

Chikyu IODP Board #4 meeting 23–24 March 2016

Takikawa Memorial Hall
Kobe University
Final minutes

#4 Chikyu IODP Board Meeting

Name	Institution
Members	
Ben	A van der Pluijm University of Michigan - Ann Arbor, USA
Gilbert	Camoin ECORD Managing Agency (EMA), CEREGE, France
Hodaka	Kawahata The University of Tokyo, Japan
Shin'ichi	Kuramoto Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Casey	Moore University of California, Santa Cruz, USA
Jim	Mori Kyoto University, Japan
Eisho	Sato Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan
Yoshiyuki	Tatsumi CIB Chair - Kobe University, Japan
Heinrich	Villinger University of Bremen, Germany
Liaisons	
James	Austin IODP Forum chair - University of Texas, Austin, USA
Keir	Becker TAT chair - University of Miami, USA
Brad	Clements JR Science Operator (JRSO), USA
Robert	Gatliff * ECORD Science Operator (ESO), British Geological Survey, UK
Holly	Given IODP Science Support Office - Scripps Institution of Oceanography, USA
Tsuyoshi	Ishikawa Kochi Core Center (KCC) - JAMSTEC, Japan
Barry	Katz * EPSP Chair - Chevron Corporation, Houston, TX, USA
Anthony	Koppers JR Facility Board Chair - Oregon State University, USA
Gilles	Lericolais * ECORD Facility Board Chair - IFREMER, France
David	Malinson SEP Co-chair - East Carolina University, USA
Ken	Miller * SEP Co-chair - Rutgers University, USA
Takeshi	Tsuji * EPSP member - Kyusyu University, Japan
Observers	
Naokazu	Ahagon Kochi Core Center (KCC) - JAMSTEC, Japan
Ryo	Anma JRFB, Tsukuba University, Japan
Wataru	Azuma JAMSTEC, Japan
Kazuma	Doi Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan
Lallan	Gupta Kochi Core Center (KCC) - JAMSTEC, Japan
Nadine	Hallmann ECORD Managing Agency (EMA), CEREGE, France
Andrew	Heap Geoscience Australia, Australia
Satoshi	Hirano Marine Works Japan, Ltd.
Fumio	Inagaki ECORD FB, Kochi Core Center (KCC) - JAMSTEC, Japan
Thomas	Janecek National Science Foundation, USA
Gaku	Kimura Japan Drilling Earth Science Consortium (J-DESC) - The University of Tokyo, Japan
Shigemi	Naganawa The University of Tokyo, Japan
Hiroshi	Nishi Japan Drilling Earth Science Consortium (J-DESC) - Tohoku University, Japan
Mika	Saido Marine Works Japan, Ltd.
Kiyoshi	Suyehiro JAMSTEC, Japan
Shouting	Tuo IODP-China Office, Tongji University, China
Yasu	Yamada JAMSTEC, Japan
Michiko	Yamamoto IODP Science Support Office - Scripps Institution of Oceanography, USA
Nan	Xiao Kochi Core Center (KCC) - JAMSTEC, Japan
Hitoshi	Hotta JAMSTEC, Japan
Yumi	Ebashi Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Nobuhisa	Eguchi Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Nori	Kyo Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Shigemi	Matsuda Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Taisei	Nakamura Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Ryoko	Sato Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Ikuo	Sawada Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Sean	Toczko Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan
Ayumi	Yoshimatsu Center for Deep Earth Exploration (CDEX), JAMSTEC, Japan

*_unable to attend

**Chikyu IODP Board #4 meeting
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Kobe University Takikawa Memorial Hall

List of Consensus and Action Items

CIB_Consensus_0316-01: The CIB approved the #4 meeting agenda as is.

CIB_Consensus_0316-02: The CIB approved the last meeting's minutes without modification.

CIB_Consensus_0316-03: The CIB endorsed the "Implementing Amphibious Drilling Proposals (ADP) in IODP-ICDP" guidelines in concept with the understanding that ADPs will follow IODP sample and data policies and guidelines.

CIB_ActionItem_0316-01: The CIB members will comment on the document and feed these comments to the next JRFB meeting in May 2016.

CIB_Consensus_0316-04: The CIB recognized that the Proposal 865 Nankai Trough T-Limits PCT proposed alternate site (ODP11-74B) does not change the scientific targets of the project.

CIB_ActionItem_0316-02: The CIB will inform the SEP of the proposed site changes not affecting the project science targets at the next SEP meeting in June 2016.

CIB_Consensus_0316-05: The CIB does not endorse the J-DESC proposed "Chikyu-STP" concept. The CDEX Technical Advisory Team (TAT) terms of reference already combines the previous IODP phase EDP and STP functions. The CIB encourages CDEX and TAT to provide more transparency of the TAT activities to the scientific community.

CIB_Consensus_0316-06: The CIB strongly encourages working closely with CDEX/JAMSTEC in terms of improving funding for long-term Chikyu scientific ocean drilling from Japanese government. Stressing the scientific importance and societal relevance of Chikyu science, along with maintaining the international leadership of Japan in ocean drilling must be part of this effort.

CIB_ActionItem_0316-03: CDEX/JAMSTEC will report the progress of specific strategy of fund raising at the next CIB meeting.

CIB_Consensus_0316-07: The CIB endorsed the execution of the shorter version of Proposal 865, Nankai Trough Temperature Limits for the JFY2016 IODP window. The CIB also endorsed the execution of the NanTroSEIZE C0002 deep riser hole in JFY2018 if operation budget is available.

CIB_Consensus_0316-08: The CIB recognized that the large riser projects currently at the CIB (i.e. CRISP, IBM, and Hikurangi) will not be implemented during JAMSTEC's current 5-year term ending in March 2019.

CIB_ActionItem_0316-04: The CIB will provide feedback to the riser proposal proponents of the postponement of riser projects (i.e. CRISP, IBM, and Hikurangi) until the next JAMSTEC 5-year plan at the earliest.

CIB_Consensus_0316-09: The CIB tasks the Science Board (Moore, Kawahata, Mori (Chair), Villinger, and van der Pluijm) to review riser drilling proposals and consider long term strategy for future Chikyu implementation. The Science Board will prepare for a detailed discussion regarding the eventual determination, including possible prioritization, of riser proposals by end of September 2016.

CIB_ActionItem_0316-05: The Science Board will report long term strategy for future Chikyu implementation to the CIB at the next meeting.

CIB_Consensus_0316-010: The CIB reviewed the bend fault serpentinization Workshop support request, and endorsed the same.

CIB_Consensus_0316-11: The CIB confirms that no new riser proposals, with the exception of CPPs, will be solicited.

CIB_Consensus_0316-12: The CIB recognized the importance of ABS issue, and expects updated information at the next meeting.

CIB_Consensus_0316-13: The *Chikyu* IODP Board warmly thanks Heinrich Villinger for his services in the early years of the CIB. His commitment, professional insight and friendliness have been critical to Board's activities. These warm thanks will come into force after Heinrich will have completed his last CIB tasks, including the prioritization of the current *Chikyu* proposals.

CIB_Consensus_0316-14: We would like to acknowledge Hodaka Kawahata for his work on CIB. He has provided informative opinions on geochemistry topics, as well as operational issues for marine expeditions. Also, he has fostered communication between the Japanese academic community and CIB. We would like to thank him for his valuable service on CIB.

CIB_Consensus_0316-15: Casey Moore, thank you for generously sharing your insights and experiences in ocean drilling science as a member of the Chikyu-IODP Board over the past 4 years. Particularly the combination of hands-on responsibilities, your professionalism and a deep understanding of ocean science spanning several decades made your contributions tremendously valuable to the Board, Chikyu science and scientific drilling in general. You leave a big hole to fill.

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Day-1

Wednesday, 23 March 2016

Agenda Items

1. Welcome Remarks

(Hitoshi Hotta)

(08:56 h.)

JAMSTEC Executive director and CDEX Director General Hitoshi Hotta delivered the opening remarks. He referred to the 1995 Hanshin Earthquake, 21 years ago, that had a great impact on the region. Director Hotta introduced the new Ocean Bottom Exploration Center, established at Kobe University, and headed by CIB Chair Yoshiyuki Tatsumi. Director Hotta mentioned the many difficulties that *D/V Chikyu* had encountered in the first 7 years of operation. *Chikyu's* 10th anniversary was celebrated late last year, after 3-4 years of significant improvement. Much of last year was spent working on an Indian Government-sponsored methane-hydrate drilling operation, and one operation for the Japanese Government has just been completed. The next IODP expedition is scheduled to begin from the end of March 2016, IODP Expedition 365. Although the budgetary circumstances of JAMSTEC are still facing many difficulties, he emphasized that they have kept a positive and forward-looking attitude regarding IODP scientific drilling, and he looked forward to the participants having a vigorous discussion and producing good suggestions.

2. Introduction and Logistics

(Shigemi Matsuda)

(09:03 h.)

S. Matsuda (CDEX) briefly described the emergency escape routes and instructions, and showed a floor map of the venue.

Nobuhisa Eguchi (CDEX) asked whether any participants were having trouble connecting to the Internet. Next, he briefed the participants about the daily coffee breaks at 10:00 and 15:00 h, and lunch possibilities in the cafeteria or students' canteen in another building. He also briefed the group on the reception starting at 18:30 h this evening in the Lavender room on the hotel's 9th floor.

(09:06 h)

Chair Yoshiyuki Tatsumi reminded the group about the CIB mandate:

- 1) Annual IODP implementation plans for the following JP fiscal year,
- 2) Long-term *Chikyu* IODP implementation strategies for the next 4-5 years,
- 3) Data management, core curation, publication capacity building, outreach programs and other program related activities,
- 4) Reestablishment of full proposal formation workshop, and other *Chikyu* IODP-related issues.

He also reminded everyone that all CIB decisions must be made by consensus and the group has to fully discuss and reach consensus. Please only one person at a time to speak, and please speak clearly.

Participants self-introductions started at 09:10 h.

3. Approval of Agenda

(Chair – Tatsumi)

(09:17 h.)

Chair Tatsumi shared the present agenda with the group, and it was approved with no major changes.

CIB_Consensus_0316-01: The CIB approved the #4 meeting agenda as is.

4. Approval of Last Meeting Minutes

(Chair - Tatsumi)

(09:19 h.)

Chair Tatsumi asked the group if they have any comments or questions about the last meeting's minutes.

CIB_Consensus_0316-02: The CIB approved the last meeting's minutes without modification.

5. CIB Decisions since Last Meeting

(Chair - Tatsumi)

(09:20 h.)

Chair Tatsumi reviewed two CIB consensus items made after the last meeting. The first was CIB_Consensus_0315-16: Workshop proposal for IODP Proposal 871. The Chair asked the group for any comments. Eguchi explained that although a CIB-endorsed PAT was created, and members were selected from Australia and Japan, no actual PAT activities have been carried out. Moreover, the workshop is over and its report is in the Agenda Book (Agenda item 15-B). Jamie Austin asked if a chair had been chosen yet and how the PAT functions. Eguchi answered that the PAT team leader is Yasuhiro Yamada (JAMSTEC), and that scientists and operators

(CDEX) work together once it becomes an actual project. This team usually then transitions into the project coordination team (PCT). Since there were no questions or comments, the Chair declared this consensus approved.

The Chair moved on to CIB_Consensus_0315-17 (Bend Fault Serpentinization) and asked Eguchi if he had any comment. Eguchi mentioned that this consensus had somehow been forgotten at the last meeting; there had been some emails among CIB members, but no action taken. Possibly this was due to the rotation of CIB members from 1 April and this is the reason why current CIB members are asked to stay in the system until the end of September. H. Villinger mentioned that as a co-proponent, he potentially has a conflict (COI). The Chair suggested that this be discussed the next day. Eguchi mentioned that this consensus was made last winter, and the CIB endorsed the workshop for the proposal 876. He said the proposal was submitted to the PIs and would be sent to CIB members separately. He also said this is included in Agenda Item #15 (scheduled for tomorrow), and that the workshop is planned for 18-21 June 2016 in London.

6. CIB Action Item Status

(Chair - Tatsumi)

(09:25 h.)

The Chair moved to Action_Item_0315-01, where the CIB selected three Curatorial Advisory Board members and this item was approved. The Chair said that K. Becker would give a presentation about the TAT under Action_Item_0315-02. Lastly, he said there are no updates from CDEX to the CIB regarding *Chikyu* policies.

7. *Chikyu* 5-year inspection and refurbishment report

- *Chikyu* 5-year inspection

(Nori Kyo)

(09:28 h.)

N. Kyo gave a presentation regarding the 5-year refit for NK class vessels. Every five years *Chikyu* is legally required to enter dry dock for maintenance, and this 2nd maintenance period was a much bigger project than the last time. Repairs and refitting were completed late last December, and sea trials went smoothly. Kyo showed the refit schedule and main equipment refit categories. These included 5-year certification work for the CMC, the travelling block, power swivel, tensioner, riser, and BOP. Manufactures suggest 5 years inspection for the hard equipment and repair if needed. Obsolete instruments were replaced. The DCIS system was updated, including the OS, Windows XP, was replaced. Radar and navigation equipment was also replaced. The riser joints were repaired and flanges replaced. The damaged buoyance modules were replaced, and the manufacture agreed not to

begin the count-down to a new 5-year certification until the riser joints are used next. The tensioners were also repaired and refitted.

- Laboratory refurbishment report (Ryoko Sato)
(09:39 h.)

R. Sato presented the lab kaizen, the renovation and refit. Sato described the lab facilities by deck, and explained the vision behind the 10-year lab development program: 1) Optimization for new workflow for core and cuttings, 2) Flexibility, 3) Safety and comfort, 4) New and upgraded instruments. Almost 50% of listed items completed, with 93 items postponed until future dock work.

The Chair asked if the XRF is newly replaced or the same. S. Hirano from MWJ replied that only the XRD was replaced, the XRF is the same. Eguchi mentioned that all this equipment have been placed in the former “off-time space”. The Chair asked about the costs of all this refurbishment. S. Kuramoto replied that the number is around 1M USD. There were no questions.

The Chair called a coffee break at 09:53 h, and the meeting reconvened at 10:13 h.

8. Other FB, IODP Forum, and Agency Activities

a. IODP Forum (Jamie Austin)
(10:13 h.)

J. Austin gave a brief update on the forum. Austin said the function of the forum is to be the custodian of the science plan in an IODP, which has gone from integrated to disintegrated. The forum is a way to keep the collaboration alive in the new program. Austin would like to see much more participation in the forum, which does all it's business via consensus.

Austin acknowledged the spectacular job that K. Becker, inaugural chair of the forum, did, and Austin appreciates his contribution for setting up the forum and getting things running.

Recent meetings, like the Canberra meeting, supported efforts aimed at the public. Program renewal is coming up, and Austin would like to see some kind of coordinated effort in getting achievements listed and presented to funding agencies. Expanding IODP membership in South America and into Africa would be a great advance. Austin would like to see more participation from these regions. Outreach & education are not seeing a lot of effort outside Europe – ECORD is doing quite a bit

of educational and outreach type of activities, but not so much the US. Austin is unaware of any outreach activities being done by Japan. The forum is a good central venue for this kind of discussion. Austin said he would pitch the US advisory committee and Camoin will pitch to ESSAC, and the summaries of these pitches must be short and readable to non-scientists. Austin acknowledged that there are language, cultural, and target issues when designing a coherent program, but he said we should try again. Austin said IODP Forum endorsed – but did NOT fund - two potential IODP workshops: an Antarctic-Southern Ocean workshop, and a Global Monsoon workshop.

Austin encouraged everyone to attend the 21-23 September meeting in Brazil. He said 1st to 4 meeting will have wide ranged type of people, political people, management representative, scientists, discussion over what program funding to do, not funding to do such as outreach, and discussions ranges will be varied, and find effort. He also said it is possible to try to identify ongoing effort to build a relationship with another going on initiative like ICDP.

Next, Austin mentioned Tatsumi, Camoin, Becker, and he have decided to hold IODP session at the 2016 International Geoscience Congress (IGC), which will be held from 27 August - 4 September in Cape Town, South Africa. The South African community has never been involved in scientific ocean drilling, and this is a useful opportunity to encourage them to join, especially since JR will be moving across from South Atlantic by 2019-2020. If South Africa gets involved either as a member of ECORD or in some other way identify them as a member, this would be good. Austin also said he expects there will be many people attending the Cape Town meeting. Austin commented that the IODP forum is only as good as the effort put into it.

(10:27 h.)

The Chair asked Austin about any updates regarding the proposal of Implementing Amphibious Drilling Proposals (ADP) in IODP-ICDP. J. Austin answered that the IODP forum agreed that is worth doing, and agreed to coordinate the group to push this ahead. Austin said that's all what they can do because the forum cannot fund anything. However, he also said that Gilbert Camoin and others have more to say about this.

The Chair asked if there is any actual community pressure for this kind of proposal, and both Becker and Camoin responded there was already one in the system. Austin

answered that it would be a complicated proposal to deliver, however, he said that good science is more important than how many numbers of proposals we get. Camoin said that opportunities have to be created or proposals won't come.

The Chair stated that ADPs are a very good concept, and should be encouraged. He asked the group if anyone is against this recommendation. H. Villinger asked if ICDP responded to the CIB recommendation made at the last meeting. Becker responded that the forum proposed this in concept, and each of the facility boards endorsed this in concept, and the ICDP executive committee last June also endorsed this in concept. Details remain to be worked out on how proposals will be evaluated. There is a proposed timeline and structure to implement this, but nothing has happened yet.

Becker prepared flowcharts of showing how a proposal could be evaluated in parallel for both SEP in IODP and SAG in ICDP along similar timelines. The forum also discussed details on how IODP and ICDP can implement this, and a working group with two representatives from both IODP and ICDP was set up. These representatives are Gilbert Camoin and David McInroy from IODP with Christian Korbel and Uli Harms from ICDP. Gilbert Camoin said that they had a phone conference and from that prepared the two-page document reflecting the recommendations; the next step will be to get feedback from the Facility Boards (CIB, JR, and ECORD) before ICDP can endorse the process. Then, the form will be reviewed, and then endorse the final implementation plans.

The Chair asked if this implementation plan would be complicated, and Camoin replied that it could be, but should be kept simple and flexible. Anthony Koppers mentioned that last year the JR FB made an assessment of the evaluation part. Koppers mentioned that the implementation will be quite different according to facility, and that the concept is being very well received, but the implementation needs to be carefully looked at. Since last year, the JRFB and SSO have been looking at this, and some issues have come up regarding implementation from the IODP side.

H. Villinger had a question about ICDP funding: is it just for drilling or drilling and science? His understanding is that drilling funds come from ICDP and science is supported by the national agencies. Villinger said this would be another problem for implementation. Jamie Austin said this would not be the only problem, since the disposition of cores is another big problem, and there would be a number of implementation issues that have to be worked through. Camoin said funding

scheme the most important problem, and on the core issue, ICDP is quite willing to use the existing repositories, even for continental drilling on an ADP. However, yes, ICDP has a totally different funding scheme.

J. Mori mentioned that ICDP DOES fund for science, but they require outside funding for roughly 50%, so although ICDP likes to fund drilling costs, they don't rule out science. Villinger pointed out that without that outside funding the project is dead, and Mori agreed.

The Chair asked for any questions or comments. The Chair reconfirmed that for the group to accept the recommendation, a more detailed plan might be needed, although this would be difficult to prepare. Camoin agreed, saying discussions showed that remaining flexible, and approaching each proposal as they come would be best.

A. Koppers commented from his point of view that there is one thing shouldn't be flexible is keeping the cores for legacy. Camoin said that in item 6, one sentence states that: "...IODP sample and data policies and guidelines will apply to ADPs". K. Becker said this was a very important principle that he presented at the ICDP executive committee, and they endorsed it. J. Mori added that ICDP is very willing to work with IODP on all this, although ICDP is much smaller program. They have a fairly significant amount of money to the project in New Jersey, and for a few others, so this should be noted.

The Chair stated that the ADP concept would be good to endorse, and the implementation plan should be kept simple. The Chair then asked the group if CIB should accept this plan. Camoin suggested waiting until late June, when the next ECORD FB will be held, and communicate via email until then. The Chair concluded that the CIB will receive this recommendation, and interested members should discuss this over email for the next few months.

CIB_Consensus_0316-03: The CIB endorsed the "Implementing Amphibious Drilling Proposals (ADP) in IODP-ICDP" guidelines in concept with the understanding that ADPs will follow IODP sample and data policies and guidelines.

CIB_ActionItem_0316-01: The CIB members will comment on the document and feed these comments to the next JRFB meeting in May 2016.

b. JR Facility board

(Anthony Koppers)

(10:40 h.)

A. Koppers delivered an update on the JRFB, after replacing Susan Humphries as Chair. This is all summarized in an article in EOS. NRC commissioned a report "Sea Change". The new program is serving JR very well, even with 10% budget cuts. The expected operational tempo is about 5 expeditions per year for 2017/2018. Consolidation and elimination of panels has improved proposal throughput, now have about 3-3.5 years from proposal to sailing on JR. Now organizing a community workshop in support of program renewal and JR in 2019. SEP proposal and site characterization guidelines updated with SSO.

The Chair accepted this report and then moved on to the ECORD FB report.

c. ECORD FB

(Gilbert Camoin)

(10:54 h.)

G. Camoin presented the report on the ECORD FB. Camoin also updated the CIB on the recent sea floor drilling tools used during the Atlantis Massif aboard the R/V *James Cook* (MeBo and BGS Rock Drill). There are now 18 members, including Israel and even Spain is back. Turkey may decide to join, and discussions have continued with Russia as well. Germany, France and UK provide about 80% of the budget. The next expedition is IODP Exp 364, Chicxulub Impact Crater, co funded with ICDP. Although the Mexican government suggested they would provide a supply boat, none has been produced. Two Mexican scientists will sail. There are 16 MSP proposals in the system, with a few very promising: the Gulf of Corinth, and a few others. A new technology review will be conducted. Some new educational programs were introduced, e.g. ESS petrophysics and ECORD School of Rock. A new website will also be launched in June 2016.

The Chair asked if there were any questions or comments. H. Givens was curious about the contact for the new website and if the Russians were at all interested in Arctic drilling. Camoin said the Russians were definitely interested. However, new members need to provide cash rather than just in-kind contributions. D. Mallinson was interested in the performance of the MeBo, to which Camoin said it was disappointing; however, MARUM has the report, and they're aware of what needs improvement.

S. Kuramoto asked about the benefits of in-kind contributions for non-members. Camoin responded that they get scientists aboard expeditions. Kuramoto was also

interested in the website renewal, since the recent JAMSTEC renew has seen a drop in access; smartphone access restrictions seem to be a large part of this. Camoin said their group is aware of this, and are working on smartphone compatibility.

Kawahata asked if expedition costs have been reduced, to which Camoin said there's an upper limit of 15 M USD, but otherwise, costs are basically the same. Brad Clements was curious about the proposed core handling for the Chicxulub expedition, and Camoin said they would follow IODP standards.

e. MEXT

(Eisho Sato)

(11:22 h.)

E. Sato revealed that the MEXT Ocean Drilling Division Director was changed to Mr. Hayashi. There will also be a program review in 2018, looking at IODP progress. The current budget allocation for JAMSTEC is ca. 36 B JPY, with no supplementary budget thus far in 2016. The current JAMSTEC 5-yr research plan is due to end in 2018, with no possibility of any budget carry-over in to the next term.

K. Becker asked if there were any updates or changes to the contract procedure between JAMSTEC and the *Chikyu* operator. Sato said there were, but nothing major or significant. There were no other questions.

f. NSF

(Thomas Janacek)

(11:28 h.)

T. Janacek gave no formal presentation, but did offer to take questions from the board. There were no questions.

g. ANZIC

(Andrew Heap)

(11:29 h.)

A. Heap also had no formal presentation, but had a report (also in the Agenda Book) to share. ANZIC is very happy with the current state of IODP activities, but sad to see some proposals (e.g. Great Australian Bight) deactivated, since industry partnerships were involved – it may be difficult to renew those now. Other proposals (e.g. Lord Howe Rise) are moving forward, and with key scientists involved, IODP's profile has been raised in the eyes of the Federal Government; funding at the current level for IODP is available for another 3 years. While *Chikyu* membership has been suspended for 2 years, it will be revisited at the end of that period. R/V *Kairei* is leaving to collect high resolution seismic data for the LHR *Chikyu* project, and the proposal itself is being revised for 1 April delivery to SEP. NSF is helping (with

Europe) to fund the Hikurangi 3D seismic survey. All these reports will be online on the ANZIC website.

J. Austin mentioned the book, recently published, describing IODP and Australian scientist participation – a great way to raise the public profile of IODP in Australia.

H. Villinger asked about the Great Australian Bight proposal deactivation; what were the circumstances? A. Hoppers essentially said that a lack of response to the SEP was the main issue, and that being a CPP doesn't insulate a proposal from needing SEP approval.

Heap also mentioned that 2 LHR workshops have been held, and the report has been sent to N. Eguchi and to CIB members.

h. PMO

IODP China

(Shouting Tuo)

(11:41 h.)

S. Tuo presented the IODP China update from 2014 to 2016. Although China are not currently *Chikyu* partners, it is important to keep communication open. Tuo mentioned the great increase in JR participation: 42 scientists from 18 institutes/universities sailed in the past three years (2014–2016). Tuo covered some of the proposals in the works, including the deactivated ones (855). IODP-China contributed 3 M USD/year to the JR operation in 2014 to 2016.

In 2014, China contributed 6M USD for CPP IODP Exp 349, and is now working with funding agencies to pay 12M USD for IODP Exps 367 and 368 (CPP) scheduled in 2017. Tuo expects the same continuing level of contribution to JR as long as these CPP proposals are approved for implementation.

Tuo described the future 10-year strategy (beyond 2018), following a domestic review in 2018, chiefly according to their performance from the 3 CPP expeditions. One current concept is to model the MSP platform provider system (like ESO). Once that was established and running, the next step would be to build a Chinese drilling vessel; however, this is VERY long-term.

N. Eguchi asked to confirm if this meant IODP-China wants to become an IODP operator? Tou affirmed this. Eguchi followed up with a question asking if they are planning on following the IODP sample and data obligation policy as well. Tuo

replied that although details haven't been discussed, he believes that developing international community consensus is key.

B. v.d. Pluijm asked about any new plans or progress on building a Chinese scientific drilling vessel, which has been in the air for the last 5 years. Tuo said that idea was originally raised in 2008 when the Chinese economy was better, but things have slowed down now.. However, he said they haven't stopped pushing the government, and at least they had a meeting to draft a design of the vessel.

J. Austin commented that ECORD will invite participation for the MSP review, would China do the same, or just keep all details internal. Tuo said that as an IODP movement they would follow IODP rules and policies.

J-DESC

(Hiroshi Nishi)

(11:50 h.)

H. Nishi presented the J-DESC IODP contributions and the *Chikyu*-STP proposal. First, Nishi introduced the new J-DESC President, Gaku Kimura, while he himself is the IODP section chair. Nishi referred to the 47 J-DESC scientists to have sailed aboard JR since IODP Exp 354. Nishi spoke about J-DESC educational activities, mentioning several symposiums and the logging school in Taiwan in February 2016. Last summer in Yokohama, there was a *Chikyu* ship tour, and J-DESC will prepare an exhibition booth for the 2016 JpGU in 22-26 May. Educational activities were held in conjunction with the Kochi Core Center and were very successful. J-DESC is planning to hold more educational courses in 2016.

Nishi introduced the proposal for creating a *Chikyu*-STP (Science and Technology Panel), similar to the STP under the previous phase of IODP. Nishi stressed that its' activities would be to maintain a scientific technology roadmap, technical review of measurement plans, and post-cruise QA/QC. He insisted that we need expanding the functionality for harvesting scientific demands, knowledge, and solution ideas from the science community to CIB/CDEX. The *Chikyu*-STP would have the following tasks: 1) identification and evaluation of "project-specific" measurements??, 2) recommendation of new or improved technologies, 3) further communication, and 4) transforming new technologies or technological solutions as outreaching roles.

Yasuhiro Yamada shared more ideas on the reason and function of the proposed *Chikyu*-STP. Yamada said the TAT was established for engineering technology development, however, *Chikyu*'s technological development (and budget) should be

driven by scientific demand. He also suggested that the other operators (JRSO & ESO) establish their own STP panels that all should have an “STP Forum”.

The Chair thanked Nishi, and asked for comments on the J-DESC report, not the *Chikyu*-STP proposal. The Chair also asked K. Becker to briefly comment on this proposal. Becker said his full TAT report will come later, but in any event all the TAT had received was a 2-page draft, not the presentation just seen. Becker mentioned that there is a lot of overlap between the proposed “*Chikyu*-STP” and the TAT. Becker’s opinion was that the STP, as proposed, is not needed; if it is needed, then a major redefinition of the ToR is required.

The Chair decided to move on, with discussion on the proposal after the TAT update.

9. *Chikyu* Operation/status update

(12:03 h.)

a. IODP Exp. 365 update (Sean Toczko)

S. Toczko presented on IODP Exp. 365, due to begin the following week, and the first *Chikyu* IODP expedition in two years. Toczko gave an overview of the expedition, which would expand NanTroSEIZE borehole observatories, linked to DONET, the seafloor cabled network, and also would recover GeniusPlug (GP) installed during IODP Exp. 332. This observatory has simple pressure and temperature sensors, with an extension to the original SmartPlug design, holding an Osmosampler and FLOCS experiment. Toczko hoped to get geochemical and biological results from the incubation experiment. Toczko said that the GP would be replaced by a 2nd NanTroSEIZE long term borehole monitoring system (LTBMS) to ~650 mbsf.

Toczko showed the operational sequence and explained the operation plan in more detail. He mentioned there is also a slight possibility of testing the turbine-driven coring system if extra time was available at the end of the expedition. Toczko introduced the co-chiefs, Achim Kopf and Demian Saffer, and their boarding schedule. Toczko also listed the science party members (scientists from the US, ECORD, and Japan), and mentioned that Geoff Wheat would not be sailing. Toczko said this is a small group for an expedition, but most of the work will be for observatory recovery/deployment (i.e. GeniusPlug and LTBMS). He then mentioned that the expedition schedule for the science party is about 1 month.

C. Moore commented that this kind of observatory is a really important model for the observatory topic being covered in newsletters and the like in the US.

The Chair asked if Toczko would also present NanTroSEIZE PCT report. B. v.d. Pluijm asked about the possibility of core sampling. Toczko answered it's very low, because the LTBMS installation comes first and it depends on how many days are left, and that this is a test of a new system. v.d. Pluijm stressed that core sampling is good. Toczko agreed, but stressed that even if core were collected, no-one onboard can work on the core, and it will be send to KCC for shore based sampling.

A. Koppers asked for a brief explanation of the new coring system. Toczko said N. Kyo will go into detail later in his presentation, but briefly explained it as a system to collect deep cores, which is a future target of the NanTroSEIZE or even Mantle project, by using a mud turbine instead of the power swivel/top drive. Then Toczko asked N. Kyo to add some details, and Kyo stated that the new system is at least similar to TAMU's motor driven core barrel system and the turbine is retrieved together with the core. Mallinson asked which site is being discussed. Toczko answered this is C10, surface of the splay fault.

b. PCT report

Note: NanTroSEIZE PCT report was presented before T-Limits PCT report, and the presentation order was changed from the original 2 to 1 as below.

1. NanTroSEIZE PCT report (Sean Toczko) (12:12 h.)

Toczko presented the NanTroSEIZE PCT report for the one-day meeting held just before AGU last December in San Francisco. Toczko covered the main topics: 3D seismic reprocessing, NanTroSEIZE science matrix, and IODP Exp. 365. Toczko briefly mentioned some consensus items from the meeting. First the PCT recognizes the financial and political situation in Japan, however, it is still important to have strong support to reach goals for NanTroSEIZE project, and everything should be done to achieve the goal. Second, the PCT recommends that the data portal from the C2 and C10 LTBMS observatories linked to DONET continue to be open access in real-time. Third, the PCT requests that 3D seismic processing results be shared by the PIs with the PCT for future C2 riser drilling planning. Toczko summarized the matrix as being important in the selling of future riser drilling to the Japanese government and public. Toczko showed the list of attendees (two of twelve members did not attend). Toczko than asked if anyone had questions.

H. Given said that the observatories and DONET are fabulous and asked how it is working. Toczko answered that data from DONET is available through a JAMSTEC website the DONET team is managing. Access via Demian Saffer's site is much easier, and has a link on the new CDEX website. Given asked if the data is from GeniusPlug, and Toczko said that no, the Genius Plug is a self-contained unit. Given again asked to confirm if the LTBMS will be hooked up to the DONET in the next expedition. Toczko stated that it will be hooked up to DONET in the future, and Kyo confirmed the plan for a June ROV dive. Toczko added that data would be collected and saved until the DONET hook up is complete. Also he said it is the same system deployed at Site C0002.

Moore commented that analysis of Site C0002 data suggest strike/slip or extensional faulting, and as you drill deeper C02 will get into a compressional regime where the big earthquakes come from. Toczko reminded the group that the C0002 LTBMS is installed down to 950 m, there is a riser hole down to a little over than 3000 m, and big target is just over 5000 m.

Villinger commented that matrix as it is seems too detailed for funding agencies is there a plan for a second version for funding agencies. Toczko answered that PCT consensus was made for a clear and easy outline for non-specialists, including policy-makers and the general public, to better understand the goals.

Koppers added that this was the first he's heard of the cabled observatory network, producing data available to the community, which is a very important advance. This can be used positively in selling the NanTroSEIZE matrix and funding agencies.

The Chair asked what "the need for political support" means in the PCT report, and Toczko simply answered it was money.

No questions.

Note: NanTroSEIZE PCT report was presented first, and the presentation order of this item was changed from the original 1 to 2.

2. Nankai Trough T-limits PCT report
(12:21 h.)

(Nobuhisa Eguchi)

N. Eguchi presented the Nankai Trough T Limits PCT. This project is riserless, but is complicated, so the CIB suggested establishing a PCT during the last meeting. Eguchi said this PCT was established for scoping detailed implementation plan and preparation for its implementation. The 1st PCT meeting was held on 1-2 October 2015 at MARUM Bremen, Germany, with 10 attendees listed. Eguchi said that the 1st consensus agreed to exclude full observatory installation from the initial expedition objectives by considering shortening expedition length but still have high impact science from the expedition. Another consensus item shifted drilling to an alternate site since the originally proposed sites (ODP11-73A and ODP 11-74A) were too close to existing seafloor cables. A JAMSTEC regulation sets the drill site distance from seafloor cables to at least equal to the water depth.

Eguchi mentioned that CDEX examined the alternate site considering the Muroto 3D MCS box, as similar a tectonic setting as the original site, minimal drilling risk such as from formation disturbance, and high in-situ temperature at the bottom of the sediment layer, all important in temperature limits of life. Eguchi said that the alternate site's estimated basement top temperature is 133 °C, lower than the original site's estimated temperature (150 °C). Eguchi mentioned reported that the PCT wants to improve HPCS recovery, possibly by using a shorter stroke. CDEX and TAT discussed this during last week's meeting. Eguchi read other consensus items (calling for participants) action items (writing the scientific prospectus), which are in preparation.

Eguchi said that time sensitive micro-bio measurements are a concern, and efforts to prioritize micro-bio measurements onboard during the expedition, and other measurements might be conducted onshore basis, were described. Eguchi said that the plan needs a strong science party requires for this expedition since sampling and measurement will be conducted onboard and onshore, similar to MSP operations, by delivering samples from the ship by helicopter to shore. The PCT agreed on the following scientific operation priorities at ODP11-74A (coring, temporary temperature observatory, basement coring, shallow coring) and ODP11-73A (coring).

Eguchi said the temporary temperature observatory (using Antares-type sensors) needs to be in place for a minimum of 1-2 years. The possibility of replacing that with a permanent observatory needs to be discussed in the future. Eguchi said the next PCT meeting is planned to take place during the Goldschmidt conference in June 2016. Eguchi said a telephone conference might happen after the CIB meeting to discuss the outcome of that meeting. Lastly, Eguchi discussed the provisional

operation plan (with or without contingency casing). For no casing, 44 total operation days, and 55 days with casing.

H. Given mentioned that this proposal moved through SEP pretty quickly, when did CDEX find out about the undersea cables? Eguchi said that cable mapping is confidential, and CDEX needed to directly request it.

H. Villinger asked about what science the proponents plan to sacrifice to fit the available schedule. Villinger also asked if a re-entry cone is suitable for a future “CORK-lite” observatory? Villinger mentioned that Achim Kopf offered the *Sonne* to do some temperature transects – any response? Villinger is also working with Masa Kinoshita and Antares over a high-temperature logger.

Eguchi said that the proponents have not actually sacrificed anything, but they did break up the program into pieces, to hopefully be able to have data separately in the end. Eguchi then said the CORK-lite is expensive and asked Kyo for comments. Kyo said the current planned system is the same as for JFAST, but they are still investigating budgets and technology. Eguchi agreed that Achim Kopf in MARUM offered the opportunity to use *Sonne* research vessel for the advanced survey during the PCT meeting in Bremen, Germany.

D. Mallinson asked if an addendum will be forwarded to SEP. Eguchi was not sure but would check. A. Koppers said an addendum could be requested, so Chair Tatsumi agreed and suggested the group discuss this tomorrow. Camoin asked about the cost of adding 10 days to the expedition, which Eguchi said added about 2 M USD. Mallinson said this must be a savings, since the original plan called for 65 days operation. Eguchi mentioned that 65 days had planned for two sites, but now only one site is being planned, so operation days are recalculated.

The Chair called a lunch break until 14:00.

(13:58)

The meeting reconvened, and the Chair discussed the T-limits changes, and said they will be discussed the next day. CIB member and SEP chair should be ready to discuss this tomorrow morning.

The Chair called for the Science Support Office report.

10. JR Advisory Panels Report/Proposal Overview

a. Science Support Office

(Holly Given)

(14:00 h.)

H. Given presented the tasks and goals of the SSO. SSO manages policies, drilling proposals, and the site survey data base (SSDB). These are all available online. The website is being renewed, and the proposal data base (PDB) and SSDB will be better integrated. Some areas needing improvement include the linking of SSDB with the actual proposals. Details are all in the agenda book.

The Chair asked for questions, then moved to the next report.

b. Science Evaluation Panel (SEP)

(David Mallinson)

(14:16 h.)

D. Mallinson presented the SEP update and reviewed the status of thirteen proposals, including proposed sites and objectives. Mallinson said the purpose of this presentation is to refresh people's memories and have a good opportunity to share and update the common information between CIB and SEP since some proposals are not updated to SEP after reaching the CIB.

537B-Full4: CRISP-Stage 2 is riser drilling, and two sites are proposed to reach the plate boundary to sample fault zone material (rocks and fluids). This was ranked #7 at SPC in 2008, and forwarded to CIB. SPC noted in 2011 that 3D seismic data from CRISP-A (two sites) are acquired to decide the updated site location. Mallinson asked if CIB could ask the PIs to forward 3D seismic data for SEP review this proposal once again.

C. Moore asked how to reconcile this with the 15 M USD needed to get the ship to Costa Rica from Japan? Mallinson answered that this is all on the CIB recommendations.

603C-Full: NanTroSEIZE Drilling and Observatory Phase 3 a riser-drilling proposal. Two sites are proposed, one is NT03-01A for primary site, and the other one is NT03-02A as alternate. This was ranked #1 at SSP in 2004 and 2005. 3D seismic survey completed and data exist. SEP has never been updated. Eguchi replied that the CIB did not exist back then, but updates have not been properly shared with SEP. Mallinson confirmed the 3D data exists, and said SEP can review those data for classification if CIB wants. Eguchi said that site has been already drilled down to 3000 mbsf, so it may not be necessary.

603D-Full2: NanTroSEIZE Observatories. Six sites proposed, 5 are primary (3 with comparison holes) and 1 alternate site. 8 CORKs are requested. Mallinson said this one is ready to implement, however, it was originally reviewed in 2005 by the rank #2 and forwarded to CIB. Mallinson again mentioned that SEP is out of loop about this proposal and asked for an update.

Toczko commented about activity at C0010 (NT2-01J). Toczko said Site C0002 (NT3-01A) is done and the “Toe” Site C0007/C0006 (NT1-03A) was discussed for possible installation. Toczko also said C0002 is where an LTBMS is installed to just under above 1000 m. Toczko said the long-term plan is to install observatory instrument at the splay fault zone for the best long-term observatory, where the décollement is estimated to lie. Mallinson said that’s fine as long as CDEX is OK with it.

J. Austin commented that even with no CIB at the time, it’s important that the CIB now pass on updates to the SEP. Once something is passed on to the advisory structure, defined for operations and scheduled, how much time should pass before the community is updated? Austin mentioned that CDEX has the PCT and proponent groups which interact with their community and platform managers. This is quite separate and distinguished from the science advisory structure. Austin said that CIB needs to go back to the SEP periodically to inform them about where things stand. This represents years and years of good science and planning by good scientists but now far away from the documents as originally reviewed. It is an important structural question to ask. Mallinson agreed that it would be nice if everyone were on the same page. Austin again asked how far we want to go on this kind of discussion. He said he thinks what we need to do is to wrap around and have CIB go with new updates to the SEP. Austin seriously mentioned that this should have been done for several years as part of CIB’s job.

698-Full3: One site, IBM-4, with 5500 mbsf penetration, with 4700 mbsf of basement. IBM proposal is ready to implement as PEP stated in 2011.

781B-Full: Hikurangi subduction margin, a proposal for deep riser drilling with 6,000 m of penetration. This proposal requires 3D seismic data files, and Mallinson introduced breaking news: NSF is funding a 3D survey in early 2018 and Nathan Bangs is the lead PI. Mallinson also mentioned that a seafloor geodetic and OBS experiment in the drilling transect revealed slow slip at 2 km below seafloor. Based

on these results, the new slow slip riser drilling target is now ~2.5–3 km below seafloor. An addendum to include these sites is expected for the April 1 deadline.

865-Full: Nankai Trough T-Limit riserless operation was reviewed at SEP in 2014 and 2015, and it was reviewed with excellent rate as ready to implement proposal. New sites had to be proposed to avoid submarine cables, and Eguchi presented this earlier in the PCT report.

Next, Mallinson discussed seven proposals currently at SEP. Three proposals in blue on the slide have no survey data but were discussed briefly.

805-MDP: MoHole to the Mantle (M2M), which was reviewed in May 2012 for the 3 proposed areas. There still remain great technical challenges of high temperature and deep-water operations. SEP recommended the proponents submit a revised proposal.

835-Full2: J-TRACK, this non-riser drilling proposal builds on the success of Exp 343 (JFAST). 4 primary sites are proposed and the Full proposal was reviewed at SEP in January 2014, and Full2 was reviewed in January 2016. Now out for external review. Although it has several fairly minor issues, but these should be solved fairly easily.

871-CPP: Lord Howe Rise crustal evolution, 7 proposed sites including 2 primary sites and 5 alternate sites. One of the two primary sites is for deep riser drilling based on the compliment on the proposal 832 “Tasman Frontier”. This was reviewed in January 2016, and SEP recommended revision for their excellent science with lots of interesting questions. This proposal needs to be polished down to more specific questions, especially for biogeochemical, since everything was included. Also a prioritized sample distribution plan is needed. The proponent needs to provide grid of 2D and 3D MCS data since current data is insufficient. A *Kairei* cruise is planned for 2016.

J. Austin asked about the case if the PIs submitted another version of the proposal by the April deadline, but still their data readiness was 3 or 4 for its classification, would they have no choice to be deactivated? Mallinson said no, they could be put in the holding bin as long as the science is good and the data are forthcoming. A. Heap from ANZIC confirmed that data are forthcoming since the site survey is funded will be definitely implemented; survey will have regional 2D, and the next will have 3D.

Mallinson said not only the data but also the science is necessary, and whole science plan again, sampling plan also need a lot of work for revision. Austin commented that when outside funding is there and you don't want to lose it; and we also want to send a positive signal to the scientists as we did for the South China Sea project. Austin said even if no data are there, but science was good, funding was going to happen if the scheduling happened.

He also said it would be a little different perspective when we might have otherwise, even though we are not supposed to change the rules for CPPs. Mallinson said we are not changing the rules; as long as they address the SEP recommendations and provide the data, then they will be all good. This is why the holding bin is the logical place for this proposal.

707-MDP: Kanto Asperity Project (KAP), there is nothing new to evaluate. 782-Pre for the deep riser operation was deactivated in 2011 with the proponent's permission. 770-Full3 for Program B is now in holding bin for JR proposal in SEP. For the KAP-Program C, SEP has expected to see other proposals coming in.

857-MDP2: DREAM Umbrella proposal of the Deep Sea record of Mediterranean Messinian events, 4 specific sites are proposed for riser drilling. SEP review was held June 2014 and January 2015. 857A-Full: Deep-Surface Connection (riser drilling) was deactivated in June 2015. Also, 857B-Pre is a JR proposal, and requested full proposal.

876-Pre: Bend-Fault Serpentinization, 4 sites are proposed to drill down to 7000 mbsf. SEP review was in January 2015, and recommended to develop full proposal, because there are several issues such as riser drilling at this proposed water depth is beyond *Chikyu's* capability. They should contact the IOs for building a feasible drilling plan is the most important issue to address. Also, estimated operation days are as long as 300 days for drilling/coring and 100 days for logging, which will increase costs. New developed full proposal are not yet submitted. A workshop is also planned for June 2016 (see Agenda #15)

886-Pre: Bend-fault hydrology in the old incoming plate, a riserless operation for one primary site THK-1A. Review was in July 2015, and recommended for full proposal to address several issues. 3D MCS workshop is planned, but no more details.

603D, 698-Full3, and 865-Full are green lit to go to implementation according to readiness. 805-MDP is red, but others are yellow.

The Chair said that the group would discuss action on these proposals the following day. He asked the group for any questions or comments, while Mallinson appreciated the feedback given while he was presenting.

No questions or comments.

11. TAT Report

(Kier Becker)

(15:03 h.)

K. Becker reported on the TAT meeting held the week before in Yokohama, 17-18 March 2016. Since it was two years since last meeting was held, Becker said they reviewed the purpose and membership of the meeting, results of the 1st meeting especially regarding the NanTroSEIZE Exp. 348 experience and early planning of Mantle drilling. He also said the second TAT meeting reviewed a wide range of projects and made 5 consensus items. Becker also said that TAT discussed their response to the *Chikyu*-STP proposal.

First Becker reviewed the purpose of TAT meeting since there are new members in the CIB meeting: to report to and assist CDEX on achieving scientific goals of IODP and other scientific *Chikyu* drilling through new/improved technology and drilling practices, to provide advice to CDEX on achieving long-term engineering developments, and to advise CDEX about scientific measurements, equipment, shipboard laboratory and procedures, and observatory measurements.

Becker introduced the TAT membership and said that there is a good balance between the internal CDEX and external experts, with open discussions and good cooperation. The members are: K. Becker from Miami (Chair), Chanh Cao Minh from Schlumberger, David Castillo from Insight Geo Mechanics, Tomio Mizuta from JAPEx, Clive Neal, from Notre Dame, Alister Skinner from ACS Coring Services, John Thorogood Drilling Global Consultant, and six members from CDEX: Shinichi Kuramoto, Nori Kyo, Nobu Eguchi, Ikuo Sawada, Eigo Miyazaki, Kazuyasu Wada, and additional observers.

Becker reviewed consensus from the first meeting about deep NanTroSEIZE drilling, held a few weeks after the end of IODP Exp. 348, where poor borehole conditions were encountered at the primary deep riser drilling site. In order to plan the best

technical approach for further riser drilling to achieve the ultimate goal, Becker said TAT recommended CDEX a forensic analysis to assess the causes of hole instability. David Castillo of iGM presented a detailed analysis of the borehole failures during IODP Exp 348, out of which several recommendations arose. Becker said all of TAT's recommendations were followed and explored. Becker also said that CDEX should continue to investigate the feasibility and availability of evolved potential technological approaches for deepening Hole C0002. The next possible window for deep riser drilling is in 2018, so there is time to prepare.

Becker talked about technical advice for mantle drilling. TAT recommends the formation of the equivalent of a project coordination team (PCT) including the scientific proponents, CDEX representatives, and a representative from TAT. However, this was not done. Becker said TAT supports CDEX in developing the technological capabilities and risk reduction required to achieve the goal of full crustal penetration to the mantle.

Becker specifically mentioned first requiring a sequence of riserless pilot holes, before riser drilling at the ultimate full penetration site to full depth. This would be for testing initial techniques and technologies. TAT reiterates its 2014 recommendation that a working group be formed soon to help evaluate technical options. Becker said the most important recent development is a 4000 m Carbon-Fiber Reinforced Plastic (CFRP) riser for deep riser drilling. TAT believes this system has great potential for many types of *Chikyu* operations, not just for the mantle-drilling project. TAT is excited about CDEX early investigation here and encouraged CDEX to pursue this development.

J. Austin asked if CDEX developed CFRP, or industry? Becker answered that this is an industry effort, but with low oil prices, there is no incentive to develop these ultra deep-water tools now.

Becker mentioned TAT's recommendations, three specific things to CDEX for their accelerated planning for riserless drilling for the Nankai Trough T-Limit project. TAT's recommendations are: 1. Short-length HPCS (used on the JR), to be tested this summer, 2. MTL temperature string with careful evaluation of the effect of anticipated in situ temperatures on the weak-link standard polypropylene/ethylene rope and potential alternative materials, and 3. Reconsider wireline geochemical logging for the added information it provides regarding the chemical and physical environments that define the limits of life.

Becker then addressed the *Chikyu*-STP Proposal, which was a two-page document in the agenda book. There are so many overlap tasks proposed. He mentioned that current TAT mandate does not specify extensive communication to the scientific community or “other STP-like bodies”. Also, TAT reports to CDEX, not CIB, and decision-making process should be carefully written to define distinct responsibilities. Becker said the TAT agreed that: 1. Two separate committees are not needed, and TAT can coordinate with the science community, if needed, 2. If a *Chikyu*-STP is needed, then the TAT and *Chikyu*-STP roles need to be very clearly defined.

The Chair asked if there were any questions. W. Azuma asked about the pilot hole - how deep should it be for the mantle drilling? Becker answered it would be riserless, however, roughly about 2,000 m for pilot hole. JR has reached 1,836 m below the sediment layer into the crust at Hole 504B. And that was at a hole not designed for deep crust penetration.

H. Given was interested in the 4000 m CFRP riser and asked if TAT realized that this limits the number of geographic sites. Becker answered that no the TAT didn't and one reason TAT recommended the panel was that there is no specific site definition. Given mentioned that the one proposal (805) mentions 3 holes, one slightly less than 3500 m water depth, and the others beyond 4000 m. Becker said right now the limit/depth record is around 3000 m. N. Kyo said 3600 m is in the catalogue, but actual experience in oil industries is around 3000 plus several hundred meters.

The Chair thanked Becker, asked for comments, and then moved on to the *Chikyu*-STP issue. The Chair commented that J-DESC's main point was to increase communication between this panel and the scientific community. The Chair mentioned Becker's conclusion that there is a great amount of overlap between the TAT and the proposed STP.

The Chair asked the group for comments about setting up *Chikyu*-STP. B. v.d. Pluijm tried to clarify his understanding of the proposal, so that reporting lines of these groups might be more important, i.e. who did they report to or who did they work for, the CIB or something else. Becker answered that there were many discussions in the transition period about which panel to keep, and neither the engineering development panel (EDP) nor the scientific technology panel (STP) were retained. Instead, each science operator can make own team. CDEX formed the TAT for engineering development, JR has the option but hasn't formed one, and ECORD

formed a one-time ad-hoc team for engineering development required for the Atlantis Massif project, a few years before the actual operation.

The Chair asked for comments.

Y. Yamada said communication is important, and if TAT is open to J-DESC, they can forward their ideas to the TAT meeting, or ask Clive Neil to discuss them. J. Mori asked if the TAT is a closed meeting. N. Kyo said that TAT provides advice to CDEX as an internal meeting. Mori asked if participation could be increased? Nori said TAT might be moved under the CIB that's one option. B. Clement commented that it is very important distinction to make if it's the facility board or the operator.

H. Villinger didn't really see any need for the *Chikyu*-STP, and asked if there is need for such a panel. T. Janeck commented that historically, one of the problems with the previous various technical measurement panels was that they provided advice, but without a funding mandate. So if you want to implement this, you should not waste the member's time if you don't have money to implement it. B. v.d. Pluijm said that this goes for anything. Janeck agreed. Kier said that Ben just asked about should TAT report to the CIB or CDEX? CIB stands for Chikyu IODP Board, and CDEX can ask TAT advice for non-IODP science drilling, for example, the Cross-ministerial Strategic Innovation Promotion Program (SIP) series.

The Chair was unclear about the meaning of this. Becker repeated that this is the Chikyu IODP Board, and CDEX has asked TAT for advice on non-IODP science drilling, e.g. SIP projects, funding outside IODP, so TAT can report partly to CIB but not entirely. The Chair wanted to clarify that the TAT was created by JAMSTEC, so reports to them; however, the Chair was reminded by CDEX that TAT is a CDEX creation. Then the Chair clarified that as an internal meeting, so communication with the community would be restricted, and possibly this is why the *Chikyu*-STP was proposed. Eguchi said that while this is partly true, an opportunity can be made to open communication. The Chair asked S. Kuramoto for the official CDEX position. Kuramoto clarified that CDEX is always looking for ways to better open to the community. Kuramoto also said CDEX is always open for communication with the community anytime, for example, in an official mode, CIB, SEP, and other meetings. CDEX is also ready for communication on an ad-hoc basis, for example at AGU, etc.

The Chair asked for other comments.

F. Inagaki commented TAT's advice is good on a technological level, but not enough for science, since technology and science are separate matters. Inagaki said that the science community needs better support from CDEX to improve science operations. Toczko said Fumio was correct, but one of the reasons CDEX established TAT was from the experience from JFAST where the complex operations needed advice from the panel to help achieve the science targets. Fumio said scientists still feel frustrated because they do not know how to communicate with CDEX. Eguchi answered that one resolution is the PCT, which is designed for just this function. Eguchi added that the PCT focuses on specific issues and solutions for IODP operations, working with scientists, CDEX, and outside experts as needed. Eguchi also said communication is not a TAT issue, but a CDEX one, so it should be improved. J. Mori agreed, saying there are too many committees/groups, and if they are too close, it is a waste of time. Mori would rather support one, rather than two separate committees/groups; however, communication should be improved. Y. Yamada agreed with Mori, and felt TAT announcements were not generally released. Villinger felt that this communication problem is not really an issue for such a small community.

J. Austin commented that decades have been spent trying to merge engineering and drilling capabilities, on systems that never got funded. Austin felt that unless budgets are linked to these efforts, you are wasting time.

The Chair felt that this was not easy to conclude this issue and suggested that this wait until post-meeting discussion with J-DESC, JAMSTEC/CDEX, and others about a better implementation. B. v.d. Pluijm asked if this means a year from now at the next CIB. Mori suggested concluding this now. G. Kimura suggested that this should be focused on specific key issues – just making a forum is a waste of time and energy. Kimura suggested being more flexible. The Chair said he will communicate with JAMSTEC and J-DESC, circulate those discussions by email, and then move to make a decision or consensus with the CIB members before the next meeting.

No questions or comments arose.

Coffee break from 15:50 for 20 min.

12. JAMSTEC Budget and Mid-term Plan -1
(16:10 h.)

(Shinichi Kuramoto)

The Chair said that S. Kuramoto will give a presentation about JAMSTEC's budgetary situation now, but that discussion should be held until the following morning, for a more detailed discussion.

Kuramoto showed a graph of the past 7 years budgetary situation of JAMSTEC and said that they had 325M USD in 2009 at an exchange rate of 120 yen/USD, however, this decreased by 3% every year, and it will drop more than 6% for new JPFY 2016, equal to about 20M USD. Kuramoto said that *Chikyu* requires 58M USD as a basic cost just to keep the ship, including ship crew costs and CDEX administration work. Kuramoto said money for drilling operations should come from member fees, commercial operations, CPPs, and donations. Kuramoto also said the money gained from commercial operations should be used for science operations since money remaining by the end of the fiscal year typically can be carried forward and accumulated for scientific drilling within the same JAMSTEC mid-term plan (continues 5-year).

Kuramoto mentioned the pros and cons of the market conditions surrounding *Chikyu* operations. He said 30-40% of the competitive rig fleet is on stand-by, waiting for contracts, since oil is down to less than 40 USD/barrel. Kuramoto said there are about 100 riser vessels similar to *Chikyu*, making the overall situation for *Chikyu* commercial operations difficult, even after reducing costs with personnel, fuel, subcontractors, etc.

Kuramoto gave a short overview of the past ten years beginning from when *Chikyu* operation started in 2005. Although *Chikyu* began IODP expedition for NanTroSEIZE in 2007, one azimuth thruster gear was broken, stalling operations for the whole next year. After restarting IODP expeditions, another azimuth thruster was lost from damage sustained during the 11 March 2011 Tohoku Earthquake. Although less one thruster, performed commercial drilling in Sri Lanka and Japan in 2011, and restarted IODP operations from 2012. Kuramoto mentioned that *Chikyu* finished commercial operations for India, mandatory maintenance, SIP (cross-ministerial strategic innovation promotion program) in Okinawa, and that soon IODP Exp. 365 will start. Kuramoto noted that JAMSTEC has about 20M USD for *Chikyu* operation, which can be carried over until the end of JPFY 2018, and this permits *Chikyu* to perform one riser operation. Kuramoto noted that if JAMSTEC can get a commercial drilling contract, the total carried over in 2018 would be 46M USD.

Kuramoto reiterated that feelings of what JAMSTEC should focus on, primarily the need to execute high science impact IODP projects to help secure government funding, especially after the lack of any IODP expeditions for the past two years. Kuramoto said that that CPPs are more than welcome and additionally, some engineering development funds are necessary for big projects being proposed, like the Mantle project, the Mediterranean salinity crisis (DREAM) project, and others. Kuramoto ended by mentioning the estimated operation days and expected costs for these future big projects, such as CRISP (160M USD), while the minimum for T-limits operation will cost 9M USD. Kuramoto would be looking forward to deeper discussions about scheduling and planning the following morning.

The Chair introduced Fumio Inagaki's presentation, after which the meeting was concluded for the day.

13. Exploring the deep-biosphere frontiers through scientific ocean drilling

(Fumio Inagaki)

(16:23 h.)

Presentation.

Day 1 finished 16:55 h

Day-2

Thursday, 24 March 2016

(09:02 h.)

The Chair explained that the CIB science members, SEP co-chair, CDEX had a discussion before starting today's session about the relocation of the T-limit project because the target site needs to be moved 3 km away from the original site. The Chair confirmed that the science targets are not changed by this relocation, so he asked the members for consensus. There were no questions.

CIB_Consensus_0316-04: The CIB recognized that the Proposal 865 Nankai Trough T-Limits PCT proposed alternate site (ODP11-74B) does not change the scientific targets of the project.

CIB_ActionItem_0316-02: The CIB will inform the SEP of the proposed site changes not affecting the project science targets at the next SEP meeting in June 2016.

The Chair mentioned that the group should discuss the TAT and STP as J-DESC proposed the day before. The Chair said that the TAT ToR clearly states that it has the joint tasks of the old EDP and STP, so the CDEX TAT effectively has the STP mandate, although it should be closer and more open to the community. The Chair asked Nishi, the representative of J-DESC, about this, and Nishi agreed with this comment. Becker asked who would be responsible for this open communication. Eguchi said CDEX. B. v.d. Pluijm suggested that the TAT should be open to CIB members as well so that any member can provide advice to help moving forward. H. Kawahata once again tried to confirm who is responsible about this, JAMSTEC or CDEX. Eguchi answered that CDEX will do. The Chair concluded that the group had reached consensus on this issue.

CIB_Consensus_0316-05: The CIB does not endorse the J-DESC proposed “*Chikyu*-STP” concept. The CDEX Technical Advisory Team (TAT) terms of reference already combines the previous IODP phase EDP and STP functions. The CIB encourages CDEX and TAT to provide more transparency of the TAT activities to the scientific community.

14. JAMSTEC Budget and Mid-term Plan-2

(Shinichi Kuramoto)

(09:07 h.)

Chair asked Kuramoto if he has any additional comment or remarks on the presentation he gave on the previous day.

Kuramoto began by talking about the basic costs for *Chikyu* 58M USD, and then C. Moore asked if this was per year, which Kuramoto confirmed. Kuramoto explained that the current JAMSTEC 5-year mid-term plan started with zero carry over money in 2014 and it will end in March 2019. In the two years from 2014, *Chikyu* had a commercial contract in the Indian Ocean from February to August 2015, mandatory ship maintenance in dry dock, an SIP (cross-ministerial strategic innovation promotion program) for 40 days, and IODP Exp. 365 to begin soon after this meeting. Kuramoto mentioned the GeniusPlug Osмосampler recovery and long-term borehole monitoring system (LTBMS) to be deployed during IODP Exp 365. Kuramoto said there are some possibilities for commercial operations in Japan, one of which is confirmed to begin after IODP Exp. 365. Kuramoto referred to the legally required shipyard maintenance needed for at least one month during Summer 2018, which will cost 10M USD.

Unfortunately, Kuramoto said money and time were lost waiting for the Indian contract, and a good amount of money was spent on required maintenance at dry dock. At the moment Kuramoto said JAMSTEC has 13M USD extra allocated for IODP operations. It was unfortunate that there were no IODP expeditions over the past two years, which the Japanese government could use to refuse budget requests. Kuramoto said the lack of progress also makes it impossible to plan IODP operations unless commercial operation contracts are made. However, the current IODP schedule makes it easier to apply for more money from the government.

JAMSTEC is working with JDC (Japan Drilling Company) to market *Chikyu* for commercial work. Kuramoto said nothing is confirmed, but if the two commercial contracts being pursued are awarded in 2017, this will allow drilling operations in 2018 with 46M USD, making a couple of riserless or one riser operation possible. He repeated to say that high scientific impact of IODP project should be conducted as soon as possible to save the *Chikyu* operation and also to keep motivation of all the community to utilize *Chikyu*. Kuramoto again emphasized that CPPs are more than welcome, even for riserless proposals, because it will accelerate future projects. Kuramoto said if any of the Chikyu+10 flagship projects were scheduled, it would help the budget situation.

Kuramoto said long term projects (e.g. Road to Mantle) are still important because that is one of the reasons why *Chikyu* was built. Kuramoto mentioned the engineering developments required to accomplish this project, discussed at Chikyu+10 international workshop held at Tokyo in 2013. Kuramoto also mentioned discussion with ECORD to utilize *Chikyu* in the Mediterranean salinity crisis (DREAM) project sometime in the future. B. v.d. Pluijm asked why the deep biosphere and fault behavior aren't included in the *Chikyu* target list. Kuramoto answered that the summarization from Chikyu+10 WS does not determine any specific project for the deep biosphere since all current proposals include the "habitable zone", and fault behavior are included in the NanTroSEIZE, Hikurangi, etc., included in the other proposals discussed at CIB.

Kuramoto mentioned the estimated operation days and costs for the listed proposals. 537:CRISP needs 300 days and 160M USD. 603:NanTroSEIZE C2 Deep requires 100 days and 35M USD. 698: IBM requires 500 days and 260M USD. 781:Hikurangi requires 400 days with 200M USD. 603 NanTroSEIZE C6 Observatory requires 45 days and 10M USD (one site) but needs a new hole. 865:T-Limits requires 40 days for one site and 9M USD, and 90 days for two sites and 20M USD. Kuramoto

mentioned the shallow observatory C2 is connected to DONET, C10 will be connected shortly, with the remaining potential observatories at C6 & C2 (deep) also targets. Kuramoto said that 603:C2 site has already reached 3000 mbsf, with ca. 2 km more to reach to the 5200 mbsf target.

The Chair asked if riser C2 35M USD includes 2 km drilling? What if the target is deeper? Shallower? Kuramoto answered that there are several fixed costs with riser drilling, so small increase/decrease would not be significant. G. Camoin commented that with these figures (13-46M USD) 2 riserless or 1 riser/1 riserless expedition could be drilled. Kuramoto agreed. Camoin then mentioned that DREAM still only exists as an umbrella proposal, so we can't see how much would be needed, but ECORD can only pay a maximum of 10M USD for DREAM. Thirdly, Camoin commented that the listed riser operations are very expensive and there are more in the pipeline at SEP. Camoin asked if JAMSTEC/CDEX can accumulate 160M USD within the next 5 years on the top of the 58M USD just for maintenance; if no, then is it realistic to keep these very expensive proposals in the system? Camoin said if we can't, then CIB should send a clear message to the proponents. Kuramoto replied saying that the 5-year term might be extended to 7 years, starting from 2019, although this isn't clear yet. Kuramoto said *Chikyu* might need to focus on commercial drilling for two years or so to get enough funds. The Chair asked Kuramoto again if JAMSTEC/CDEX could get the 160-200M USD in a 5-year term. Kuramoto would not say no. The Chair then asked him how much money JAMSTEC gained from past commercial drilling. Kuramoto said closer to 250M USD over the past ten years.

Nishi asked about CPP proposal, e.g. LHR, because there is no cost calculation introduced. He said he expect to see one of the CPP proposal in the SEP meeting for 2019-2020. Eguchi commented that we all aware of the LHR proposal but it's still being discussed at SEP meeting, money cannot be estimated.

The Chair asked Kuramoto how much money we can get from commercial operation or when we can know, for example by the next meeting. Kuramoto answered that they could answer the exact amount of money by the next meeting if these next contracts are made. T. Janacek said the information here showed JAMSTEC gaining a net profit of 20M USD carry over from the commercial operation by 2017. If so, to gain 100M USD more to conduct one of these expensive missions, JAMSTEC has to do 5 commercial operations in a row? Janacek said if true, this is impossible, and we are wasting time and effort to evaluate and rank proposals that will never get funded.

Janacek said the National Science Foundation funds people to attend meetings to evaluate these and he must ensure funds are wisely used. Janacek said JAMSTEC must recognize and admit that these can't be scheduled. Mallinson suggested the only option is getting CPP money for these other riser operations. Janacek disagreed, saying that information shown here suggests the net for a CPP will be insufficient for these other riser expeditions.

J. Austin said that *Chikyu* would not be able to raise that amount, since *Chikyu* is old and the day rate is too low, clearly 500K USD/day. J. Austin continued, saying that more modern and recent drill ships at dock cost 700K USD/day when oil was >100 USD/barrel. Now that oil is ca. 40 USD/barrel, these ships will be competing with *Chikyu*, and *Chikyu* will lose bids. Austin said the market place will not support *Chikyu's* wishful thinking. Austin warned JAMSTEC to stop imagining that they could gain 500K USD/day plus additional money for carry over with an old drillship, since this is a fantasy. Austin instead argued that JAMSTEC needs to change its' entire focus, and work on pushing for the support of Japanese government funds to perform societally relevant work in Japanese waters. Austin suggested that JAMSTEC forget about mantle drilling, since the government doesn't care. Austin said the CIB needs to help JAMSTEC push to get support for more Japanese government funds, since even the JR cannot survive only on CPP projects but requires government funds to operate 8-11 months a year. Austin said without government support *Chikyu* will sit at dock. In that case, get rid of *Chikyu* and hire a modern drillship, to do the work you need. He urged reconsidering JAMSTEC's focus so that *Chikyu* will not stay at the dock. W. Azuma appreciated Austin's honest comments. Kuramoto said that this is the real situation and he feels the same.

B v.d. Pluijm said as a new member he felt that we need IODP drilling this message needs to be sent to the government; science would not continue if we give up. v.d. Pluijm said that we still need to be realistic and faced with proposals that are 3, 4, or even 5 times larger than the estimated JASMTEC budget. v.d. Pluijm said if we have a budget allowing only 1 or 2 projects, let's move forward on those and see where we are in the future. v.d. Pluijm said it's important to ensure there is IODP drilling plan so the message to the community is we are looking forward to science. He said moving on to 200M USD science is a different discussion. v.d. Pluijm ended saying with the funding situation as it is, we can do T-limits and NanTroSEIZE C2 riser and that's it.

T. Janecek said that this is fine, and if we follow this and then complete one of these 160M or 200M USD projects when and if the money comes in, also fine. However, Janecek pointed out we know this would take the next 5 years of operation. Janecek asked what should be done when we have 20 years of operations ready to go, why should we spend time and money on evaluating new proposals?

B.v.d. Pluijm said CIB needs to plan for the future, because otherwise you will never do anything if you wait until a budget is there. v.d. Pluijm feels this kind of planning is very important and aspirational and should never stop. Janecek responded that CIB needs to be realistic regarding what could be done, especially with 30 years operations on the board that will not happen. Janecek could not support sending people to plan operations that will never happen; they should be dropped and CIB should be honest with the community. B.v.d. Pluijm understood, but noted he felt the expensive operations should remain as aspirational programs, which he added was part of NSF job to support aspirations just as much as support operations.

A. Koppers returned to the 5-year limited funding term with no carry over, limiting what *Chikyu* can do in the time frame. Koppers felt that there are riser operations that are too expensive, so there are two options. 1. Would be to take them off the schedule, or 2. In agreement with v.d. Pluijm, implement one of them and support it for the long-term, and take the other ones off the board. Koppers used the example of NanTroSEIZE, in that it's taken more than 15 years, over the long-term, and use that as a model for the other riser project. Koppers felt that this opportunity could be used to attack some of the other recommendations that TAT made for other long-term projects. Koppers could see the longer-term vision of CDEX but felt a clear message needs to be sent to the community recommending one of the excellent proposals on the table, but putting a hold on all other riser projects for the moment.

J. Austin commented that the NanTroSEIZE project began in mid 90's, and we are still not near achieving it's excellent science goals. NanTroSEIZE must be finished. Austin mentioned that the chances of *Chikyu* drilling in Costa Rica and the Mediterranean were zero, with a small chance for Hikurangi, and possibly the LHR CPP if serious commercial funding is available. However, Austin said the primary push, with CIB's help, should be to sell *Chikyu* NanTroSEIZE operations to the Japanese government. Austin could not understand why such an incredibly societally relevant project could not be sold to the Japanese government or people. Austin further said that if you cannot sell the NanTroSEIZE project, how could CDEX possibly sell Lord Howe or the DREAM project. Austin understood the Japanese

government's lack of interest in the Mantle project, since Mohole couldn't be sold to the US congress at the beginning of scientific drilling. Austin agreed with v.d. Pluijm to see what CIB can do as a group of professional scientists, to create an argument to convince the Japanese government to support their platform. Austin encouraged the group to go back to basics, in which 15 years ago, the agreement was to drill in Japanese home waters as the primary focus of *Chikyu*. Austin said *Chikyu*'s science has been spectacular, when it's been done. Austin suggested to keep going for the target (5-7 km down), and forget the Mantle.

The Chair asked Kuramoto for comments, and he thanked Austin for his comments.

H. Villinger suggested that 100M USD proposals be put on hold for at least the next 5 years because they are not realistic in the current funding scheme.

G. Kimura agreed that the present IODP situation is quite serious in Japan. Kimura stressed that not JAMSTEC, but the entire science community in Japan needs to understand why *Chikyu* operations are important not only for science but also for societal relevance. Kimura said the prediction movement is dead, but after the Tohoku EQ, and the imminent Nankai EQ, the key issue is how to get better government support to continue this scientific drilling. Kimura said that getting 100M USD for these projects would require everyone's support, since this cannot be funded solely by MEXT, the Ministry of Finance is the only section of the Japanese government that could move this money. However, Kimura said how pressure is made for ministerial support is important, especially given the poor state of the Japanese economy. Kimura was glad to hear J. Austin's comments, since this assessment is essential to getting JAMSTEC to more efforts here. Kimura said that one optimistic point in Japan is that the entire science and technology education system is being reconstructed. Kimura suggested CIB and JAMSTEC should collaborate with universities to help rejuvenate their basic science programs, especially in geological and biological fields this would improve the overall level of science in Japan. Kimura noted that the top two countries in the world for Nobel prizes are the US and Germany, while Japan is in the top 10. Kimura said that IODP social relevance in Nankai Trough EQ is very high, because of the fears of earthquakes and tsunami in Japan, so there should be a great amount of social pressure to move the Japanese government. Kimura has Kuramoto to mobilize public support to get more government funding. Once that happens, getting international support will be easier. If we fail, this is the end of riser drilling in Japan; we need to be honest with ourselves.

The Chair agreed with Kimura and said we have to move very actively as scientists. Then he asked E. Sato from MEXT for comments.

E. Sato said that as a representative of MEXT, they want to convince the government why scientific drilling requires a huge amount of money. Sato cannot promise that larger budgets will be forthcoming, but that they will work towards accomplishing this.

The Chair understood that Sato can't make any promises, but was happy to hear that MEXT wants to work with scientists to approach the government.

S. Kuramoto said that every year they submit budget requests they always emphasize social relevance, understanding tsunamis, and earthquake mechanism, which they will continue. Kuramoto said that the continuing 3% annual budget cut trend, 6% for next year, will not be changed by JAMSTEC. Of course, CDEX submits the NanTroSEIZE project, and other new ideas, like mantle drilling, to JAMSTEC headquarters to get funding. Kuramoto said they would try to approach other government ministries to gain some funding, although there is not a lot of support from them.

The Chair asked for comments.

J. Mori liked the discussion, because we could focus on the short-term, but look at long-term goals, which is the purpose of the CIB. Mori thought a kind of think-tank approach to creating a strategy to increase the budget is needed to collect money for expensive projects.

G. Kimura said as a NanTroSEIZE PI, he has a Col, but even so, he feels that completing this riser project can recover trust from the community and from society. Kimura said this would improve getting government to support for more expensive projects. Kimura said once the NanTroSEIZE project is finished it will make moving on to the next operation much easier.

The Chair called a coffee break at 10:04 hrs, and the meeting reconvened at 10:28 hrs.

15. *Chikyu* Proposals (update and discussion)

(Yoshiyuki Tatsumi)

(10:28 h.)

- a. Potential *Chikyu* Proposals at CIB and SEP
- b. Recommendation for Future *Chikyu* IODP Window

The Chair restarted the discussion by referring to the comments from J. Austin and G. Kimura especially about the issues of the role of long-term *Chikyu* operations. He divided the issues into long- and short-term for 2016 and 2017 to improve discussion. The Chair stated that long-term operation requires a big impact to get US\$100M and that CIB needs to play a role in getting such funding from the Japanese government. The Chair strongly encouraged JAMSTEC to work with the science community since governmental funds for science are essential. B. v.d. Pluijm said society relevance needs to be emphasized and made more explicit.

The Chair agreed. J. Austin commented that the international science drilling community would be happy if *Chikyu* spent more time in Japanese waters as a funded platform, than struggling to be a global platform. Austin suggested that Janacek was right in that the CIB needs to deal openly and honestly with the science community rather than trying. Austin said it would be healthier to approach the Japanese government about completing the NanTroSEIZE project first, with a natural hazard base, including related deep biosphere or subduction kinematics, and prove that we can answer questions and complete NanTroSEIZE – do it right. Austin said other big ideas CRISP, Hikurangi, DREAM, are good while accepting nearby CPP and commercial work, but for now the focus should be on the Japanese public and Japanese home waters. Austin believes this is the way to sell *Chikyu* to the Japanese government – and forget the mantle. C. Moore said *Chikyu* can continue to attract good scientists from all over the world, no problem, and Austin agreed. The Chair agreed with this strategy.

H. Villinger thought it extremely unlikely that the Japanese government will fund a billion dollars of money for drilling these other riser projects, CRISP, Hikurangi, or IBM, since for the Japanese people there's no relevance. The Chair agreed, but said that the first criterion should be scientific impact, and then societal relevance should be considered. The Chair asked E. Sato for his thoughts. Sato said he understands the situation and will work to convince the government.

G. Camoin asked then with these decisions, what message will the CIB pass to the proponents, since we have postponed projects for the last 2 years; we should decide

post-2018 plans. The Chair wanted consensus first, but agreed a clear message should be sent, and sent to JAMSTEC from the CIB.

Chair Tatsumi said he is also a proponent, and proposed that if CIB get the consensus about this, the group would send a message from CIB to JAMSTEC. The group agreed to do so. The Chair asked Wataru Azuma, incoming Executive Director of JAMSTEC, for comments. Azuma was impressed with the arguments here, and understood Austin's importance of including societal impact. Azuma said JAMSTEC needs to consider why these issues are not only important to Japan, but also to many other nations in Asia. Azuma said Japan has an opportunity to take a leadership role. Azuma will take the CIB's message to JAMSTEC, to see how the NanTroSEIZE project can reach completion. Azuma would follow up at the next CIB meeting to report on progress. The Chair asked what could be done to move JAMSTEC on getting more funding, and Azuma promised to follow-up and report. The Chair asked Kiyoshi Suyehiro for comments. Suyehiro agreed that the international leadership of Japan should be stressed. H. Given also commented that it would be easier to sell long-term *Chikyu* specific if goals/objectives could be more narrow and specific. The Chair concluded the point by referring to Suyehiro's comment on keeping the international leadership of Japan in ocean drilling. He asked the group if the wording is fine, and there was no comment. G. Kimura commented that social relevance is a domestic issue, but also a quite global issue, and clearly stated in the new science plan. Kimura said it would be possible to save tens of thousands of people from disasters by using sophisticated observatory systems like DONET, which would be helpful to other southern pacific countries with similar issues. The Chair collected consensus.

CIB_Consensus_0316-06: The CIB strongly encourages working closely with CDEX/JAMSTEC in terms of improving funding for long-term *Chikyu* scientific ocean drilling from Japanese government. Stressing the scientific importance and societal relevance of *Chikyu* science, along with maintaining the international leadership of Japan in ocean drilling must be part of this effort.

CIB_ActionItem_0316-03: CDEX/JAMSTEC will report the progress of specific strategy of fund raising at the next CIB meeting.

(10:44 h.)

The Chair moved to discuss the short-term strategy for the next two years. He confirmed with Kuramoto that the current budget of JAMSTEC is 13M USD; the

NanTroSEIZE observatory project costs 10M USD, and T-limit at minimum costs 9M USD for one drill hole. The Chair asked the group for comments or discussion on the two potential proposals for the next two years. B. v.d. Pluijm first commented that it would be a mistake to aim for the lowest possible budget to aim for the short-term plan, because it goes back to the same issue if we would not get the budget for science. v.d. Pluijm said the CIB should be going forward, for example, if we might have 46M USD from commercial drilling, we can plan that way for both riserless or riser project. He commented, otherwise, how it is relevant to such an expensive drilling. The Chair commented that commercial drilling is not yet decided for this year, but it will be confirmed by the next CIB meeting, and reminded the CIB that it needs to endorse this year's operations. A. Koppers said that the proponents should be informed that riser drilling is still included to keep their motivation since the *Chikyu* has not been doing IODP drilling the last two years. The Chair agreed with Koppers.

B. v.d. Pluijm said that it would be only riserless drilling with 10M USD in the next two years, it's a risk to propose both riser and riserless drilling when riser drilling may not happen, since this might lose proponents and the community's motivation and interests. K. Becker commented that v.d. Pluijm is repeating what the Chair would like as consensus. Becker mentioned that CIB should choose one project for this year, and hopefully endorse riser drilling. The Chair mentioned that it is not possible to conduct riser drilling this year, but CIB has to decide one IODP project to conduct for this year. The Chair said that discussion for the following year from 2017-2018 is the next step.

The Chair showed two potential proposals with each budget that CIB should choose for the 2016's operation, and asked the group which one should be selected as an IODP project for this year and how to feedback to the proponents or what to do for the 2018 IODP slot. J. Mori asked if there would be any possibility to operate riser operation in 2017. Both the Chair and Kuramoto said no. The Chair added some comment that it is difficult to decide what to do in 2018 since there are no fixed commercial drilling contracts. B. v.d. Pluijm pointed out that is not what Becker mentioned about consensus and requested the chair to decide the potential proposal for 2018. v.d. Pluijm commented that otherwise everyone, proponent and community, will have to wait a whole year if not decided and discussed now about the Nankai project and going forward decisions from CIB. The Chair understood and corrected that CIB will decide two operations, one for this year and another one for 2018 if operation budget is available. J. Austin suggested that it is equally important to tell the other riser drilling proponents that *Chikyu* would not be operating for them

in the next two years. He said it is passing negative but realistic message, not for wishful thinking. Koppers said it would be confusing to state short-term and long-term consensus together, they should be separated to consider. Camoin also commented that riser expedition on NanTroSEIZE C0002 should be finished, and for the other projects should be considered in the long-term phase. Austin said there are ready-to-go high science projects such as CRISP and Hikurangi, which require *Chikyu* capability, and they are long-term projects. He also said they will allow you to make strategy and then CIB can help keeping *Chikyu* go beyond 2020.

The Chair asked the group to decide one proposal for this year and another one for 2018. The discussion resolved around which would be better, the T-limits expedition, or the NanTroSEIZE C0006 observatory. T. Janeck asked if both proposals are ready to go for implementation, and Eguchi answered yes. Although both had merits, the agreement was that the T-limits expedition was exciting and good science. It also had the advantage of delivering quick results that could be shown to funders, so it should be scheduled. The consensus was that the NanTroSEIZE C0002 deep riser should be scheduled for 2018, pending funds availability.

J. Austin suggested that the biosphere community be guided on gathering past results based on previous expeditions as part of selling *Chikyu*. The Chair confirmed that the CIB reached consensus. While confirming the wording, B. v.d. Plujim suggested deleting the phrase “if commercial funds available” to pressure the government on completing this. The Chair corrected it to “if the money is available” as suggested.

CIB_Consensus_0316-07: The CIB endorsed the execution of the shorter version of Proposal 865, Nankai Trough Temperature Limits for the JFY2016 IODP window. The CIB also endorsed the execution of the NanTroSEIZE C0002 deep riser hole in JFY2018 if operation budget is available.

CIB_Consensus_0316-08: The CIB recognized that the large riser projects currently at the CIB (i.e. CRISP, IBM, and Hikurangi) will not be implemented during JAMSTEC’s current 5-year term ending in March 2019.

(11:10 h.)

c. Feedback to *Chikyu* Proposal Proponents

The Chair changed the topic to agenda item 15c Feedback to *Chikyu* Proposal Proponents. He mentioned that the last CIB meeting made a consensus to keep

them in the system without priority. At this stage, there are some choices, to keep them with/without priority, deactivate, or send back to SEP. The SEP chair provided some information and opinion for these proposals, and he asked the group to discuss if there is any other choice.

Koppers said an honest message to existing proponents could be that SEP will not focus on *Chikyu* for the next five years, or just pick one at the board and going to start with the carry over. The question was raised about how many possible riser proposals can be expected to come up through SEP, and the LHR 871 CPP was mentioned. The pending Hikurangi project will also become more attractive in cost and science merits. The call for riser proposals includes wording that they be CPPs, which means without outside funding, they won't be considered. J. Austin pointed out that several non-riser expeditions have been great successes (e.g. JFAST), so that riserless proposals should not be excluded from consideration.

The Chair said it is difficult to make a consensus, but if high-cost proposals are prioritized, at least today, due to Col, he could not. The Chair asked the group if they could confirm keeping high-cost drilling proposals in the system without any priority for future *Chikyu* operations, or at least send a message to the proponents. J. Austin advised the Chair to consider the option of removing himself for the discussion if he has a Col, or to nominate a member of the board to lead the discussion. Becker said CIB should be prepared to do so, since none of the riser projects are possible for the rest of the current IODP term. The Chair rephrased that we should prepare information which makes us to judge which order. Villinger said none of the three high-cost proposals could be implemented in the next five years even they are prioritized, so since "prioritization" doesn't help to get more money, suggested to remove the word. The discussion moved on the importance of keeping the riser projects on stand-by as CPPs, especially given the reality that likely none of them would be drilled in the next 5 years. K. Becker mentioned that this CIB was unready to set priorities at this moment. T. Janecek mentioned that prioritization would be helpful to funders, is seeing which projects would possibly get funding, and the Hikurangi project's NSF funding for seismic survey was an example of what wouldn't get funded if it would not get drilled. The CIB came to a conclusion that sending a message to the funding agencies as well as to the proponents was necessary, but needed preparation. The Chair asked the CIB Science Board, led by J. Mori, to prepare for a detailed prioritization discussion by September 2016.

CIB_ActionItem_0316-04: The CIB will provide feedback to the riser proposal proponents of the postponement of riser projects (i.e. CRISP, IBM, and Hikurangi) until the next JAMSTEC 5-year plan at the earliest.

CIB_Consensus_0316-09: The CIB tasks the Science Board (Moore, Kawahata, Mori (Chair), Villinger, and van der Pluijm) to review riser drilling proposals and consider long term strategy for future *Chikyu* implementation. The Science Board will prepare for a detailed discussion regarding the eventual determination, including possible prioritization, of riser proposals by end of September 2016.

CIB_ActionItem_0316-05: The Science Board will report long term strategy for future *Chikyu* implementation to the CIB at the next meeting.

d. Bend-Fault Serpentinization (Proposal 876) Workshop
(11:52 h.)

The Chair moved to the Bend-Fault Serpentinization Workshop, which was included in the previous consensus. The Chair said this workshop proposal was submitted in last January but the workshop itself will be held in London in June this year. Eguchi said the proposal was submitted to CIB, and the proponents will be funded by CDEX.

K. Becker asked if CIB is inviting another riser drilling proposal? This started a conversation about encouraging new riser proposals. Eguchi explained this workshop is about a wide range of operation possibilities. Austin noted this could be dangerous, having just told other riser projects they're on hold, and now encouraging another one that won't be drilled. We have to be honest, Jamie said.

H. Given read the SSO posted workshop announcement: Day 1 will be a specialized conference about marine geological process, with funding from ECORD member countries, and also likely to be available to Japanese scientists. Moore asked if riserless drilling was envisioned, and Eguchi confirmed this. The Chair said he would attend and guide the group in discussing scientific targets. Chair Tatsumi asked if the group can have a consensus to support them. Villinger asked how much this would cost, and Eguchi answered 40K USD.

Chair Tatsumi closed this agenda item with full agreement and called lunch.

CIB_Consensus_0316-010: The CIB reviewed the bend fault serpentinization Workshop support request, and endorsed the same.

CIB_Consensus_0316-11: The CIB confirms that no new riser proposals, with the exception of CPPs, will be solicited.

Lunch

16. *Chikyu* Outreach Activities

(Nobu Eguchi)

(13:01 h.)

N. Eguchi presented CDEX outreach activities. Last year was *Chikyu*'s 10th anniversary, and held such events as open ship tours. The open ship tour was aimed at several different kinds of groups, including high-ranking Japanese government officials, diplomats, VIP visitors, and the general public, about 8000 people in total. Media companies, such as local television stations (e.g. NHK, TBS), and National Geographic, Japan were invited to visit *Chikyu*. Over 16 different media groups filmed *Chikyu* at sea and in port, for domestic and international consumption. CDEX and JAMSTEC opened booths at international science conferences like AGU and AOGS, and JpGU. CDEX jointly organized an IODP/ICDP Townhall meeting at AGU, in collaboration with ECORD, ICDP, and USSSP, where over 400 participants joined. CDEX organized special symposia and ship tours for young students. Upcoming activities include booths at JpGU, Goldschmidt (Yokohama), and AGU. Eguchi said this summer will have a three day *Chikyu* onboard school, aimed at student attendees of the Goldschmidt conference.

G. Camoin was disappointed that ECORD was not invited to the *Chikyu* 10th anniversary. Eguchi said he believed that he had invited ECORD, but it seems only funding agencies were invited.

The Chair asked Ishikawa to present the KCC update.

17. KCC Report

(Tsuyoshi Ishikawa)

(13:13 h.)

Ishikawa reported on KCC curation tasks (core storage management, sample requests evaluation, sampling plan for *Chikyu* IODP expeditions, organize sampling party, sample data management, and education & outreach). The curation of core materials in KCC includes legacy core from DSDP/ODP, and from non-IODP expeditions as well. Based on the geographical model, KCC is in charge of cores taken from the western Pacific and Indian Ocean, with just over 111 km of cores stored in KCC. He explained curated core 1/4 is from IODP. Ishikawa explained that

the curated core material is divided into three types: 1.5 m long core sections, 10 cm long microbiological WR samples saved at -80°C, and cuttings samples from *Chikyu* riser drilling operations. KCC follows the IODP sample data & obligation policy implementation plan. A repository additional was built in October 2014 as the original repository started to fill up. Shore based sampling parties at KCC included IODP Exps. 353 and 354, where 40,000 samples were collected for Exp. 353, with 10,000 samples collected by KCC staff after the sampling party. Ishikawa mentioned that KCC is developing a new sample management system, with an easier and more efficient mobile interface. Ishikawa gave a brief overview of some of the KCC analytical equipment (more details in the Agenda book). Ishikawa mentioned funding, including support from COL and NSF. From USFY 2016, JAMSTEC will cover the entire KCC budget. There were no questions.

18. Access and Benefit-sharing (ABS) update

(Nan Xiao)

(13:29 h.)

N. Xiao, a curator at KCC, gave a quick presentation of the Nagoya protocol. Primarily Xiao wished to share the issue of biosphere frontiers and genetic resources. The Nagoya protocol, in general, requires the permission of the country of origin, which owns biological samples. Xiao explained that Japan has not yet implemented any rules yet, so a policy is being drafted for *Chikyu* IODP expedition material transfer agreements for benefit sharing of such biological resources.

No questions arose.

CIB_Consensus_0316-12: The CIB recognized the importance of ABS issue, and expects updated information at the next meeting.

19. Safety Review Committee Update (Shigemi Matsuda/Shigemi Naganawa)

(13:43 h.)

S. Matsuda presented the safety review committee and its activities. The safety review committee is comprised of five specialists, from *Chikyu* ship builders and marine affair specialists. Drilling specialists and people from Japanese industry used to part of this board, but they are now members of the drilling sub committee. The drilling committee examined that IODP Exp. 348 drilling experience to provide professional outside feedback. He then passed on to S. Naganawa.

S. Naganawa explained some safety and technical issues. One was on progress analyzing the IODP Exp. 348 NanTroSEIZE Deep riser hole issue at C0002 and the

other was the dropped pipe incident. Naganawa spoke about the two drilling sub committee meetings (March 2014 and 2015). They recommended various ideas aimed at improving downhole conditions for the deep riser, including drilling mud composition, downhole monitoring, pore pressure/stress predictions, update the mud weight window, and examine new technologies to alleviate the poor drilling conditions.

The Chair interrupted, so H. Villinger could leave to join his expedition. The Chair expressed his gratitude to Villinger for his role in the meeting. Villinger was thankful and was looking forward to the e sub committee work before September.

(Applause)

Naganawa continued explaining the incident of drill pipe failure & drop incident on 16 January 2016 during DCIS commissioning where 1400 m of 5-1/2-inch drill pipe was lost. He mentioned possible causes such as bending moment generated at the fixed contact point of drill pipe, drill pipe rotation in seawater without vertical movement, and frictional heat might have reduced the material strength of the drill pipe. C. Moore asked if this was related to the Kuroshio current, and Naganawa confirmed that the current was strong but not that strong.

Naganawa mentioned the drilling sub committee recommendations from 28 January 2016: 1) detail investigation, analyses, and simulation of the cause should continue, 2) similar offshore operations should be canceled until the cause is understood, 3) ensure the likelihood of similar incidents during *Chikyu* riser/riserless drilling operations is extremely low, and 4) sufficient and careful risk assessment, review of operations plans, and procedures should be properly implemented for effective HSE management.

The Chair asked if they need CIB endorsement, but it was not required. There were no questions and the Chair called a coffee break.

Coffee break (30 min.)

20. Review of Consensus Statements and Action Items

(13:51 h.)

All the consensus statements were reviewed and approved as appeared in this minutes, in addition to those the following consensus statements were made for rotating off CIB members.

CIB_Consensus_0316-13: The *Chikyu* IODP Board warmly thanks Heinrich Villinger for his services in the early years of the CIB. His commitment, professional insight and friendliness have been critical to Board's activities. These warm thanks will come into force after Heinrich will have completed his last CIB tasks, including the prioritization of the current *Chikyu* proposals.

CIB_Consensus_0316-14: We would like to acknowledge Hodaka Kawahata for his work on CIB. He has provided informative opinions on geochemistry topics, as well as operational issues for marine expeditions. Also, he has fostered communication between the Japanese academic community and CIB. We would like to thank him for his valuable service on CIB.

CIB_Consensus_0316-15: Casey Moore, thank you for generously sharing your insights and experiences in ocean drilling science as a member of the Chikyu-IODP Board over the past 4 years. Particularly the combination of hands-on responsibilities, your professionalism and a deep understanding of ocean science spanning several decades made your contributions tremendously valuable to the Board, Chikyu science and scientific drilling in general. You leave a big hole to fill.

21. Next CIB meeting

(14:50 h.)

The CIB chair Yoshi Tatsumi proposed the next meeting in Kobe (same as #4 meeting) and Kuramoto confirmed the timing will be February-March window in 2017.

22. Any Other Business (Chair - Tatsumi)

(15:00 h.)

No additional discussion items were raised.

The Chair called the meeting to a close at 15:03 hrs.

Meeting adjourned