platform Exploration of the Ocean), Vancouver, 1999**
  - **Mission-Specific Platforms - APLACON (Workshop on Alternate Drilling Platforms: Europe as the Third Leg of IODP), Brussels, 2001**

IODP Initial Science Plan (2001): Focus on processes

Major Themes: Deep Biosphere, Environmental Change, Processes and Effects , Solid Earth Cycles and Geodynamics



Initiatives

Deep Biosphere	Gas Hydrates	Extreme Climates	Rapid Climate Change
Seismogenic Zone	Continental Breakup & Sediment Basin Formation	Large Igneous Provinces	21st Century Mohole

IODP Governmental Planning

- International Working Group (IWG) 1997-2003
  - Made up of representatives from countries interested in joining IODP
  - iSAS advised IWG
  - Developed Program Principles
    - Membership
    - Program
      - SOC-POC
    - Drilling Platform
    - Implementation
    - Principles of Scientific Investigation
    - Management Structure
      - Central Management Organization (CMO)

IODP Funding Structure

- IODP is an unprecedented equal partnership withJapan and the U.S. as Lead Agencies, with Europe playing a major role supporting MSP's
  - Strong Central Management
  - Memoranda, derived from IODP Principles, specify equal program contributions 2004-2013 between U.S. and Japan, with NSF and MEXT serving as Lead Agencies

IODP Funding Structure- POC

- Platform Costs borne by Members contributing platform
  - Mobilizations costs not considered a Program cost
  - Platform Operating Costs (POC) borne by member contributing platform, counts as Program Cost

IODP Funding Structure- SOC

- NSF commingles Program contributions from members for distribution as SOC
- IODP-MI is CMO, under contract to NSF
- IO's are in contractual relationship with IODP-MI as CMO
  - Most SOC distributed to IO's through CMO
  - Some direct SOC required

Approval of IODP Program Plan

- IODP Program Plan determines Program activities
- Lead Agencies give fiscal and POC-SOC guidance to IODP-MI in January-February for next fiscal year
- IODP-MI works with IO's to produce a draft PP, which is then approved by SASEC and IODP-MI BOG in summer
- Lead Agencies approve PP in September

IODP Funding Structure- U.S.

- JOI Alliance is U.S. Operator
  - Receives POC under direct contract with NSF
  - Receives non-program funds for other Program-related expenses not covered by POC or SOC
- JOI has Cooperative Agreement with NSF to support USSSP
  - Supports U.S. Scientist Participation, small grants and workshops
  - Supports USAC
- IODP Grants Program

SAS Role

- Following IODP Principles, SAS advises CMO (IODP-MI) in IODP Planning
- Crucial for STP to develop solid working relationship with IODP-MI as CMO, and through and in association with them, with IO's
  - Role is advisory, not directive
  - Key aspect of IODP structure is removal of responsibility of operations from IODP-MI, and therefore, SAS (liability issues)

Recommendations for STP Focus

- Should STP have a regular annual cycle for its two meetings leading to input to August SPC on technological priorities for FY+2 program plan and long-term vision for shipboard technological improvements? (This is recommended by SPC and IODP-MI regardless of SAS WG.)
- This suggestion arises from the SPC mandate to deliver priorities for engineering and technology at the same time as the recommended science plan. It's already been applied to the biannual EDP meetings.
- If we apply the EDP model to STP:
  - winter STP meeting would emphasize feedback to IODP-MI and IO's on short-term (FY-1 to FY+1) technological projects
  - summer STP meeting would emphasize developing a long-term vision ("roadmap") for scientific technology improvements, and specifically recommend to August SPC priorities for FY+2 scientific technology developments

Lead Agency Timeline for FY07 Scheduling and Program Plan (APP) Development

- March 2005 - SPC Global Ranking
- June 2005 - Operations Task Force (OTF) Develops FY07 Schedule Options
- Fall 2005 - SPC Approval of FY07 Science Plan
- Jan 2006 - SPPOC Approval of FY07 Science Plan
- Jan 2006 - Lead Agencies Provide IODP-MI Fiscal Guidance for FY07
- Spring 2006 - IODP-MI Drafts FY07 APP
- July 2006 - SASEC Approval of FY07 APP
- Aug 2006 - Lead Agency Approval of FY07 APP
- Oct 2006 - Earliest FY07 IODP Operations

EDP Recommendation 05-09-01: EDP mandate

The EDP recommends the following modification to its mandate (italicized in red).

"The EDP shall identify long-term (two to five year lead time) technological needs determined from active IODP proposals and the ISP, and recommend priorities for engineering developments to meet those needs, *both for the annual IODP engineering plan and on a longer term*. Appropriate topics shall include…"

EDP Recommendation 05-09-02: STP Liaison

EDP recommends that EDP choose a member to act as a liaison with the STP.

Conceptual EDP Schedule

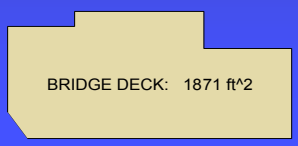
July Meeting: [follows March SPC ranking for FY+2]
Status Report on projects
Prioritize FY+2 ED for Program Plan
Examine/Define long-term ED needs (FY>2)
Examine SSEP proposals

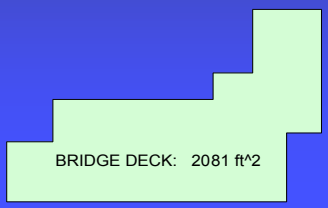
January Meeting: [follows Aug SPC scheduling meeting]
Assess outcome of previous FY projects, drilling, 3rd Party developments, etc. (FY-1)
Update on current FY issues and Project Status (FY0)
Informational item for EDP (by IODPMI)
Review/Finalize ED for Program Plan (FY+1)
Examine SSEP proposals
Preview long term EDP needs.

26% Overall Increase
34% Increase: Laboratory, Office and Conf. Space

Deck	JR	SODV
Bridge	1,871	2,081
Core	2,616	4,272
Fo'c'sle	2,408	3,775
Main	1,835	0
Upper Tween	1,377	4,673
Lower Tween	2,310	1,279
Hold	2,310	2,560
Totals	**14,727** sq ft	**18,640** sq ft

Bridge

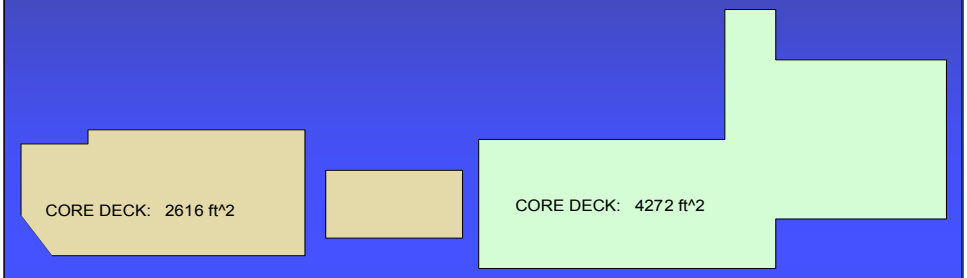




- Downhole Lab
- Conference Rm
- Thin Section
- Logging Office
- Hard Rock Café

- Trans Ocean Office
- Operations Office
- Science Office
- Technical Office
- Mechanicals
- Hazardous Storage
- Hard Rock Café

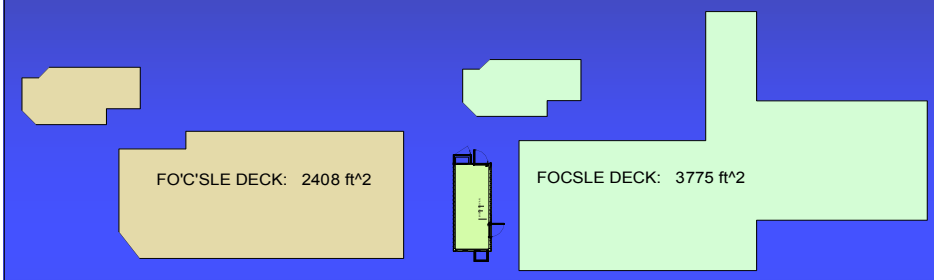
Core



- Core Lab
- Core Receiving
- Trans Ocean Office
- Operations Office
- Science Office
- Technical Office

- Downhole Lab
- Core Receiving
- Core Lab
- Logging Office
- Telemetry Lab
- Thin Section Lab
- Curation Office

Fo’c’sle



- Underway Lab
- Microbiology Lab
- Chemistry Lab
- Paleontology Lab
- Sample Prep. Lab

- Underway Lab
- Microbiology Lab
- Chemistry Lab
- Paleontology Lab
- Sample Prep. Lab
- Microbiology Van

- Conference Rm
- Publication Office

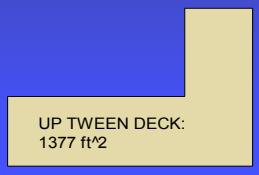
Main

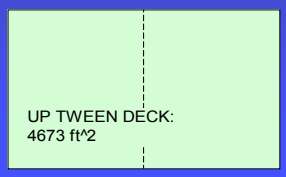
- Movie Room
- Data Center
- IT Office
- User Room
- Publican Office
- Curation Office

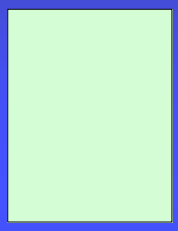
- Laundry
- Change Room
- Mechanical

- Galley & Mess
- Laundry
- Change Room
- Food Storage

Upper Tween & Tween







- Imaging Lab
- Mechanical
- ET Shop
- Science Storage

- IT Office
- Data Center
- ET Shop
- Science Storage
- Imaging Office

- Gym
- Movie Room
- Lounge
- User Room

Lower Tween

LOW TWEEN DECK:
2310 ft^2

- Core Storage
- Science Storage
- Gym
- Hazardous Storage

LOW
TWEEN
DECK:
1279 ft^2

- Science Storage
- Logistics Shop

Hold

HOLD DECK: 2310 ft^2

- Core Storage
- Science Storage
- Logistics Shop

HOLD DECK: 2560 ft^2

- Core Storage
- Mechanical

L-DEO-BRG Ongoing Projects

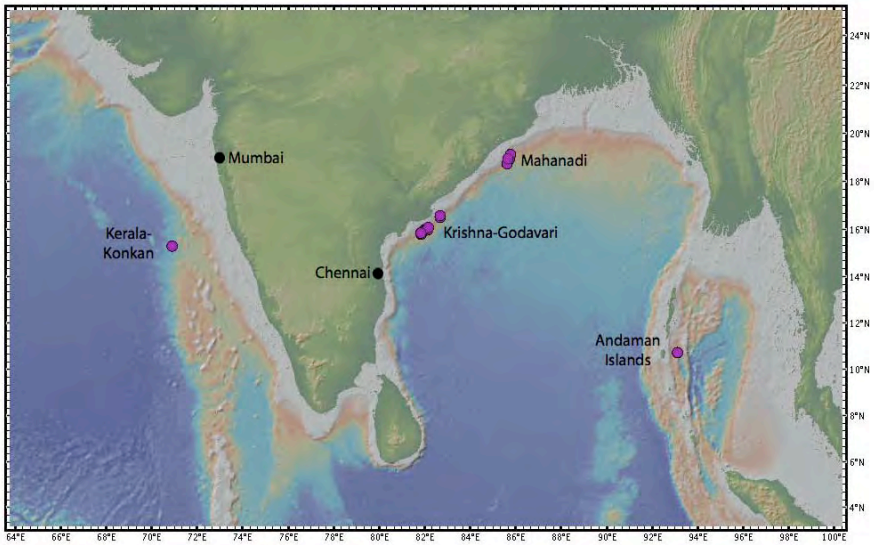
1. Modernization of old TAP-Temp.&Pressure tool is complete
   New tool is called Modular Temperature Tool (MTT)
   - MTT can run inline with other Schlumberger wireline tools for real time results or in memory mode.
   - Temperature tolerance increased from 85 to 250˚ C

2. 3rd Party Development of Magnetic Susceptibility Tool
   - Testing will take place in spring 2007
   - Update on progress at summer STP meeting by PI's or L-DEO-BRG

India National Gas Hydrate Program (NGHP)

- Goal:
  - –Characterize the presence of natural gas hydrate on India's continental margins and at Andaman Islands and a potential energy resource for India, while contributing to the geologic knowledge of the **ten study sites**.
- Lead Participants:
  - –Directorate of Hydrocarbons (India), USGS, Overseas Drilling Limited, LDEO, Fugro, & Geotek
- Statistics
  - –April 28 - August 19, 2006
  - –Five drilling legs
  - –**21 sites drilled**
  - –14 Sites were logged with wireline
  - –12 sites were logged with LWD

NGHP Sites



Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Shipboard Logging System Changes

1. Move main logging operations from rear of ship to lab stack and near rig floor.

2. Telemetry lab becomes main operational office for Schlumberger engineer and LWD operations

3. New wireline heave compensation equipment currently being designed in conjunction with Schlumberger

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Scientific opportunities using state-of-the-art, large-diameter logging tools:

1. Increased resolution and quality of minimum measurements
2. Allow for recovery of pore fluids at *in situ* conditions, high-density permeability measurements, continuous geochemical profiles, and sidewall coring capabilities
3. New 3rd-party tool deployments

Standard tools (Minimum Meas.) available for all expeditions

Special tools deployed when science is proposed and reviewed by SAS.

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Standard Large-diameter tools are current industry state-of-the-art (Some ODP/IODP slim-hole tools are 20-30 years old).

Standard Large-diameter tools improve measurement capabilities:

- Additional measurement sensors (Sigma, 5-depth induction, ...)
- Wide-swath electrical images
- Larger-hole caliper & VSP clamping capacity
- Shorter downhole logging time (faster sampling sensors)
- Shorter tool strings and shorter rig-up/rig-down time

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Special Large-diameter tools are also current industry state-of-the-art

Special Large-diameter tools will add new measurement capabilities:

- NMR (nuclear magnetic resonance)
- Geochemical spectroscopy
- Sidewall coring capabilities
- *In situ* bulk permeability
- *In situ* fluid sampling

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

STP Measurement Delineation

Minimum	Current Diameter <3.75"	Large Diameter >3.75"	Notes
natural gamma ray	SGT		SGT= scintillation gamma ray tool
spectral gamma	HNGS	Platform Express	HNGS=hostile natural gamma ray spectroscopy
density	HLDS	Platform Express	HLDS=hostile litho-density sonde
porosity	APS	Platform Express	APS=accelerator porosity sonde
resistivity	*DIT	Platform Express	DIT=dual induction tool
sonic	DSI	MSIP	DSI=Dipole sonic imager, MSIP=modular sonic imaging platform
borehole imaging	*FMS	FMI	FMS=Formation microscanner, FMI=Formation micro imager
Standard			
Vertical seismic profile or checkshot	*WST, VSI	SAT	VSI=vertical seismic imager, SAT=seismic acquisition tool
Downhole pressure	Third party - available		drill collar or wireline
Open-hole temperature	Third party - available		drill collar or wireline
Magnetic susceptibility	Third party - under development		wireline
Magnetic field	Third party - presently not available		
Supplemental			
LWD and MWD			drill collar at high lease rate
Logging While Coring			drill collar at high lease rate
Permeability through packer tests		MDT	MDT=modular formation dynamics tester
High resolution gamma	Third party - available		
Nuclear magnetic resonance		CMR	CMR=combinable magnetic resonance
Formation testing		MDT	
Downhole sidewall sampling		Side wall corer	
Pressurized fluid/gas sampling		MDT	SRFT not applicable due to hole size limitations
Spontaneous potential (SP)	SP		

*tool slated for near term retirement

Yellow = high resolution version of existing measurement or new science capability

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Results of Stress Engineering Drill Pipe Study

At the present time, IODP uses an assumed overpull of 150,000 lbs, an assumed bending stress of 25 ksi, and a bottom hole assembly weight of 60,000 lbs, which results in a static drill string design length of 8,375 meters (27,478 feet).

A tapered drill string with a maximum total length of 27,829 ft (8482m) could be deployed made up of 11,905 ft of 5-inch pipe and 15,304 ft of 6 5/8-inch pipe

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Drill Pipe Study considered 132 different drill string configurations.

Racker pipe storage limits (where considered in drill string configuration limits) are:

5-inch pipe -- 3629m (11,906 ft) per racker
5 1/2-inch pipe – 2822m (9258 ft) per racker
6 5/8-inch pipe – 2822m (9258 ft) per racker

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

"Drill pipe results when a limiting condition is applied: that either one or two rackers are filled with all 5-inch pipe, i.e. racker with no mixed size pipe. The least effective combination is to limit the large-ID pipe to only one racker. Two full rackers of 5-inch pipe (23, 810 ft) is much more than can be deployed (limit is 14,131 ft) so much of the 5-inch pipe in the racker would simply be in storage…."

"The best solution to achieve maximum length pipe with rational use of the pipe racker storage is to have one racker filled with 5-inch and two rackers filled with large-ID pipe. This judgment is based on a goal of achieving a long drillstring for routine coring and drilling operations as well as a long, large-ID "logging string". …the maximum string that can be deployed would be 27,829 ft (8482m). And, in addition, pair of rackers full of large-ID pipe would offer the possibility of a specialized "logging string" as long as 18,517 ft (5644m)."

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Current SODV Drill Pipe Implementation Plan

- Plan is for 1 Racker- 5" and 2 Rackers- 6 5/8"

- Initial purchase of 4000m -6 5/8" drill pipe has been budgeted for at this point.

Additional large diameter pipe to be budgeted for based on overall SODV budgets and prioritization.

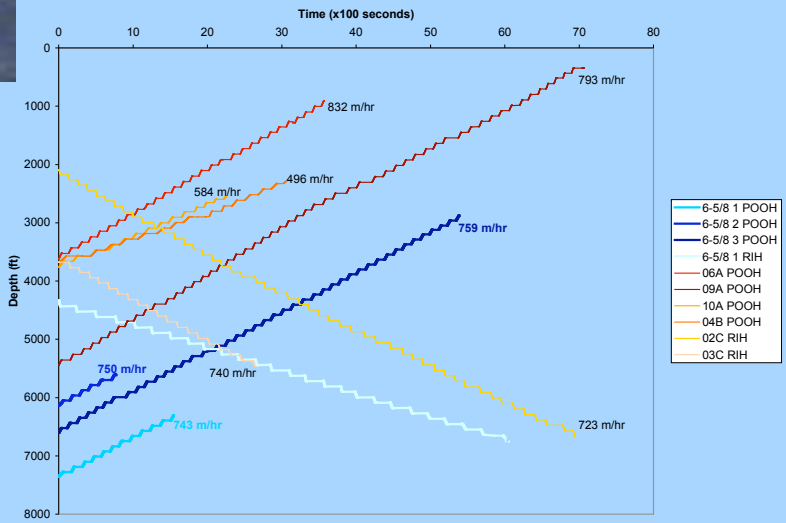
Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Operational considerations

Deployment of large-diameters tools will require approximately +1 day of rig time

0 --> drill, clean, and prepare hole with 6.675-5" tapered string
1 --> deploy FFF, if needed, POOH & layout 5" pipe
2 --> re-enter with 6-5/8" BHA, clean, prepare hole, if needed
3 --> run tool to TD & log open hole
4 --> pull tool to rig floor

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV



Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

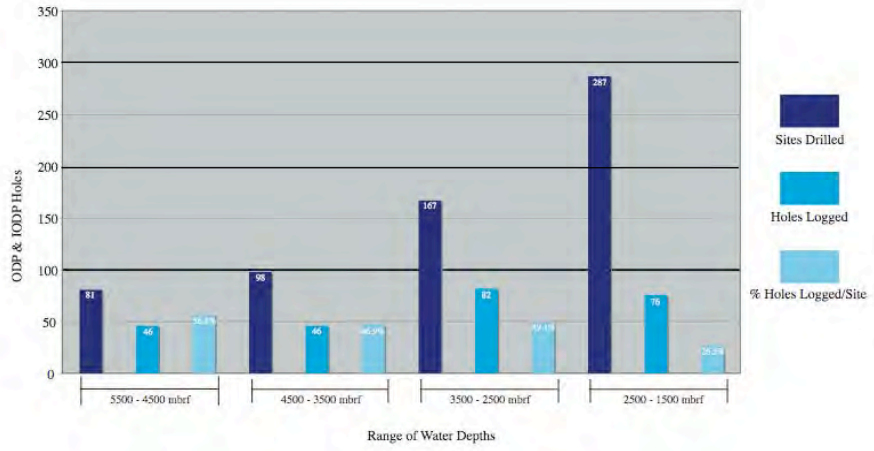
USIO discussion is continuing on open issues, including:

- pipe purchase/deployment schedule
- performance criteria and evaluation
- mitigation strategy for catastrophic pipe loss
- operations (i.e. hole conditioning, mud usage, etc)
- pipe storage (i.e. pipe rackers, &/or hold deck & shore based storage)
- pipe inspection strategies

Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

How much pipe should be deployed on the SODV?

ODP and IODP Drilling and Logging History



Shipboard Logging Changes, Logging Science, and Large-diameter Drill Pipe Plan for SODV

Proposal Pressure for Large Diameter Logging Tools

A count of individual proposals reviewed at the last 3 SSEP meetings show the following:

30% = percentage of proposals with proponents requesting measurements requiring large diameter tool deployments (26 proposals out of 87)

77% = percentage of proposals with all holes at water depths < 3000 m (20 proposals out of 26)

85% = percentage of proposals where all or some of the holes can be logged at water depths < 3000 m (22 proposals out of 26)

Other proposals highlight fluid sampling, permeability, and geochemistry as main scientific objectives. These would potentially benefit from large diameter tool deployments as well

USIO

USIO Analytical Systems Projects Update

STP Meeting, San Francisco

December 8, 2006

USIO

Outline

- Overview
- Information management
- Descriptive and interpretative information
- Petrophysical systems
- Chemistry systems

Overview

USIO

- Current list of approved analytical projects
  - Started with the 2004-2005 wish list ("Briefing Book")
  - Got filtered and sorted by SODV design team, STP, and other reviews reviews (late 2005 through early 2006)
  - Mar 06: purchased LabWare LIMS
  - Spring 06: Funding block prioritization (1A', 1A, 1B, 2 groups)
  - Mar-May 06: Initial SODV PMO approved work list for 1A' - contained ~15% of analytical non-labor costs
  - Jul 06: purchasing freeze after engineering design revealed budget shortfall
  - Aug 06: regular budget surplus allowed purchase of critical items to move ahead with most of 1A projects
  - Nov 06: CDT/PMO approval for remainder of 1A and some of 1B projects received
  - Expect a few more purchase approvals in March
  - Hope for a few more in summer/fall 07

Overview

USIO

- Impact of management process:
  - IODP Minimum and USIO standard measurements are covered in the plan with all systems replaced/upgraded as originally proposed
    - Exception: new microscopes may not be purchased
  - "New-new" capabilities will not happen
    - X-ray CT scanning
    - XRF scanning
    - Granulometry
    - LA/ICP-MS
    - ...
  - Some time-critical purchases too late to ensure deployment for first few expeditions at risk
    - Will be managed such as to minimize impact on expeditions

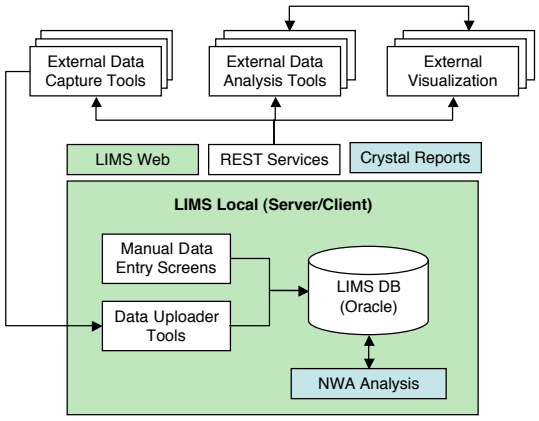
LIMS Implementation

USIO

- Laboratory Information Management System (LIMS) Implementation
  - Will house and serve all USIO sample and analytical information (except downhole logging)
  - Will load measurement data into database
  - Will not provide data capture systems other than forms and tables for manual entry
- Status
  - Overall architecture defined (blueprint)
  - Sample schema complete - part of observable parameter list
  - Sample types defined
  - Sampling interface partly complete
  - Depth types defined
  - General schema for measurement data developed
    - Expect >1000 measured and computed parameters
    - http://millstone.iodp.tamu.edu/wiki/index.php/USIO_measurement_parameters

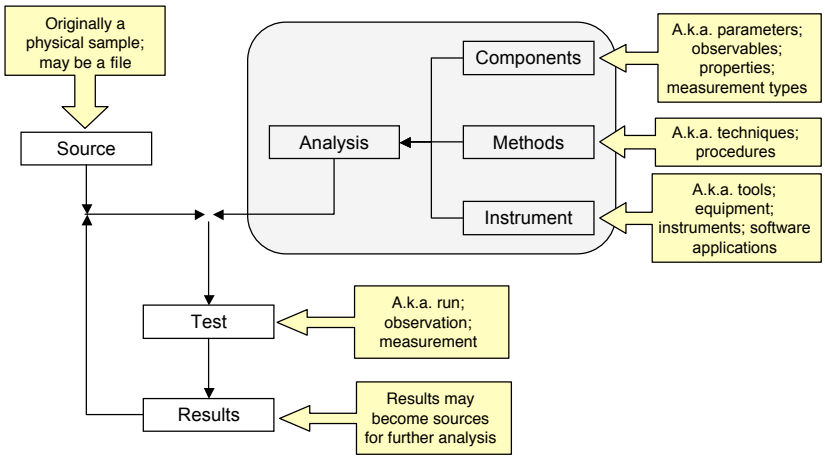
LIMS - Architecture

USIO



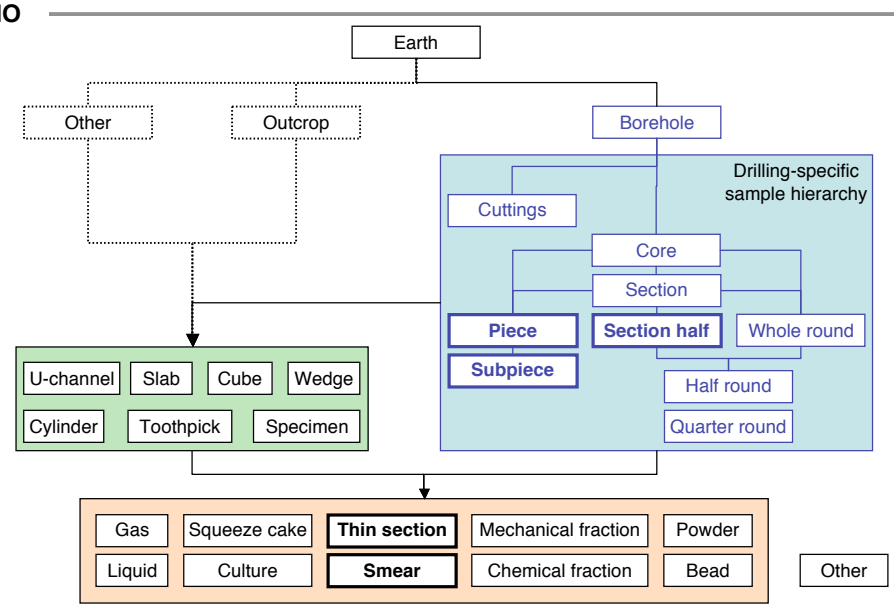
Introduction - General Schema

USIO



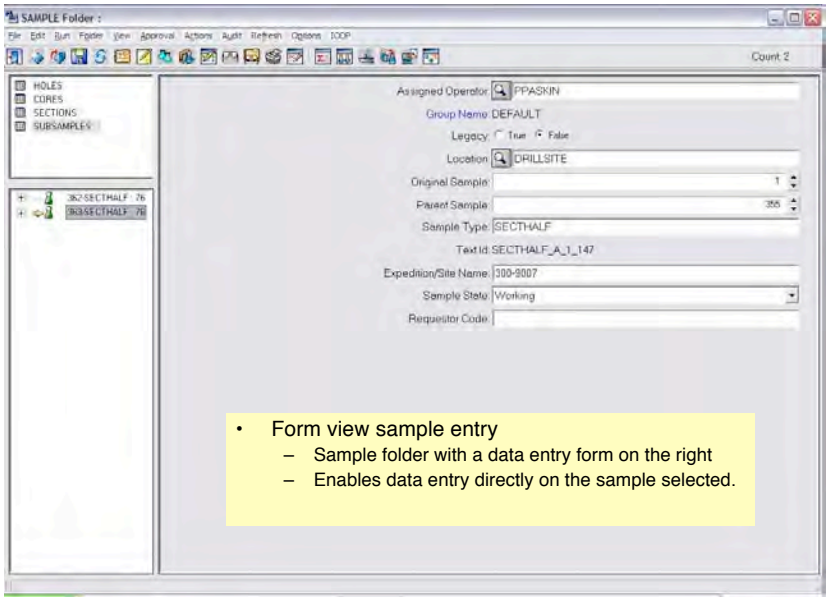
DESCINFO - Sample Types

USIO



LIMS - Sample Entry

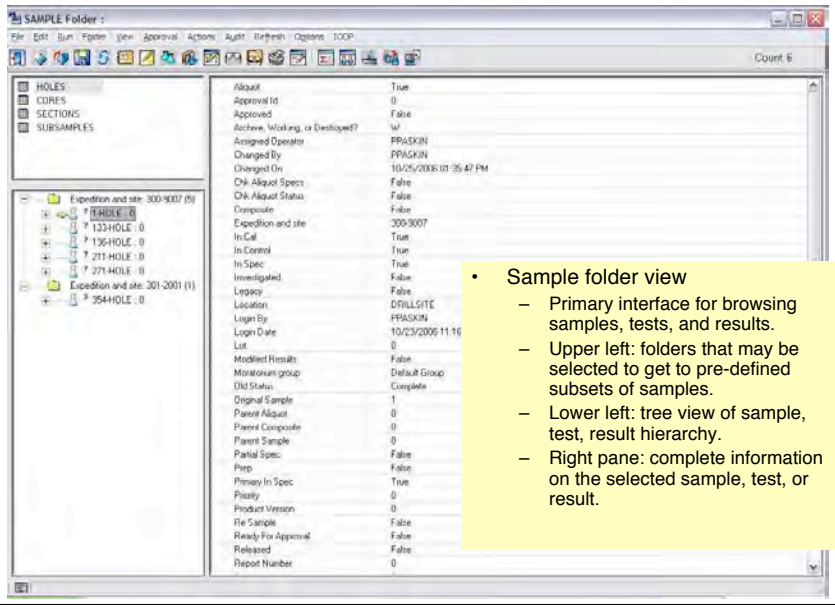
USIO



- Form view sample entry
  - Sample folder with a data entry form on the right
  - Enables data entry directly on the sample selected.

LIMS - Sample Entry

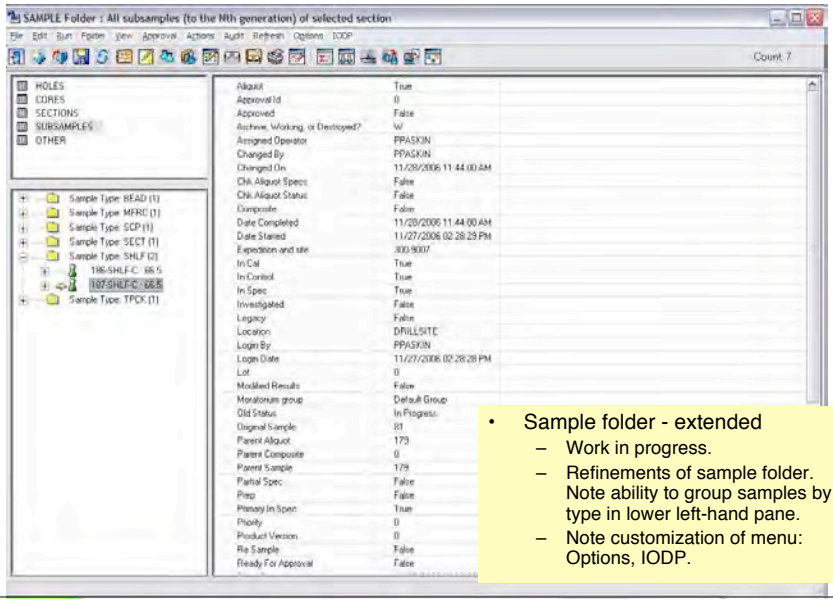
USIO



- Sample folder view
  - Primary interface for browsing samples, tests, and results.
  - Upper left: folders that may be selected to get to pre-defined subsets of samples.
  - Lower left: tree view of sample, test, result hierarchy.
  - Right pane: complete information on the selected sample, test, or result.

LIMS - Sample Entry

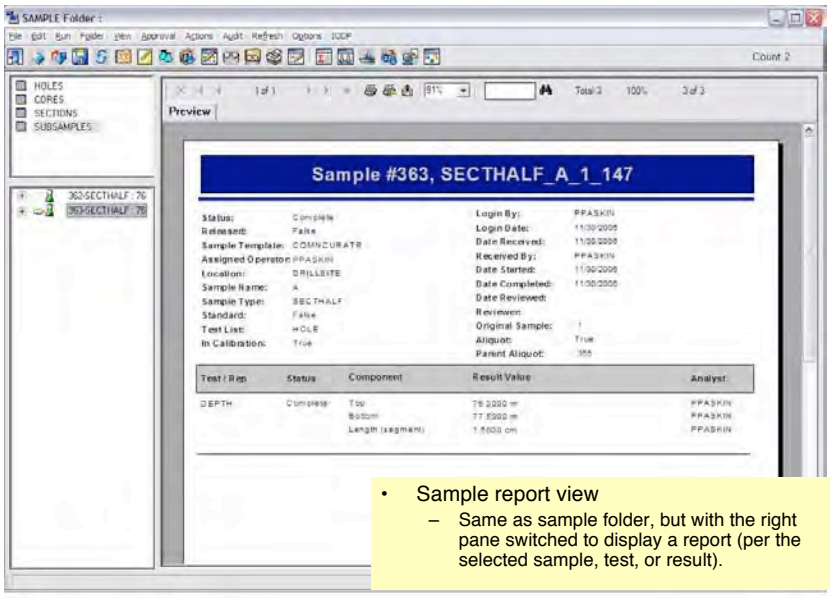
USIO



- Sample folder - extended
  - Work in progress.
  - Refinements of sample folder. Note ability to group samples by type in lower left-hand pane.
  - Note customization of menu: Options, IODP.

LIMS - Sample Entry

USIO



- Sample report view
  - Same as sample folder, but with the right pane switched to display a report (per the selected sample, test, or result).

LIMS - Sample Entry

USIO

Sample Table

File Edit Sample Table

Num Records: 6

	Label Id	Length of Parent (remeasured)	Offset (measured)	Sample Type	Length (of sample)	Default (Curatorial) Test	Parent Aliquot	Context Sample
1	10-15.0	148.44000	10.00000	UCHN	5.00000	SUBSAMPLE	179.00000	SECT_C_9_8
2	10.00000-12.0	148.44000	10.00000	SCP	2.00000	SUBSAMPLE	187.00000	SHLF_C_9_97
3	35.0-37.0	148.44000	35.00000	SCP	2.00000	SUBSAMPLE	187.00000	SHLF_C_9_97
4	60.0-62.0	148.44000	60.00000	SCP	2.00000	SUBSAMPLE	187.00000	SHLF_C_9_97
5	85.0-87.0	148.44000	85.00000	SCP	2.00000	SUBSAMPLE	187.00000	SHLF_C_9_97
6	110.0-112.0	148.44000	135.00000	SCP	2.00000	SUBSAMPLE	187.00000	SHLF_C_9_97

- Sample table entry - extended
  - Select a section half in a sample folder, then select the menu or toolbar item for logging samples in a way reminiscent of the repository sampling programs.
  - Refinements of sample table data entry dialog: more columns, allow parent sample selection with some constraints.

LIMS - Sample Entry

USIO

Primary Sectioning of Core

File Edit Core Logging

Num Records: 7

	Length	Sample Type	Test List	Original Sample	Parent Aliquot
1	150	Section whole round	Section Whole-round	1	56
2	150	Section whole round	Section Whole-round	1	56
3	150	Section whole round	Section Whole-round	1	56
4	150	Section whole round	Section Whole-round	1	56
5	150	Section whole round	Section Whole-round	1	56
6	150	Section whole round	Section Whole-round	1	56
7	150	Core Catcher	Section Whole-round	1	56

- Core sectioning
  - Section and Whole Round sample entry
  - Catwalk sample entry workflow
  - The core being sectioned was selected in a sample folder

LIMS - Depth Framework

USIO

- Design goals
  - Maintain correct position of samples relative to each other regardless of change in core section length with time
  - Implement multiple depth scales and the rules mapping from one to another
  - Provide consistent retrieval mechanism for user to obtain desired depth for all samples in a hole
  - Minimize computation times for sample depths
- Implications
  - Collection of fractional positioning of samples within core section
  - Collection of core section lengths over time
  - Users must decide on a “default depth scale” for a hole - other scales can then be computed if needed

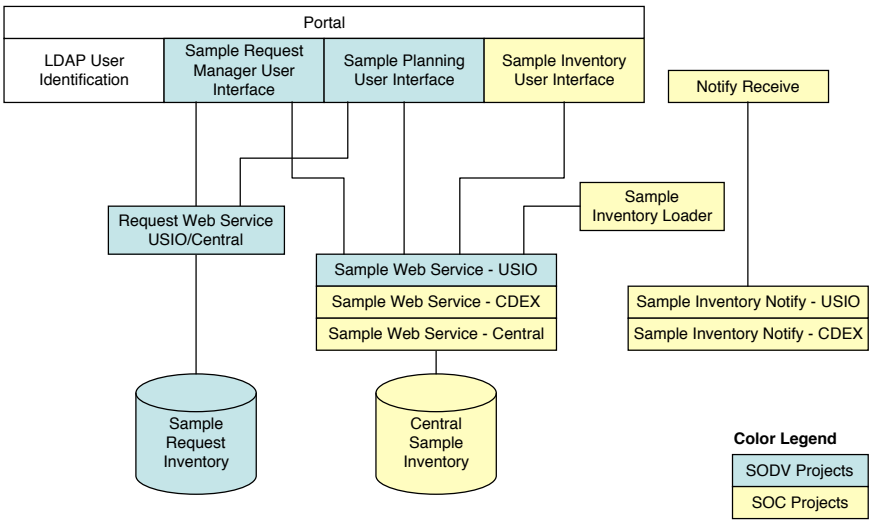
SMCS

USIO

- Scope of Sample Material Curation System (SMCS)
  - Sample Request Management (SMCS-SRM)
    - Requirements developed by all IOs in fall-winter 2005
    - Includes data requests
    - Does not include IO data access (e.g., images of core sections)
    - Application will be released for beta testing in January
  - Sample Planning (SMCS-P)
    - Draft requirements and system design developed
    - Many features could be added
  - Central Inventory (SMCS-CI)
    - CI is necessary for managing sample information in a multi-platform, multi-organizational program
    - Will include applications to harvest sample information from IO databases
- Systems will be presented to IODP curators at their Feb/Mar 2007 meeting in Bremen

SMCS - Architecture

USIO



SMCS-SRM

USIO

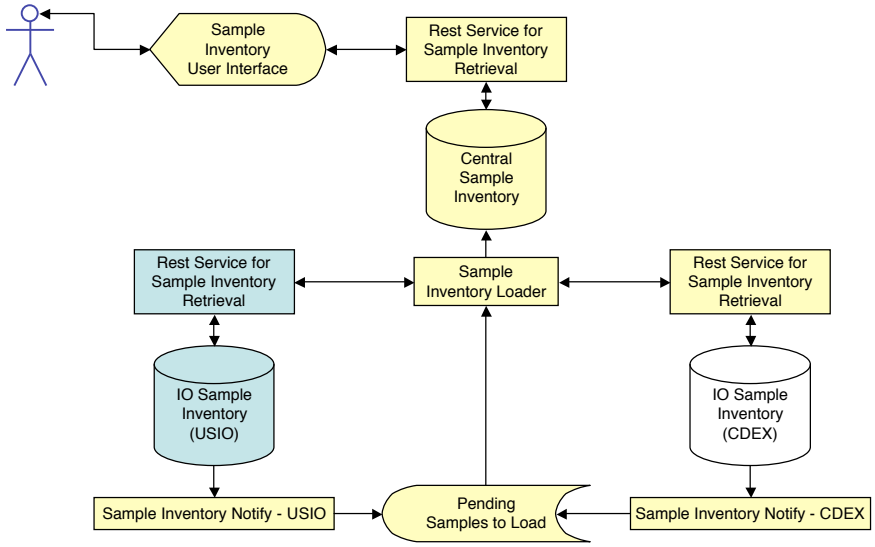
- Sample Request Management
  - Web-based form
  - Sample and data requests
  - Built for the USIO but designed to work for all IOs
  - Features controlled by role:
    - Requester
    - Curator
    - Administrator
  - Curator can assign tasks:
    - Review group of requests (science party)
    - Approve group of requests (SAC)
    - Manage sampling process (curatorial representative)
  - Requests are version controlled
  - Requests have status

SMCS-SRM

USIO

SMCS - Central Inventory

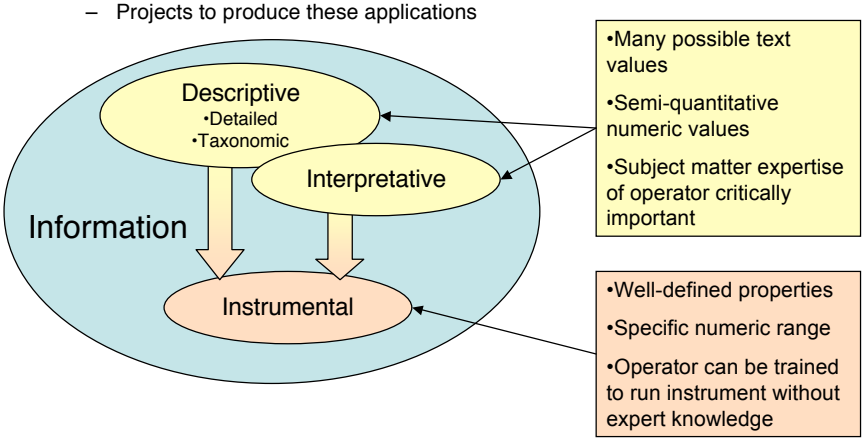
USIO



DESCINFO - What is it?

USIO

- Descriptive and interpretative information
  - Type of information
  - Set of software applications to capture that information
  - Projects to produce these applications



DESCINFO - Scope

USIO

- Includes information domains such as:
  - Earth material description
  - Sedimentology, Petrology
  - Structural geology
  - Paleontology
  - Stratigraphy
- Information acquisition and management issues are similar
  - Implement multidisciplinary science deliverables and legacy information infrastructure using relatively generic, configurable, extensible, and replaceable tools

DESCINFO - Topics

USIO

- The DESCINFO project presentation will cover the following topics:
  - Lithologic classifications
  - Database
  - Data capture (tools to meet workflow requirements)
  - LithoLogik QA/QC
  - Reporting
  - Data visualization

DESCINFO - Lithologic Classifications

USIO

- Past issues
  - Multiple schemes are in use today and we need to allow their applications
  - Visiting scientists chose classification suitable to their objectives and the material recovered
  - Have modified existing classifications on the fly - a lithology name may mean different things from expedition to expedition
  - Desire for non-genetic, descriptive classification scheme has been in countless texts, all resort to classes such as sedimentary, igneous, and metamorphic, pelagic, volcaniclastic, etc.
- Implication
  - In the foreseeable future no single classification scheme will be suitable for all IODP applications or accepted by all the scientists we serve
  - Need to accommodate use of different classifications, combinations of classifications, and modified classifications

DESCINFO - Lithologic Classifications

USIO

- DESCINFO Objectives
  - Differentiate between, and provide for the collection of descriptive and interpretative data elements
  - Description not based on genetic concepts - really!
    - "Sediment" is not a description
  - Enforce use of lithology (and paleontological taxa) name lists where name is identified with classification
  - Do not use specific material properties or classified names to define the data model

DESCINFO - Database

USIO

- Past issues
  - Globally searchable database for descriptive and interpretative data has never existed
  - ODP/IODP Phase 1 data are digitally available but most are expedition-specific published reports
- DESCINFO Objective
  - Create database for any Earth material recovered on IODP expeditions
  - Ensure global searchability by parameters of interest (descriptive or interpretative)
  - Well-defined parameters
  - Levels of granularity

DESCINFO - Database

USIO

- DESCINFO database is defined as a set of observable parameters such as:
  - Material description
    - Composition (component type, size, abundance, shape, etc.)
    - Texture (relationship between components)
    - Lithification
    - Color
    - Structures
  - Lithologic name assignments
  - Fossil name assignments
  - Geological unit definition and description
    - Interval
    - Stratigraphic (litho, bio, chrono, etc.)
    - Geological processes, environments, etc.
  - Etc.
- List can be reviewed at:
  - http://millstone.iodp.tamu.edu/wiki/index.php/Descinfo_observables

DESCINFO - Database

USIO

- Each parameter has a *value list* or a numerical range
  - Value lists are hierarchical
  - Value lists represent the expert knowledge, which is thus separated from the data structure
    - Instead of:
      - *sandstone_abundance=30%* (where sandstone is "hard-coded)
    - ...use a more generic
      - *component=composite* (could also be quartz, carbonate, dolomite,...)
      - *component_size="sand (Folk 1953)"* (will auto-enter 0.032-0.064 mm)
      - *component_abundance=30%*
  - Hierarchies represent the levels of specification or granularity, which are functions of
    - material observed
    - user's training, skill, and desire to describe or interpret at a certain level.
    - Example: mineral > clay mineral > smectite
  - Experts can review and propose changes to the value lists
  - Draft value lists based on extensive searches and compilations of resources by DESCINFO staff are available at:
    - http://millstone.iodp.tamu.edu/wiki/index.php/DESCINFO_Survey

DESCINFO - Data Capture

USIO

- Past issues:
  - Major tool developments during the ODP/IODP1 failed
    - Edge-A-Sketch
    - ROCKY
    - VCD-Janus (too complex at scoping stage)
    - PALEO-Janus (built but never used - too complex, not user friendly)
    - AppleCore for igneous and metamorphic rocks
  - In IODP1, digital graphic data capture tool existed for sediments only (AppleCore)
    - Tool was acquired to created “pretty pictures” (barrel sheets)
  - Description tool for igneous/metamorphic material and paleontology consisted of general spreadsheet, plotting, and drafting software
    - Excel was the most effective and frequently used tool for detailed data capture (expedition specific, no well-established templates)
  - Interpretative information capture tool did not exist
    - Geological units (lithostratigraphic, biostratigraphic, chronostratigraphic, etc.)

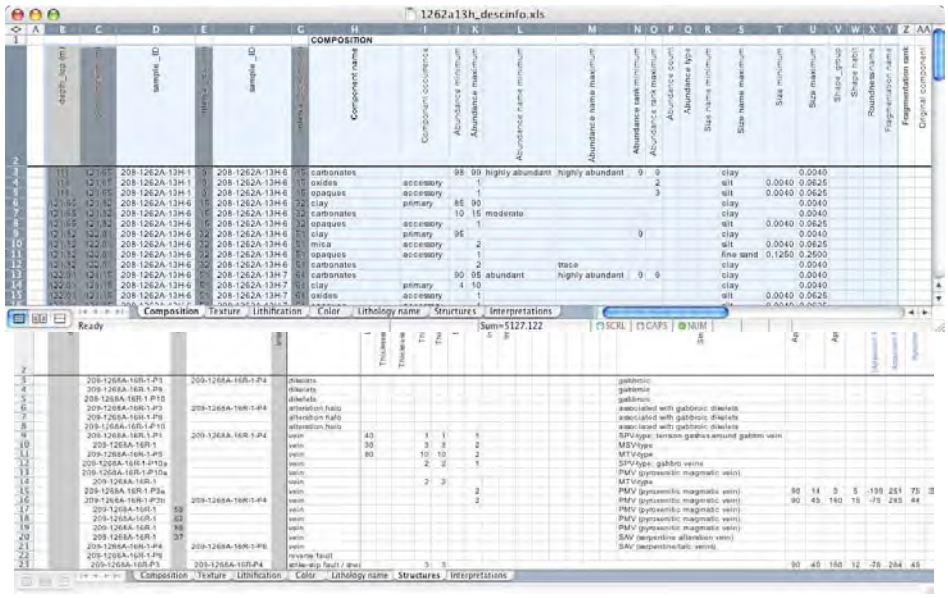
DESCINFO - Data Capture

USIO

- Support all known workflow patterns
  - Describe at the detailed, material properties level or describe using lithology names or other taxonomic concepts
  - Describe all features within an interval or describe individual features across multiple intervals
  - One person describes all features or multiple users share the description of configurable groups of features by expertise
- Provide spreadsheet data entry capabilities
- User can invoke advanced tools (see LithoLogik)
  - Populate material description parameters based on lithology assignment and associated classification rule set
  - Compute lithology name

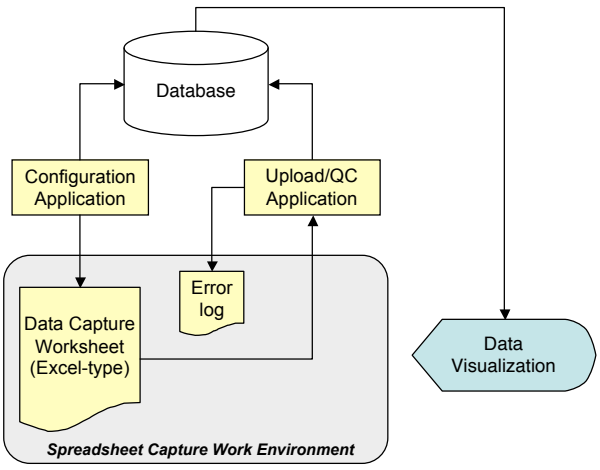
DESCINFO - Data Capture

USIO



DESCINFO - Data Capture

USIO



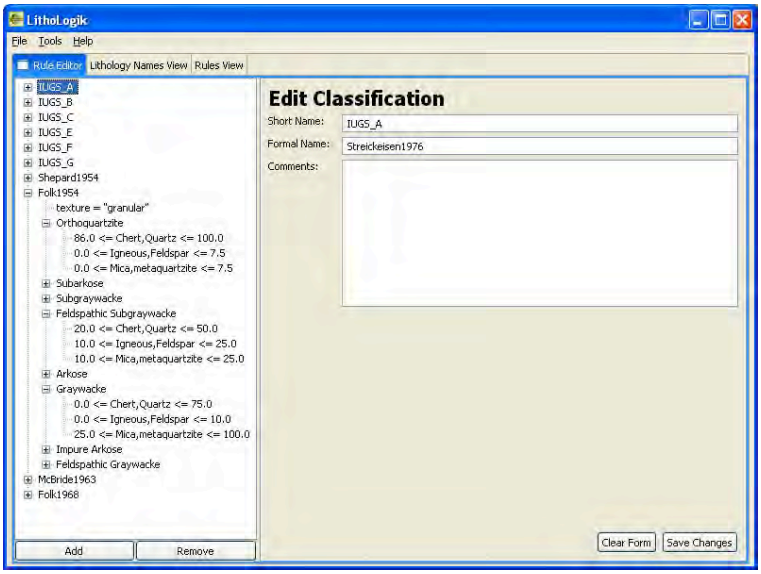
DESCINFO - LithoLogik QA/QC

USIO

- LithoLogik application will provide rule sets that clearly identify relationship between descriptive information and classified lithology name
- Serves multiple purposes:
  - Verify intent of using a certain lithology name based on a certain classification
  - Populate relevant descriptive parameters to ensure more successful global data searches ("normalized" database) without the need for the user to enter each parameter value
  - Tool may become a trainer for core describers and help them understand concepts of lithologic classifications
- Application will be invoked from the data capture spreadsheet
  - Assign lithology and compute parameter values
  - Describe material, select depth interval for a sample type, and compute average lithology based on selected classification
- User has total control and bears responsibility!
  - Computed values are flagged as such
  - User id is always captured along with other QA/QC information.

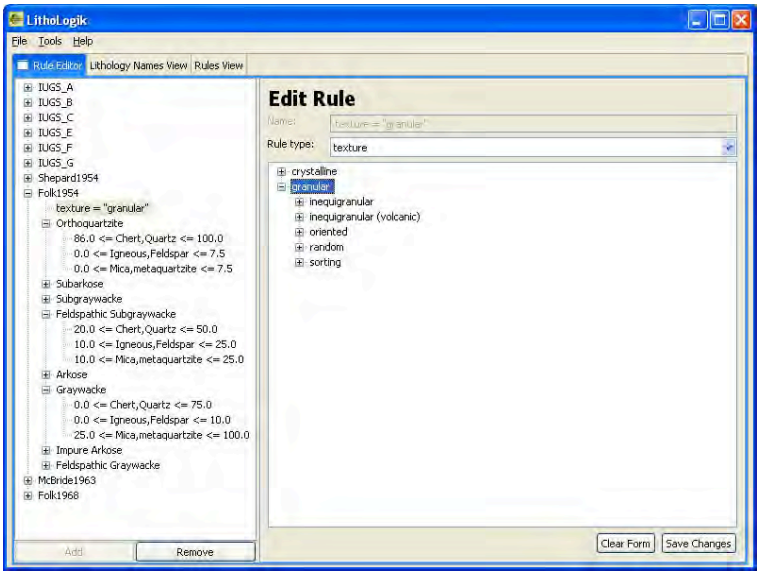
DESCINFO - LithoLogik QA/QC

USIO



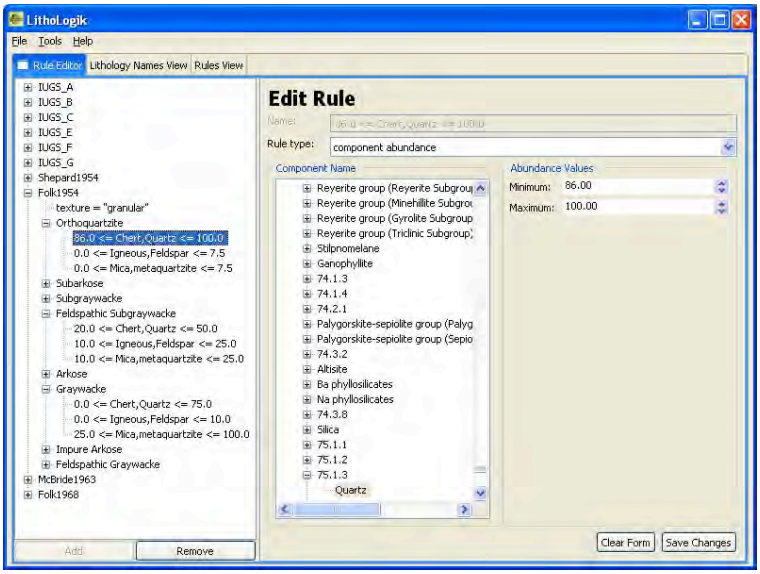
DESCINFO - LithoLogik QA/QC

USIO



DESCINFO - LithoLogik QA/QC

USIO



DESCINFO - Reporting

USIO

- Multiple reporting tools currently include
  - LabWare LIMS, client and web
  - Crystal Reports, client and web
  - INT graphics library

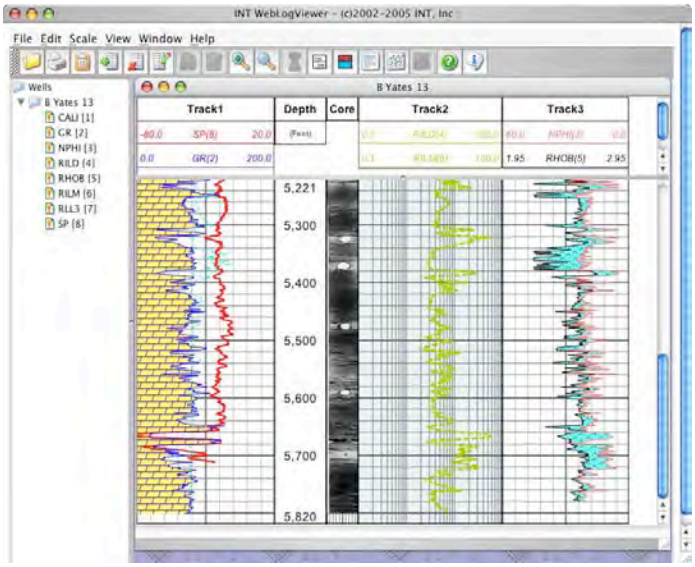
DESCINFO - Data Visualization

USIO

- Scope
  - Visualize all data types
    - Numerical, images, descriptive and interpretative
  - Core summary and hole summary scale “borehole displays” of top priority
    - Standard graphic reports online
    - Save scientists the time to prepare routine reports
  - Meet publication requirements
    - To be defined
    - Need to decide on an IODP format for patterns and symbols (e.g., SVG vs. raster) from a development perspective
    - Work with illustrators to create a large set of professionally created symbols and patterns in the most appropriate format and style

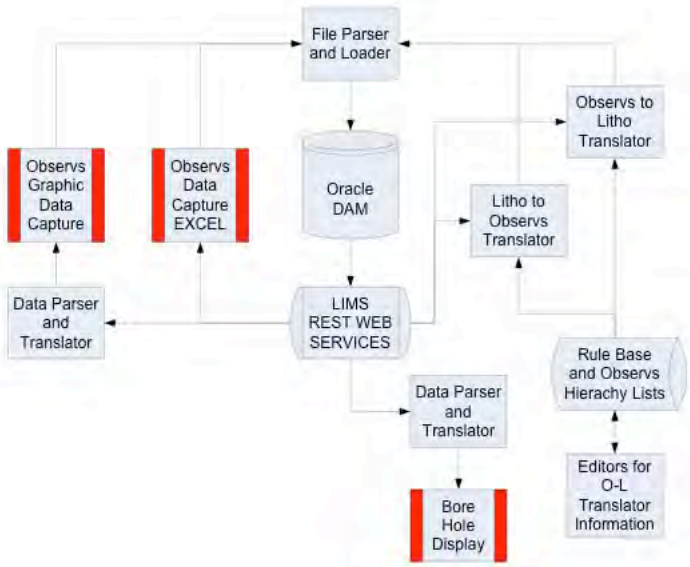
Visualization

USIO



DESCINFO - Architecture

USIO



DESCINFO - Microscopy

USIO

- Microscope procurement preparatory work
  - Conducted market review
  - Created complete inventory and digital database
  - Receive demonstrations of latest optical and digital microscopes
    - Zeiss
    - Nikon
    - Olympus
    - Keyence
  - Will prepare a strategic plan for upgrading microscopy capabilities
  - Started to specify requirements for microscope configuration and image metadata capture application
    - Allow user to shoot, then select images to be saved
    - Prompt user to supply critical metadata (method, tool, and source description) before saving images
  - Funding for microscopic equipment on hold

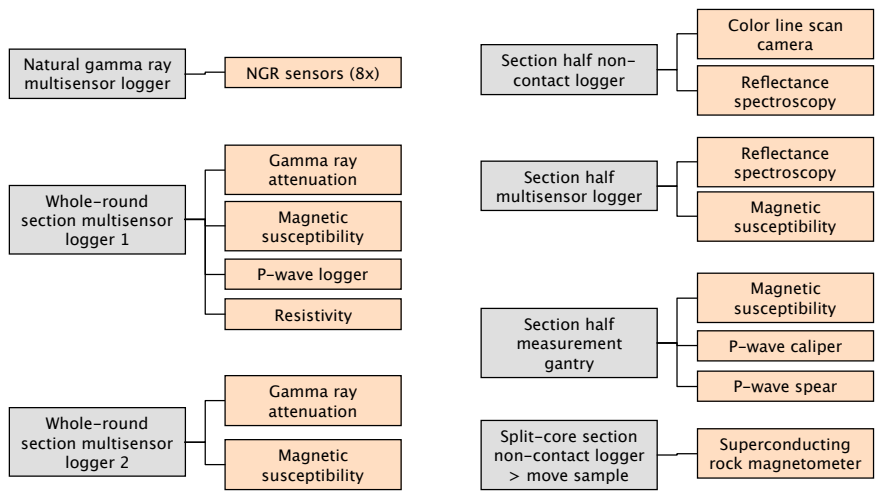
Petrophysics - Core Logging

USIO

- Core Logging Scope
  - Provide automated data acquisition machines for rapid collection of physical properties measurements
  - Sample types:
    - Core
    - Section
    - Section half
  - Acquire improved sensors
  - Implement cost-effective solutions that meet SODV workflow requirements

Petrophysics - Core Loggers

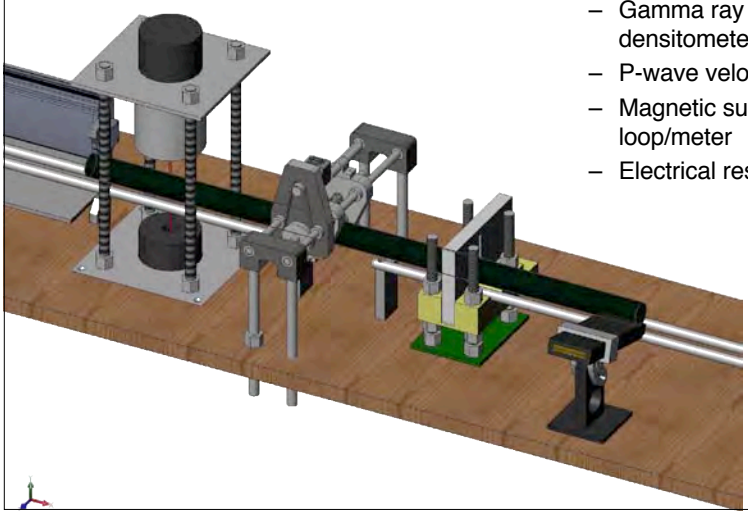
USIO



Petrophysics - Core Loggers

USIO

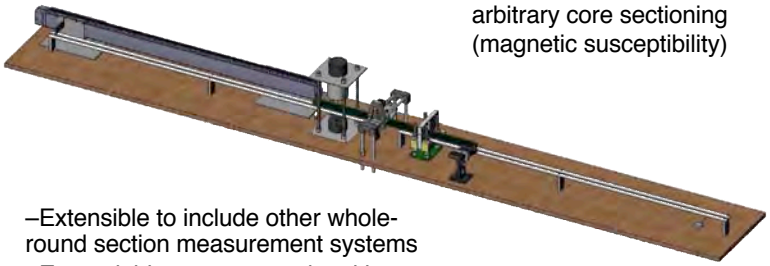
- Whole-round multi-sensor logger
  - Gamma ray attenuation densitometer
  - P-wave velocity logger
  - Magnetic susceptibility loop/meter
  - Electrical resistivity estimator



Petrophysics - Core Loggers

USIO

- Whole-round multi-sensor logger
  - Push core system for efficiency
  - Reduce edge effects created by arbitrary core sectioning (magnetic susceptibility)



–Extensible to include other whole-round section measurement systems

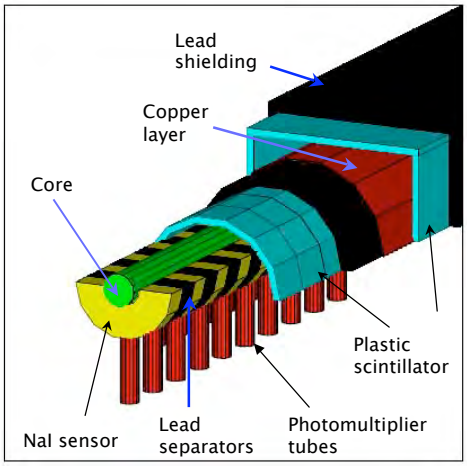
–Expandable to automated multi-section handling capability (possible configuration shown in diagram)

–Calibration verification standard measured at the end of each core

Petrophysics - Core Loggers

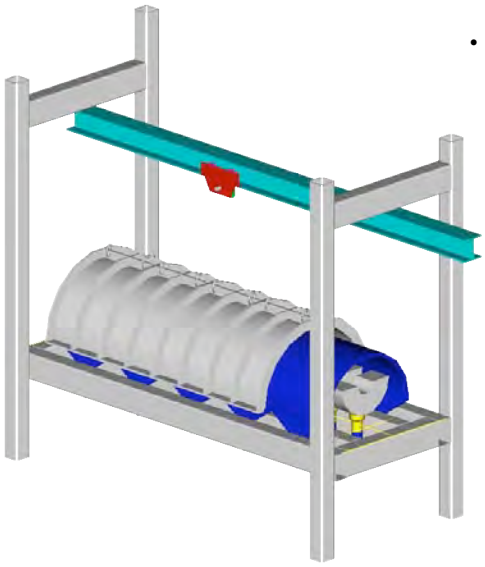
USIO

- Natural gamma logger
  - Multisensor system will increase count rates by at least an order of magnitude
  - Active and passive shielding from cosmic radiation reduces background by 70-80% and improves signal/noise.
  - System performance simulated with GEANT (Detector Description and Simulation Tool) developed at CERN for high-energy and nuclear physics.

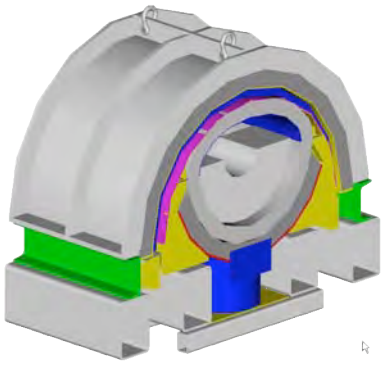


Petrophysics - Core Loggers

USIO



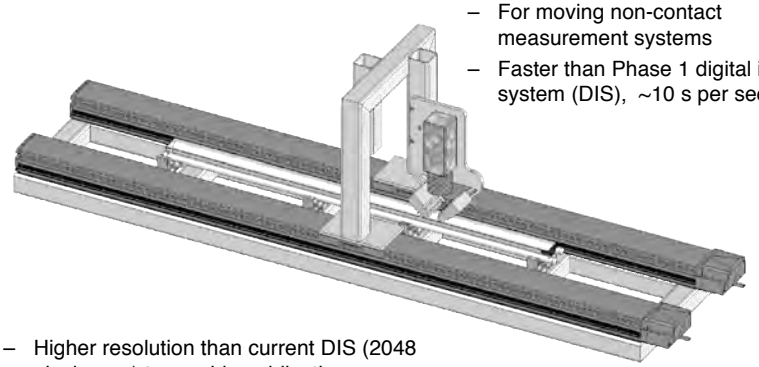
- Natural gamma logger
  - Detailed assembly design near completion



Petrophysics - Core Loggers

USIO

- Half section imaging logger
  - For moving non-contact measurement systems
  - Faster than Phase 1 digital imaging system (DIS), ~10 s per section

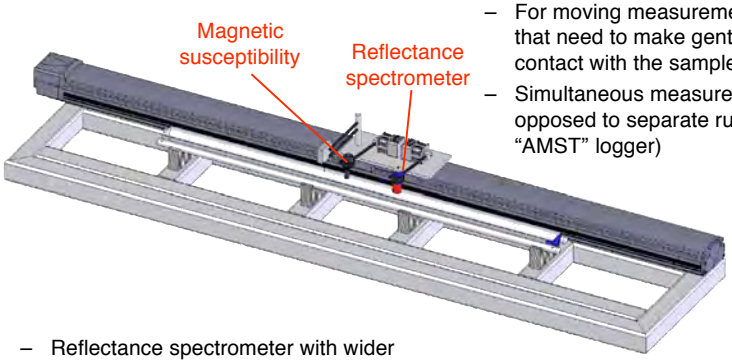


  - Higher resolution than current DIS (2048 pixel array) to provide publications quality images
  - Better dynamic range to eliminate the need for aperture change (error source)

Petrophysics - Core Loggers

USIO

- Section half multisensor logger



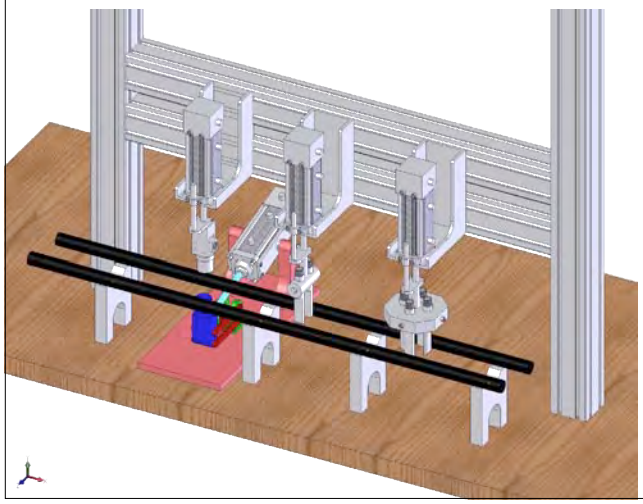
- For moving measurement systems that need to make gentle or near contact with the sample surface
- Simultaneous measurement as opposed to separate runs (previous "AMST" logger)

- Reflectance spectrometer with wider range and greater resolution than Minolta CM2002
  - 250-1150 nm instead of 400-700 nm
  - 3 nm instead of 10 nm

Petrophysics - Core Loggers

USIO

- Section half measurement gantry



- No motorized or automated motion control
- Measurements require firm contact or penetration of material

- P-wave velocity, caliper-type probes
- P-wave velocity, spear-type probes
- Automated vane shear measurements
- Manaul shear strength measurements

Petrophysics - SRM

USIO

- Superconducting Rock magnetometer (SRM)
  - Original proposal called for a replacement with a helium-free system
    - Was not considered cost-effective
    - Current system is still relatively new and meets user expectiation
  - Fall back project scope is to repair/upgrade the current system for a few thousand dollars.
  - Most recent proposal is to add electronic equipment for simultaneous measurement of three moments
    - This would significantly enhance throughput at the paleomagnetics station, which is the core laboratory's "bottle neck" on high-recovery expeditions

Petrophysics - Other Systems

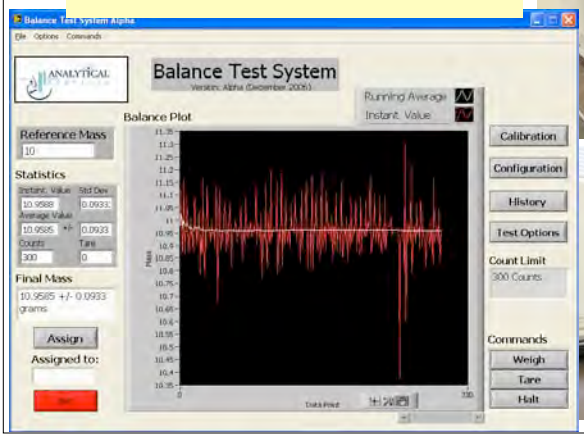
USIO

- Moisture and Density (MAD)
  - Replace balances
  - Replace pycnometers
  - Replace sample drying equipment

Petrophysics - MAD

USIO

- Dual balance system
  - Use off-the shelf Mettler-Toledo balances
  - Upgrade and standardize control application and statistics



Petrophysics - MAD

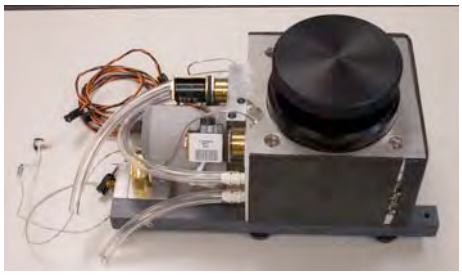
USIO

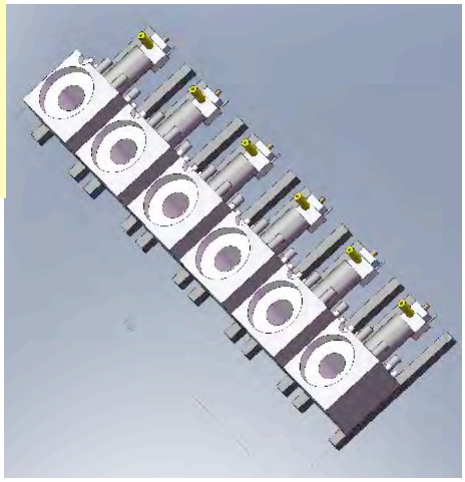
- Drying method and system
  - Community survey has been conducted to determine the best sample drying method
  - USIO considered freeze drying and vacuum ovens
    - Avoid “baking” of samples so they can be used for other analysis
  - Set of responses from Chikyu shakedown visiting scientists was in favor off sticking with the exactly same method that has been used during OPD/IODP
  - UISO is therefore looking for the most suitable convection drying ovens available

Petrophysics - MAD

USIO

- Helium pycnometer
  - Purchased Micromeritics single cells
    - Ergonomic lid mechanism
    - Temperature control option
  - Custom assembly
    - allows simultaneous computer-controlled measurements





Petrophysics - TC

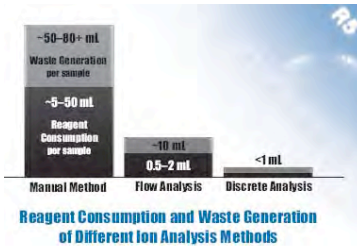
USIO

- Thermal conductivity
  - Needle-probe system
    - Purchased a replacement system from TeKa
      - Latest model equipment and software
  - Optical scan system
    - Analytical Services have launched a community survey to determine if this method is desired and feasible aboard the riserless vessel
    - Method would allow much faster measurements on smaller samples

Chemistry

USIO

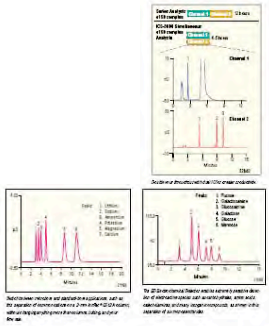
- Purchased discrete analyzer (OI)



Chemistry

USIO

- Purchased
  - New Ion Chromatograph (Dionex)
  - New CHNS analyzer (CE Elantec, Thermo)
- Refurbishing
  - All gas chromatographs
- Latest approvals:
  - RockEval replacement
  - X-Ray Diffraction replacement



Data Analysis

USIO

- Funding recently approved
  - Downhole T-P Data Analysis
    - Provide custom software tools for efficient, mission-specific data analysis compatible with shipboard workflow
  - Age-Depth Modeling
    - Provide custom software tools for efficient, mission-specific data analysis compatible with shipboard workflow
  - Stratigraphic Correlation Integration
    - Integrated existing application into workflow

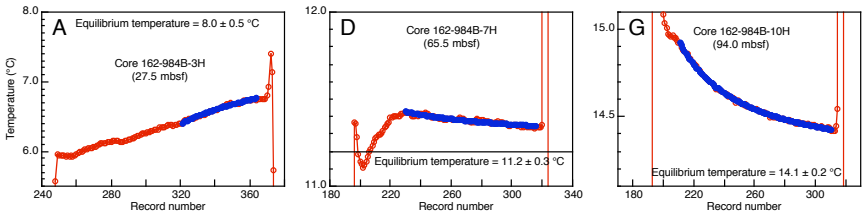
USIO

Questions?

Data Analysis - Downhole T and P

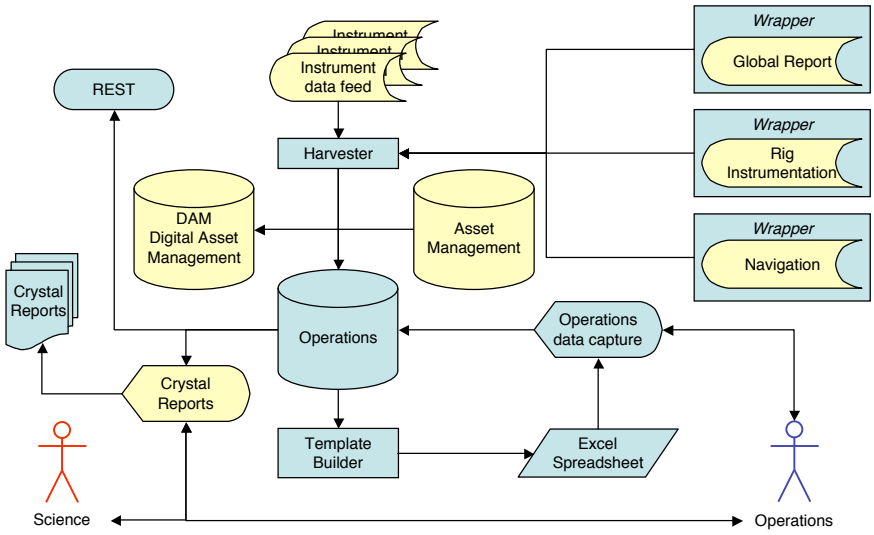
USIO

- Scope
  - Provide a new downhole temperature and pressure data analysis tool
    - TFIT program for T data processing is >20 years old
    - Accuracy of TFIT is not adequate for the increased data accuracy from new tools
    - Provide more accurate analysis using 2-D FEM model
    - Provide more rapid analysis with better software functionality and interface, allowing visiting scientists to learn and execute the procedure within a day
    - Metadata are stored along with processed data (in addition to raw data)
- Assumptions
  - Collaboration with third party



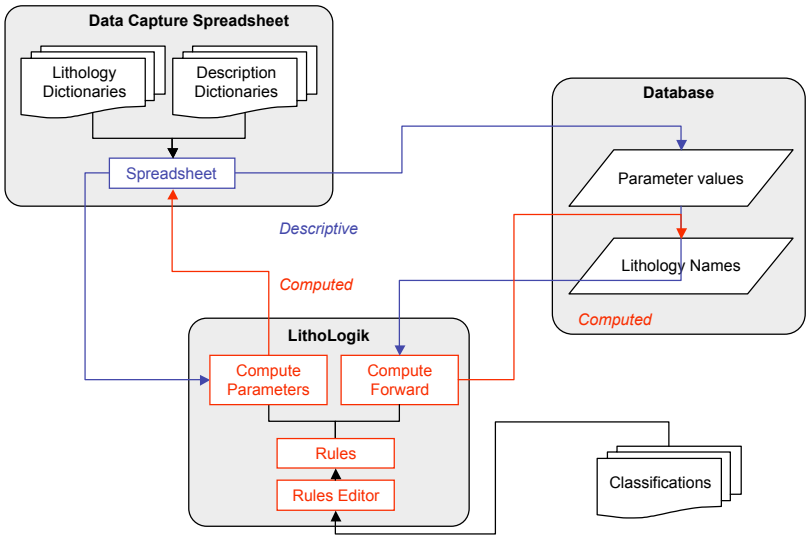
Operations - Architecture

USIO



DESCINFO - LithoLogik

USIO



APPENDIX

STP Comments on

The non-Stretched SODV Design

Plans received 21 November, 2006

Compiled by Clive R. Neal, Vice-Chair of STP

Comments and questions have come in a variety of forms and I will do my best to summarize them here. Where I have information regarding a particular comment or question, I have put it in square brackets and in red to indicate that this has already been addressed at our Conversion Design Team (CDT) teleconference on Monday (27 November, 2006). I would ask that the USIO check these comments for accuracy and advise accordingly. I have included all comments to show the USIO that there was quite a response, even with the short time (including the Thanksgiving holiday for the US members) and also to show the STP membership that their voices have been heard.

Downhole Tools

Can one walk a 4-m-long tool out of the door to the rig floor?

Microbiology

I see a microbio van, is there room for other vans (e.g., isotope van?)
[Yes, but how many is uncertain. The USIO will need to confirm this]

The microbio space is a bare minimum. [This has been addressed by the Conversion Design Team and the UISO]

Logging

I assume that the logger will still have their tools on the helo deck?
Will the loggers maintain their shack near the helo deck? [No – it is on the Core Deck with a view of the rig floor]

Miscellaneous

The science conference room should be eliminated and used for sample processing. If the science party wants to have a meeting, have them go to the science movie room. If we are going to advance the science then we need the extra room for new instruments, etc. I see mbio as taking a big hit in lab space and the chemistry lab does not have enough room for growth or advancement. [The size of the science meeting room is being reduced so more lab space can be made available. How much space will be made available is uncertain at this time.]

We need a library, or at least a quiet place for scientific work (can it be the Study room in the lower tween deck?) [I believe this is where the library will be located but will need

the USIO to confirm]

Is there any room for and ROV van? [This will depend on the size of the ROV van – the UISO is investigating].

Is there enough room in the core description area for a sampling party? Probably yes if the non-contact track and imaging parts can be used for it. Otherwise? [The redesign of the Core Lab following the CDT telecon allows for a sampling party]

There needs to be a corkboard in the planning area.

My main concern is how the redesign impacts big ticket items such as heave compensation, larger drill pipe diameter, and ROV operations.

It's clear that today there is not enough room for everything, and that we will need more space for new intstruments. However, I do not agree with the requested elimination of the science conference room. The science movie room is clearly too small for science party meetings. If
extra-room can not be find inside, just try outside and add containers as on the old JR! Seriously, we need some flexibility in space allocation. [Ship stability may not allow addition of containers on the upper deck]

Paleomagnetics

I am only worried about the magnetics lab being attached to the mechanical room. I assume that the mechanics room means vessel mechanics that supposedly have some electrical currents and magnetic fields involved. These may cause a severe problems to the magnetic field used to measure the magnetic properties. If my assumption is correct, please try to move the magnetics lab as far away from both elevator and mechanics rooms. [The mechanical room is magnetically shielded and should not contain much equipment that would interfere with the magnetics lab]

Which side (left or right) is the core sample approach in Cryogenic magnetometer measuring system?

It looks like right-side core-sample-approach by the usual position of a alternating-field demagnetizer. In this case, paleomagnetist must move the core from left side to right side before core measurement, and also remove the core from right side to left side after core measurement (the starting and ending positions of the paleomag measurement are the same). The width between "Cryogenic Magnetometer" and "Velocity & Sample Track" is too narrow to move and rotate the 150cm-long core.

Paleolmagnetists prefer left side (in the figure) core sample approach instead of right side because of time, space and labor savings (please see the attached SODV_paleomag file).

The cryogenic magnetometer is controlled by computer, therefore computer for magnetometer should be located at or near the core approach side (please see the attached SODV_paleomag file).

Some of on-shore paleomagnetists want to treat a full-core measurement instead of a half-core because of possible deformation during splitting core.
[The Paleomagnetics lab has changed configuration since the plans we have were sent out – the USIO will need to address this question]

Micropaleo/Microscope lab

I like the idea of cordoning off the space with a wall, that will allow for the addition of another work area. I would argue that some of the extra space should be used to extend the paleo desks by another foot at least, as I am concerned that the workspace is not large enough. [Two more L-shaped microscope workstations will be included once a partition wall is put between the L-shaped and straight microscope workstation]

The scale suggests the desk areas are about 5' long with about 18" workspace for the curved desks. As you know, we need a place for brushes, water, picking trays, and sieves on one side. As it is drawn that will all have to squeeze between the keyboard and the computer (easily knocked over by the scientist), or next to an area of high traffic flow (easily knocked over by passers by). The 18" work space allotted to the curved desks will have to accommodate reference books and writing materials (most of us don't work directly onto the computer, as we often make unofficial counts/ calls as we work downcore), and the samples/ slides we are working on that day.

I know that we hope to have digital libraries to work from, and their use will cut down on the number of references we will have piled up around us, but #1) these are imaginary right now; and #2) even if they are created quickly, we will still want to refer to many original works for more descriptions and illustrations. The digital taxonomic dictionaries will be quite useful when completed, but there are many publications that are specific to a region, with slight deviations in description, etc. that are essential for good science. Furthermore, these dictionaries won't be developed equally for all fossil groups- what will say the dinoflagellate specialist do while waiting for development of their online dictionairies? [With the inclusion of the dividing wall, space for wall shelves to hold reference books is now available]

Overall, this seems like an unnecessarily cramped work space, considering people work at these desks for 12 hours/ day. The surface area is simply not large enough to fit all our materials, supplies, samples, etc. On the JOIDES, we always had a chair next to us to hold references, etc. In this configuration we will be blocking the aisles if we put a chair next to us to hold these essential materials, especially it is an area with open flow.

Also, this workspace will need to accommodate a set of drawers below for storage of supplies and samples. The way it is drawn, it will be a choice between knees or storage- extending the stations a little will allow for storage drawers and knees. A further benefit of the wall is that it will permit bookshelves and wall space at each station, for tacking up essentials such as zonations, our working assessments of the ages of the cores, and other unavoidable stuff.

A last comment concerns air flow. As it is drawn, most of these stations are exposed to passing traffic at the door or within the work area. Those of us who work with the

larger specimen not examined on smear slides have concerns about air currents created by air flow and people traffic. The wall will cut down on this, but a full wall might be best to limit overhead air currents.

Because of different light requirements, the microscope area may be closed and separated from the core description area [This is now being included in the design]

Core Flow/Core Description

I have a concern about the core entry. I am not sure if it's coming through the 2' wide door adjacent to the engraver, or through the downhole lab. If it's coming through a 2' wide door, that seems awfully tight. If it's coming through downhole, the core rack would have to be maneuvered in a really tight space (3') or come in on a diagonal.

Whole core analyses should not be so far from the core racks- yes, it's only 2- 4 feet but the whole core will have to be carried across 2 active passage ways. Why not move the break area and dedicate that space for core racks? There is an unnamed closet area between the head and the break area- put a coffee station there if some other place can't be found. Frankly it's a tough location since anyone wanting to access it will have to walk through core transport to the cutting room, or from racks to whole core analysis. Maybe a better place for it in the core description area, on the proposed wall? Or even better, just use the one that is up a deck (bridge level).

The bottleneck will predictably come in the very narrow corridor between the whiteboard and the core splitting room. Is there any chance of giving that corridor an extra bit of space to make room for the ever present co-chief at the whiteboard (even more likely if the core deck level break area is removed)?

The core flow needs to be checked. For example imaging is probably done after splitting, but actually needs to cross the whole core description area.

If core description moves to digital tools (as expected), more display may be necessary in this area. Can they be fixed to the ceiling?

Too bad to supress the X-ray CT scan, this tool may be (by comparison with borehole images) a way to orientate the cores. [There will be space for future expansion]

Chemistry Lab

It appears that the plan is to go with XRD, ICP-OES and XRF. The 'sample prep' room is designed to make slides, beads and pellets for XRD and XRF, and 'thin section' room to make thin sections, and they look good. However, there is no appropriate lab space to prepare ICP-OES samples; the problem will be even bigger if in the future, we will add/upgrade to ICP-MS. [It is not clear whether or not we will have ICP-OES, ICP-MS, XRF, and XRD – we may have all. This makes the issue of preparation space all the more urgent. The USIO will need to confirm this]

Chemistry only has 3 squeezers, it needs at least 5. [There will be at least 5 squeezers]

Some specific comments, with minimal space/wall adjustments:

1) it may be somewhere, but I do not see an 'ultrapure' (Barnsted, Nannopure, etc.) water system in the chemistry lab. My understanding is that the RO/UV water system near the presses will not produce good enough water for trace analysis. WE DEFINITELY NEED ONE, not only for ICP, but for many other purposes as well.

2) to create an ICP prep lab, I would move the table a bit farther away from the thin section room wall, put F3-CH on the other side of the table, remove the 'extract' from that side of the table to open up a work space* on the side of the F3CH (also for a bench top laminar flow hood later, for a 'future' ICP-MS) and put a sink at the end of the table.

3) the ICP, XRF, XRD need a good micro-balance; I am guessing that the XRF/XRD chan balance will serve this purpose, but it is far from the sample prep areas where it is needed. In the first place, what is the balance doing in the XRD/XRF room – only prepared sections, beads and pellets need to be in that instrument room, so there is no need to weigh samples there? Move it in a 'protected' area, i.e., the perfect place for it is in the computer space in the 'thin section' room. Although it is convenient to have a computer terminal there, to input the thin section samples, there are only a few thin sections being made per cruise, and so this task can be done using other terminals.

4) Alternatively, but less preferred, the CNHS chan balance can be used for ICP sample prep, since it is close enough.

5) I would put a wall/partition in the middle of the table, behind F3-CH, to create a semi-isolated lab space for ICP; a HEPA-filtered overhang can be placed above the isolated space for clean air supply in the future (for future ICP-MS work).

6) *I see little open table (work) spaces for sample prep in the whole chemistry lab! I can be wrong, but I only see instrument boxes and what I assume respective support computers. This is not good because we need table/bench spaces to prepare samples, read manuals, write lab notes, etc., for each type of analysis. The more table/work spaces we can have, the better.

7) One way to solve the problem is to put open table spaces near each instrument (e.g., GC-MS, CNHS, etc.). Using the existing design, I would move some of the smaller, not so sensitive (to traffic) instruments on either side of the ICP bench. Also note that ICP-OES usually comes with its own table, so do not construct a solid bench on that side of the lab unless the ICP-OES is a table top model.

8) I do not know what the 'cleaning locker' is for, but I would move it somewhere else, and create more work bench spaces and/or for instruments/computers - to free up spaces between instrument (see #7) in the tables.

9) [Microscope lab] I would move the Network Swing Rack somewhere to create more lab bench work space for 'on-duty' paleontologist.

[The expansion of the Chem Lab area through the contraction of the Science Meeting Room may address at least some of these issues. The USIO will need to confirm this]

STP Rotations

		06-12	07-06	07-12	08-06	08-12	09-06
Ahagon, Naokazu	J						
Basile, Christophe	E						
Bruckmann	E						
Paterno Castillo	U						
Beth Christensen	U						
Colwell, Rick	U						
Ge, Hongkui	C						
Gorin, George	E						
Ikehara, Minoru	J						
Johnson, Paul	U						
Lee, Youn Soo	K						
Lovell, Mike *	E						
Masuda-san	J						
Nunoura, Takuro	J						
Neal, Clive*	U						
Okada, Makoto	J						
Sakurai, Shinichi	U						
Suzuki, Noritoshi	J						
Wheat, Geoffrey	U						
TBN	J						

Next STP Meeting

Dates:	June 4-6 2007
Location:	Beijing, China
Host:	Hongkui Ge
Fieldtrip:	3rd June 2007

Roadmap of borehole seismology

Junzo Kasahara

07.3.15

VSP and crosshole seismics for better imaging of shallow crustal part

- Borehole sources are ideal

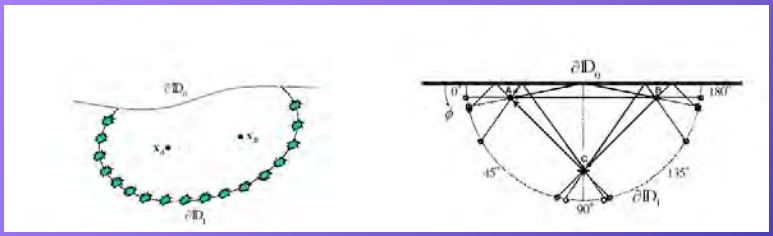
07.3.15

How to get borehole source

- Borehole airgun
- Bending source
- Spiral code
- Virtual source (Daylight imaging, Seismic interferometry)

07.3.15

Seismic Interferometry (Virtual source)



$$2\Re\left\{\hat{G}^{\nu,t}_{p,q}\left(\mathbf{x}_A,\mathbf{x}_B,\omega\right)\right\}\hat{S}\left(\omega\right)\propto \left\langle\left\{\hat{\nu}^{obs}_p\left(\mathbf{x}_A,\omega\right)\right\}^*\hat{\nu}^{obs}_q\left(\mathbf{x}_B,\omega\right)\right\rangle,$$

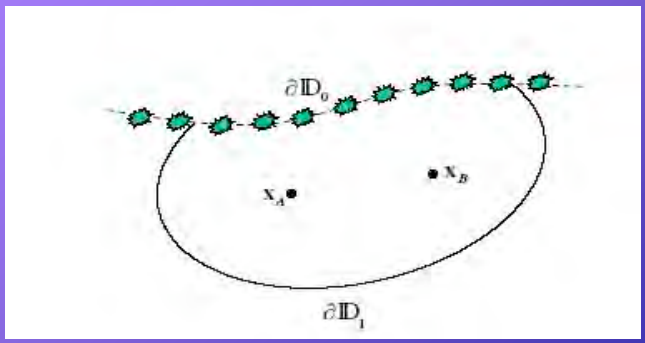
Kees Wapenaar

07.3.15

Using Receiver A

- Making cross-correlation of receiver A and receiver B
- (Sources are somewhere surrounding A and B)
- Eliminate use of source in position A or B
- Integrate closed space including A and B
- Get Green function of A->B
- Apply to borehole seismic records instead of using borehole sourcr

07.3.15



07.3.15

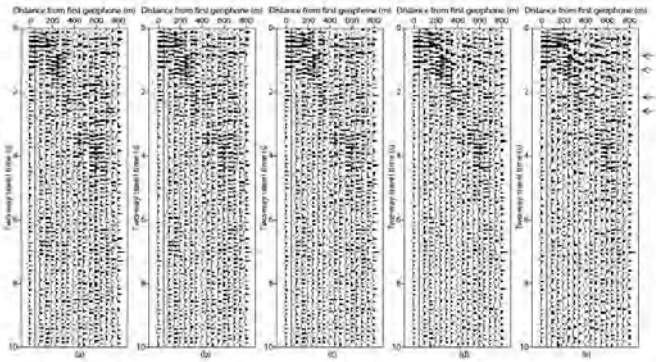
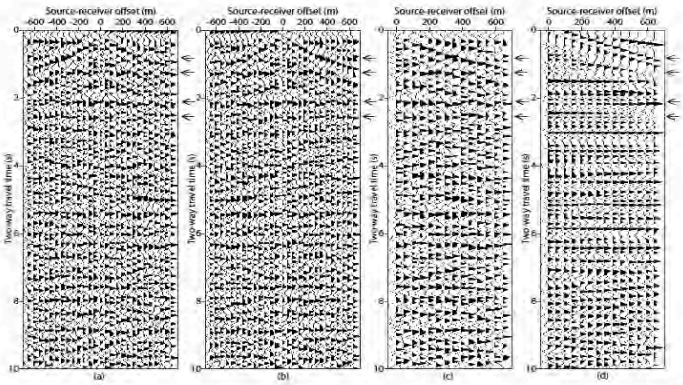


Figure 1: Gradual building of the reconstructed vertical particle velocity as if from a vertical traction source at $x_1 = 0$ m. The individual panels show the first 10 s of the causal part of the reconstruction of the common-shot gather after summation of (a) 100, (b) 200, (c) 300, (d) 400 and (e) 500 correlation panels. The arrows point to events that can be interpreted as nearly horizontal reflection arrivals. These arrivals will become clearer in the following figures.

Deyan Draganov[1], Kees Wapenaar[1], Wim Mulder[1,2], Johannes Singer[2], and Arie Verdel[2]

07.3.15



07.3.15

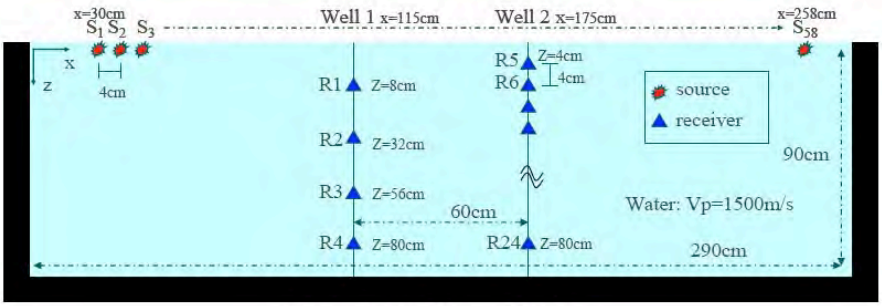


Figure 1. Simulation Model

Kentaro Torii [(1)], Kazuya Shiraishi [(1)], Kyosuke Onishi [(1)], Toshifumi Matsuoka [(1)], Toshinori Kimura[(2)], Takao Aizawa[(2)]

07.3.15

Items for Science and Technology Roadmap

Koji Masuda, Weiren Kin, Junzo Kasahara

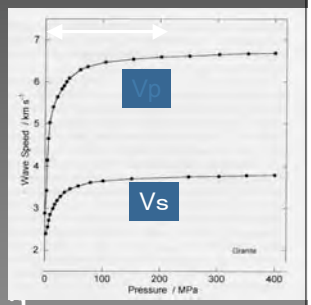
Necessity of measurements under in^-situ circumstance

Future capability unto several years
-Chikyu drilling up to 6000m depth

Measure similar circumstance as in-situ temperature
Current status:
-Preparation of P velocity measurements under Pressure
Next step
- S wave velocity under pressure

Current status

Feasibility study of pressure measurements of Vp on board of Chikyu
-Room temperature
-Pulse transmission method
Results
-P-Pressure up to 200MPa
-Considering items for design
-Easy measurement on board if pobbile
-Measurements under safe circumstance
-Routinely operation capability
-Any person can get same data



Future measurements items under deep-sea drilling circumstance

P wave velocity
- -Higher pressure >500MPa (15km)
- -T dependence measurements on shore base
- -Wet circumstance measurements on shore base

S-wave velocity measurements
- -Under pressure measurements
- -T dependence on shore base
- -Wet circumstance

Other measurements
- -electrical conductivity

Needed further discussion

Future technological target

S wave velocity measurements

Necessity
- -Comparison to logging data
- -Use of Vp/Vs: estimation of Qz and serpentinization
- -Valuable for estimation of materials
- -Vp/Vs

<Roadmap>
- -S velocity measurements under 200MPa(6-8km depth
- -Anisotropy (Splitting)
- -measurement considering schistocity
- -Directional control for anisotropy
- -under room temperature
- -Measurements under dry condition
- -Routinely operation

Importance of onboard XRF analysis for determination of major chemical components in rock samples

Summary

- X-ray fluorescence spectroscopy (XRF) is recommended to be installed on D/V CHIKYU because XRF has superior stability of Silicon measurement, which is essential to classify the volcanic rocks.

Background … 1

- Since ODP leg.187, ICP-AES has been installed on JOIDES Resolution (JR). Consequently, XRF on JR was removed after ODP leg.191. On the other hand, at planning stage of CHIKYU, onboard analytical equipments were selected based on JR equipments. Therefore, except for XRF scanner, there is no onboard XRF system for analyzing chemical composition in IODP platforms.

Background… 2

- ICP-AES has superior capability to analysis minor and trace elements in liquid sample with high precision and is one of optimal solutions for analysis of seawater/porewater chemistry. However, there is pitfall on determination of major elements in the rock samples.

Major problems on ICP-AES

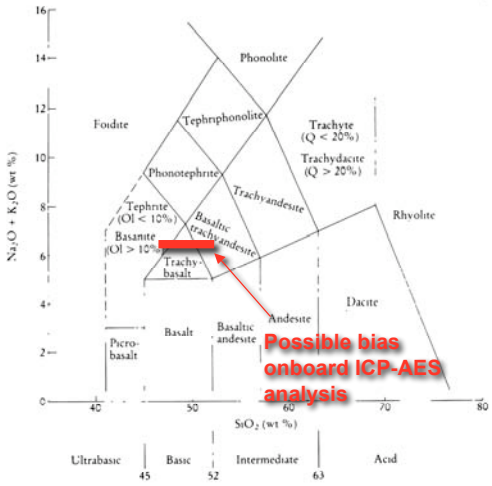
1. Difficult to get rapid and accurate analytical results (we need experienced techs).
2. Reproducibility is not good for some elements.
3. Some important elements are difficult to bring solution (e.g., Silicon).
4. Many chemical steps lead to increase the possible contaminations and errors, and may cause interlaboratory difference.

Silicon (Si) --chemical character

- Silicon does not react with most acids under normal conditions but is dissolved by hydrofluoric acid (HF). Some silicon fluoride can escape into the air (volatile)
- Silicon is attacked by bases such as aqueous sodium hydroxide.

Silicon (Si) --geolgical view point

- Major element of igneous rocks.
- Major classification of volcanic rock depends on its silica content.
- Small difference of silica content (~a few w.t.%) could give different rock name.



The chemical classification and nomenclature of volcanic rocks using the total alkalis versus silica (TAS) diagram of Le Maitre *et al.* (1989). Q = normative quartz; Ol = normative olivine.

Ex.1 N-MORB rock measured using ICP-AES

Andesic Basalt?

Data are provided by resent cruise participants for this presentation.

		SiO2	TiO2	Al2O3	FeO	MnO	MgO	CaO	Na2O	K2O	P2O5	L.O.I.	total
Sample A	initial calculation (I)	54.10	1.30	15.80	11.20	0.20	7.60	9.90	2.30	0.20	0.10	−0.12	102.60
	result (not 100% normalized)	52.51	1.42	15.88	12.44	0.11	7.69	9.77	2.29	0.23	0.14		102.49
	result (normlized) (N)	51.87	1.40	15.69	11.06	0.11	7.60	9.65	2.26	0.23	0.14		100.01
	Difference (N−I)	**−2.23**	**0.10**	**−0.11**	**−0.14**	**−0.09**	**0.00**	**−0.25**	**−0.04**	**0.03**	**0.04**		
Sample B	initial calculation (I)	55.70	1.10	14.70	10.10	0.20	7.80	11.10	2.30	0.10	0.10	0.79	104.00
	result (not 100% normalized)	52.49	1.14	14.68	10.31	0.21	7.71	11.09	2.29	0.12	0.10		100.13
	result (normlized) (N)	52.42	1.13	14.67	10.29	0.21	7.70	11.07	2.29	0.12	0.10		100.00
	Difference (N−I)	**−3.28**	**0.03**	**−0.03**	**0.19**	**0.01**	**−0.10**	**−0.03**	**−0.01**	**0.02**	**0.00**		
Sample C	initial calculation (I)	55.60	1.30	14.00	11.10	0.30	7.60	10.70	2.90	0.10	0.20	0.99	103.70
	result (not 100% normalized)	52.30	1.37	13.73	12.10	0.27	7.34	10.67	2.82	0.11	0.08		100.78
	result (normlized) (N)	52.53	1.37	13.79	10.93	0.27	7.37	10.72	2.83	0.11	0.08		100.00
	Difference (N−I)	**−3.07**	**0.07**	**−0.21**	**−0.17**	**−0.03**	**−0.23**	**0.02**	**−0.07**	**0.01**	**−0.12**		

All initial calculation exceeded 100% in total.

Recalibration with adding some new standards was done by scientist.

Ex.2

- Cross-checking using different reference materials.
- The average values are in agreement with certified value.

However, deviation based on single analysis is still large for some elements such as Silicon.
(~5 w.t.%)

Sample		SiO2	TiO2	Al2O3	Fe2O3	MgO	MnO	CaO	Na2O	K2O	P2O5	Total
DTS-1	Average(22)	40.38	0.01	0.19	8.60	49.46	0.12	0.09	0.00	0.00	0.01	98.86
	DTS-1(R.V.)	40.74	0.01	0.19	8.75	50.00	0.12	0.17	0.01	0.01	0.00	100.00
	Precision	0.64	0.00	0.02	0.25	0.94	0.00	0.02	0.00	0.00	0.03	1.39
	%	1.58	68.50	12.61	2.90	1.89	3.13	10.68	46.00	17.40	1357.58	1.39
	Accuracy	0.36	0.00	0.00	0.15	0.54	0.00	0.09	0.01	0.01	-0.01	1.14
	%	0.88	-79.76	2.29	1.77	1.07	1.73	49.86	55.39	66.51	-456.50	1.14
	Max	41.65	0.01	0.28	9.51	51.33	0.12	0.12	0.01	0.01	0.07	101.45
	Min	39.45	0.00	0.15	8.32	47.36	0.11	0.05	0.00	0.00	-0.03	96.01
	dif	2.20	0.01	0.13	1.19	3.97	0.02	0.07	0.02	0.01	0.10	5.44
JGb-1	Average(9)	44.69	1.61	18.01	15.57	8.04	0.19	11.71	1.27	0.26	0.04	101.38
	JGb-1(R.V.)	43.66	1.60	17.49	15.06	7.85	0.19	11.90	1.20	0.24	0.06	100.00
	Precision	1.34	0.07	0.58	1.00	0.28	0.00	0.58	0.05	0.07	0.02	1.90
	%	3.07	4.20	3.31	6.66	3.58	2.27	4.89	4.44	30.55	31.52	1.90
	Accuracy	-1.03	-0.01	-0.52	-0.51	-0.19	-0.01	0.19	-0.07	-0.02	0.01	-1.38
	%	-2.36	-0.60	-2.96	-3.36	-2.37	-3.01	1.64	-5.54	-7.01	20.37	-1.38
	Max	46.45	1.76	19.31	17.35	8.36	0.20	12.25	1.40	0.45	0.07	103.89
	Min	41.87	1.51	17.43	13.66	7.58	0.19	10.24	1.23	0.22	0.02	98.67
	dif	4.58	0.25	1.88	3.69	0.79	0.01	2.02	0.17	0.23	0.06	5.22
BIR-1	Average(22)	47.76	0.96	15.37	11.38	9.74	0.17	13.13	1.80	0.02	0.02	100.37
	BIR-1(R.V)	47.60	0.95	15.38	11.21	9.63	0.17	13.20	1.81	0.03	0.02	100.00
	Precision	0.90	0.02	0.21	0.14	0.24	0.00	0.21	0.04	0.00	0.02	1.10
	%	1.89	2.50	1.40	1.24	2.52	2.45	1.59	2.01	5.10	113.02	1.10
	Accuracy	-0.17	-0.01	0.01	-0.16	-0.12	0.00	0.07	0.00	0.01	0.00	-0.37
	%	-0.35	-1.09	0.08	-1.45	-1.21	-0.43	0.50	0.23	18.88	-18.51	-0.37
	Max	49.55	1.01	15.91	11.64	10.11	0.18	13.58	1.85	0.03	0.08	101.88
	Min	45.43	0.91	15.07	11.13	9.34	0.16	12.70	1.70	0.02	-0.02	97.47
	dif	4.12	0.10	0.84	0.51	0.76	0.02	0.88	0.14	0.01	0.10	4.40
JP-1	Average(21)	43.64	0.01	0.67	8.44	46.08	0.12	0.54	0.02	0.01	0.00	99.54
	JP-1(R.V.)	42.38	0.01	0.66	8.37	44.60	0.12	0.55	0.02	0.00	0.00	100.00
	Precision	0.77	0.00	0.01	0.12	0.40	0.00	0.02	0.01	0.00	0.02	0.95
	%	1.82	58.07	1.89	1.48	0.89	1.84	4.19	25.85	65.69	1056.66	0.95
	Accuracy	-1.26	0.00	-0.01	-0.07	-1.48	0.00	0.01	0.00	0.00	0.00	0.46
	%	-2.97	-48.96	-1.81	-0.88	-3.32	-0.42	1.27	-11.73	-117.44	-103.26	0.46
	Max	45.06	0.01	0.70	8.64	46.79	0.13	0.58	0.03	0.01	0.06	101.67
	Min	42.46	0.00	0.64	8.22	45.48	0.12	0.50	0.02	0.00	-0.03	97.77
		2.60	0.01	0.06	0.42	1.31	0.01	0.08	0.02	0.01	0.09	3.90
JA-3	Average(21)	62.32	0.68	15.57	6.57	3.72	0.11	6.37	3.19	1.41	0.10	100.04
	JA-3(R.V.)	63.97	0.70	15.56	6.60	3.72	0.10	6.24	3.19	1.41	0.12	100.00
	Precision	0.94	0.02	0.24	0.15	0.11	0.00	0.13	0.04	0.02	0.03	1.14
	%	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.01	0.01	0.27	0.01
	Accuracy	1.65	0.02	-0.01	0.03	0.00	0.00	-0.13	0.00	0.00	0.01	-0.04
	%	0.03	0.03	0.00	0.01	0.00	-0.02	-0.02	0.00	0.00	0.11	0.00
	Max	63.69	0.72	15.94	6.91	3.84	0.11	6.61	3.24	1.45	0.15	101.78
	Min	60.60	0.65	15.04	6.31	3.36	0.10	6.09	3.11	1.37	0.03	97.85
	dif	3.08	0.07	0.90	0.60	0.47	0.01	0.52	0.13	0.08	0.12	3.93
JB-3	Average(8)	50.49	1.40	16.95	11.74	5.15	0.18	9.69	2.74	0.77	0.38	99.50
	JB-3(R.V.)	50.96	1.44	17.20	11.82	5.19	0.18	9.79	2.73	0.78	0.29	100.00
	Precision	1.03	0.03	0.27	0.16	0.07	0.00	0.17	0.03	0.01	0.09	0.92
	%	2.01	2.34	1.57	1.34	1.30	1.39	1.74	1.12	1.68	30.46	0.92
	Accuracy	0.47	0.04	0.25	0.08	0.04	0.00	0.10	-0.01	0.01	-0.09	0.50
	%	0.92	2.56	1.44	0.71	0.68	-1.57	1.02	-0.49	1.76	-30.60	0.50
	Max	51.50	1.45	17.38	11.99	5.22	0.18	9.87	2.79	0.79	0.51	100.75
	Min	48.46	1.34	16.65	11.53	5.04	0.18	9.39	2.70	0.75	0.24	97.92
	dif	3.04	0.11	0.73	0.46	0.18	0.01	0.49	0.09	0.04	0.27	2.84

Points of discussion

- Main onboard work is description. Scientists want to determine rock names at first.
- In this purpose, stable and robust method to determine major composition of the rock sample is recommended.
- XRF method is relatively easy to routine use and has enough precision and reproducibility on major chemical components (e.g., Si).
- Compatibility and reproducibility of XRFs can be examined using same set of bead (fused) samples in which chemical composition is well known.

Approach

- STP Action Item

  To find optimal solution on determination of major elements, especially for Silicon, from community's inputs and from IOs.

- QA/QC issue?
  - Is there another solution?

Summary

- X-ray fluorescence spectroscopy (XRF) is recommended to be installed on D/V CHIKYU because XRF has superior stability of Silicon measurement, which is essential to classify the volcanic rocks.