

MINUTES 10th EPSP Meeting
June 11-12, 2009
Colorado School of Mines, Golden, Colorado

Meeting was called to order: B. Katz (EPSP Chair) called the meeting to order at 8:30 at the Colorado School of Mines on June 11, 2009. The Panel's conflicts of interest rules were reviewed. No conflicts were identified. George Claypool, meeting host, provided a brief review of meeting logistics.

Self Introductions

Panel Members Present: Michael Enachescu, Jennifer Henderson, Barry Katz (Chair), Tadashi Maruyama, Jean Mascle (alternate), Nobuo Morita (alternate), Sumito Morita, Donald Potts, Craig Shipp, Dieter Strack, Manabu Tanahashi (Vice Chair), Akiko Tanaka (alternate), Toshiki Watanabe, and William Winters

Panel Members Absent: Philippe Lapointe, Bramley Murton, Sadao Nagakubo, Yoshifumi Nogi, Jerome Schubert, Catalin Teodoriu, and Ziqiu Xue

Guests: Jamie Allan (NSF), David Clague (716 proponent), George Claypool (TAMU-SP) , Peter Clift (618 proponent), Neil DeSilva (TAMU-SP), Brandon Dugan (637 proponent), Christian France-Lanord (552 proponent), Colin Graham (ESO), Tom Janecek (IODP-MI), Shin'ichi Kuramoto (CDEX), Mitch Malone (USIO-TAMU), Greg Moore (603 proponent), Jim Mori (SPC), Craig Nicholson (705 proponent), Jin-Oh Park (SSP), Mark Person (637 proponent), Gert-Jan Reichart (549 proponent), Will Sager (654 proponent), Volkard Spiess (552 proponent), and Barry Zelt (IODP-MI)

Agenda review: The updated agenda was reviewed. No additional modifications were brought forward.

Approval of prior meeting minutes: No additional corrections or modifications were presented. Minutes from the June 2008 meeting are approved.

Review of SPC/SASEC Activities: Jim Mori SPC chair reported that SASEC's activities have focused on program renewal, with the upcoming INVEST meeting being the first large planning meeting. The results of this meeting are expected to lead to the development of a science plan for IODP renewal. He also reported that there were a number of recommendations made that could impact EPSP including a request to increase NSF funding to permit 12 month operation and the streamlining of the proposal process. With respect to SPC activities, Jim Mori reported the SPC ranking of proposals. He noted that there were six proposals in a holding bin waiting action by EPSP (and SSP) prior to their movement to OTF. It was further noted that there is a need for the overall improvement in the handling of APLs, including how their scheduling could be accommodated without adversely impacting the previously approved science plan. SPC also requested that CDEX prepare a contingency riser plan for 2010 *Chikyu* operations, if the Kuroshiro Current prevents NanTroSEIZE operations. They requested that CDEX provide preliminary scoping for Proposals 537B (CRISP), 618 (Southeast Asia Margin), 698 (Izu-Bonin-Mariana Arc Middle Crust), and 595 (Indus Fan), with the highest priority being given to Proposal 618. In conclusion it was noted that this was the first time that the fully integrated nature of the program has been achieved, with all three platforms in operation.

USIO Update: Mitch Malone presented the USIO update. This included a review of the current operational schedule for the *Resolution*. He reported that the sea trials and readiness assessment process was condensed and that only limited coring was conducted. In fact, PEAT I (Expedition 320) actually became the shakedown cruise. More than 3500 meters were cored, with basement being tagged at each location. Core recovery has been good. A number of challenges were identified during the expedition. An oversight group was established to handle the challenges. PEAT II (Expedition 321) has reported no major difficulties. It was reported that there is a steep learning curve for the new science systems. The operation is approaching the point where SODV issues will be closed and further refinements and improvements will be handled by functional departments. At the conclusion of the currently scheduled drilling (post-Wilkes Land) an external review will be held to evaluate the operations. Among the questions to be considered will be have the staff reductions adversely impacted operations. Malone reported that following this phase of IODP operations there will be a non-IODP program examining gas hydrates in Korean waters. He also reported on a non-IODP funded project to examine the feasibility of dual gradient drilling (non-riser mud return drilling) and hoped to secure funding for a field test. Brad Clement was named the new USIO-TAMU Director. The USIO is currently obtaining third party environmental assessments for issues associated with marine mammals, sea turtles, and other endangered species. The presentation concluded with a review of the new “core flow” onboard the *Resolution*.

The USIO should arrange, if reasonable, a presentation on dual gradient drilling at the next EPSP meeting.

ESO Update: Colin Graham provided an overview of ESO operations. It was reported that New Jersey drilling is underway. The coring problems are meeting expectations. Coring is currently underway at location MAT-2. ESO trained a number of its staff to be marine mammal observers. An exclusion zone of 230 m around the platform was established. Whales have been observed and they are following the required reporting procedures. Staffing changes and supply runs are being made weekly. MAT-1A terminated at 634 mbsf, with very good core recovery, crossing the Eocene/Oligocene boundary. Logging and VSP was completed at the site. Core recovery at MAT-2 was reduced from that of MAT-1A although still good (72%). It was also reported that H₂S had been encountered at MAT-2 just prior to the meeting. Graham also reported that the contract has been signed for the next MSP operation, Great Barrier Reef (GBR) Environmental Change. Plans are for a 45 day expedition between late October and early December 2009. Specific dates to be determined based on the availability of the platform (*Bluestone Topaz*). The expedition will include five transects along the GBR.

CDEX Update: Shin'ichi Kuramoto presented an overview of CDEX activities since the last EPSP meeting. It was reported that a new operator Mantle Quest Japan (MQJ) has been designated. It is a joint venture company formed September 2008. The previously reported problems associated with the thrusters and riser tensioners on the *Chikyu* have been repaired. It was also reported that the core migration to Kochi has been completed. An active outreach program is in-place, with a display at the Smithsonian and a ship tour during the Kobe port call. The *Chikyu* is currently drilling Expedition 319 (114 days). As a result of the length of the expedition there are four Co-Chiefs. Immediately following completion of Expedition 319, Expedition 322 will begin on September 1, 2009. The Expedition 319 Science party staffing rotation plan was presented. It provided overlap and briefing/debriefing periods to maintain “corporate” memory. The online mud gas monitoring

equipment was presented. This equipment will provide both molecular and isotopic composition data. The plans for the walk-away VSP were described. The relationship between the NanTroSEIZE locations and the DONET seafloor cable was presented. The presentation concluded with a review of the planned drilling sequences for NT2-11, NT2-01, and NT1-07.

EPSP Actions since last panel meeting: Barry Katz reviewed EPSP activities since the last panel meeting. These actions included:

- A request to re-enter Site 807 was approved as the *Joides Resolution*'s sea trial site.
- A request for the modification to the operation plan for Expedition 313 (New Jersey Margin) was received. The modified program eliminated LWD/MWD. ESO proposed an alternative monitoring program that the panel accepted.
- NAV-1B was proposed as an alternate site. The site was approved to 150 meters. As a result of inconsistencies in the seismic data provided, the panel recommended but did not require the acquisition of seismic data.
- A request to alter the operational plan for NT1-07 was received. The request was to eliminate LWD/MWD. The panel did not approve this request. The operator has advised that they are preparing a response.
- A request for Site PEAT-8D (Pacific Equatorial Age Transect) was approved to basement, but no greater than 500 meters.

E-Review Formalization: EPSP formally recommended approval of all sites as proposed for Proposals 662-Full (Life Beneath the seafloor of the South Pacific Gyre) and Proposal 636-Full3 (Louisville Seamount Trail). It was noted that for Proposal 662-Full at Sites SPG-3A and SPG-7A there were steep seafloor slopes, which could be a potential operational issue. It was also noted that the thin sediment cover at some locations could be a potential problem. For Proposal 636-Full3 the approved depths are based on a basement penetration of 350 meters. The proponents requested additional, but undefined, basement penetration approval. EPSP has recommended that deeper penetration be determined by the operator based on operational conditions. The details are presented below.

Proposal 662-Full – Life Beneath the seafloor of the South Pacific Gyre

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
SPG-1A	23.8505°S	165.6442°W	171	Approval is recommended as requested (up to 100 meters basement penetration)
SPG-2A	26.0516°S	156.8943°W	17	Approval is recommended as requested (until basement is encountered)
SPG-3A	27.9420°S	148.5899°W	106	Approval is recommended as requested (up to 100 meters basement penetration). Panel requests that TAMU consider the steepness of slope
SPG-4A	26.4816°S	137.9394°W	120	Approval is recommended as requested (up to 100 meters basement penetration)
SPG-5A	27.9420°S	148.5899°W	22	Approval is recommended as requested (until basement is encountered)

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
SPG-6A	27.9167°S	123.1609°W	123	Approval is recommended as requested (up to 100 meters basement penetration)
SPG-7A	27.7379°S	117.6197°W	103	Approval is recommended as requested (up to 100 meters basement penetration). Panel requests that TAMU consider the steepness of slope
SPG-9A	38.0615°S	133.0917°W	20	Approval is recommended as requested (until basement is encountered)
SPG-10A	39.3103°S	139.8006°	21	Approval is recommended as requested (until basement is encountered)
SPG-11B	41.8571°S	153.1192°W	100	Approval is recommended as requested (until basement is encountered)
SPG-12A	45.9642°S	163.1842°W	130	Approval is recommended as requested (until basement is encountered)

Proposal 636-Full3 – Louisville Seamount Trail

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
LOUI-1B	26.4777°S	174.7243°W	420	Approval is recommended as requested (up to 350 meters basement penetration). Additional penetration of basement should be reviewed by the operator during drilling operations.
LOUI-2B	33.6983°S	171.4490°W	420	Approval is recommended as requested (up to 350 meters basement penetration). Additional penetration of basement should be reviewed by the operator during drilling operations.
LOUI-3B	36.9043°S	169.7985°W	420	Approval is recommended as requested (up to 350 meters basement penetration). Additional penetration of basement should be reviewed by the operator during drilling operations.
LOUI-4B	38.1830°S	168.6377°W	420	Approval is recommended as requested (up to 350 meters basement penetration). Additional penetration of basement should be reviewed by the operator during drilling operations.
LOUI-6A	28.5655°S	173.2797°W	470	Approval is recommended as requested (up to 350 meters basement penetration). Additional penetration of basement should be reviewed by the operator during drilling operations.
LOUI-7A	32.2165°S	171.8807°W	470	Approval is recommended as requested (up to 350 meters basement penetration). Additional penetration of basement should be reviewed

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
LOUI-8A	36.9052°S	169.7985°W	420	by the operator during drilling operations. Approval is recommended as requested (up to 350 meters basement penetration). Additional penetration of basement should be reviewed by the operator during drilling operations.
LOUI-9A	37.9953°S	168.2852°W	465	Approval is recommended as requested (up to 350 meters basement penetration). Additional penetration of basement should be reviewed by the operator during drilling operations.

Site Survey Panel (SSP) Activities: Jin-Oh Park presented an overview of SSP activities and observations that may impact EPSP. Three proposals were highlighted based on their February meeting – 716-Full2 (Hawaiian Drowned Reef), 672-Full2 (Baltic Sea Basin Paleoenvironment), and 738-APL (Nankai Trough Submarine Landslide). SSP reports that site specific data including sea floor images and sample data were missing for Proposal 716-Full2. All the data were believed to be available for 738-APL, but they encouraged the proponents to consider additional sites. Proponents for Proposal 672-Full2 raised questions to SSP concerning how an ammunition dump site should be handled. SSP recommended that they contact the EPSP chair. A brief discussion on this issue occurred. If this proposal moves forward, EPSP will make recommendations on the additional data that will be required prior to approval. It was suggested that multi-beam and magnetometer surveys will be needed and submersible observations may also be required.

Review of IODP-MI Activities: Barry Zelt presented an update on Science Advisory Structure (SAS) related activities. He noted the upcoming meeting schedule. Of note to the panel were the SSP meeting July 27-29 and the SPC meeting August 25-27. EPSP has historically sent liaisons to both panel meetings. Proposal statistics were reviewed showing the number of proposals, their status, proponents, themes, and platforms. The panel was reminded of the INVEST meeting registration deadline of August 3rd and that there is a long-term thematic review of the deep biosphere and sub-seafloor ocean planned for September 2009. It was also informed that Kiyoshi Suyehiro has been appointed the new IODP-MI President and that there is a plan to consolidate the two IODP-MI offices into a single office. Proponents present were reminded that if sites are relocated or new sites are added that in addition to the site safety sheets that are supplied to EPSP an addendum needs to be submitted to IODP-MI by January 15, 2010.

(Pre-)Review Proposal 552-Full3 – Bengal Fan: Christian France-Lanord and Volkard Spiess presented the scientific overview and site-by-site review. The proposal was developed to examine the relationship between Himalayan erosion and climate and tectonic interactions, using the sedimentary record in the offshore to track the region's evolution onshore. Among the issues to be studied are the role of the Himalayan system as a CO₂ sink and whether its development played a role in the onset of the icehouse period. These aspects of the program include a study of the region's carbon cycle, with respect to organic carbon flux, the proportion of fossil carbon, and overall burial efficiency. Another aspect of the program was to establish the timing of the initiation of the Asian monsoon and the associated upwelling in the Arabian Sea. This would, in part, be examined through the stable carbon isotopic composition of sedimentary organic matter. In general, the Bengal Fan was considered an excellent sediment archive as a result of the volume of sedimentary material being

introduced (>12% of the global flux). Proposal 552 is based on a six site transect across the middle Bengal Fan, with three deep and three shallow holes. The proposed transect is positioned across a narrow portion of the fan, constrained by the 90°E and 85°E Ridges. Prior ODP drilling (Leg 116) was in a more distal position. It was noted that the proposed program was part of a more complete investigation including a number of shore-based studies, with a “source to sink” approach. As part of the general safety overview it was noted that the section would be dominated by a series of turbiditic sequences of sandy silt, clean silt, and clayey silt. In the sandier intervals that may be encountered it was noted that there may be low core recovery. Prior drilling suggested that the hydrocarbon risk was low as a result of generally low organic carbon contents, the terrestrial character of the organic matter, and its low level of thermal maturity. The results of the site-by-site review are presented below. (It was determined as a result of this review that sufficient data were available to make a final determination for each of the proposed locations.)

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
MBF-1A	8.0070°N	86.2833°E	1200	Approval is recommended as requested
MBF-2A	8.0070°N	87.6708°E	1200	Approval is recommended as requested
MBF-3A	8.0070°N	88.7417°E	1500	Approval is recommended as requested. First location to be drilled will establish drilling and physical characteristics for the transect.
MBF-4A	8.0070°N	86.7983°E	500	Approval is recommended as requested
MBF-5A	8.0070°N	87.1817°E	500	Approval is recommended as requested
MBF-6A	8.0070°N	88.1100°E	500	Approval is recommended as requested

Preview Proposal 637-Full2 - Pleistocene Hydrology Atlantic Continental Shelf: Brandon Dugan presented the scientific overview and site-by-site preview. The program’s focus was the examination of possible mechanisms of formation of offshore freshwater occurrences. Specifically, the program would test two hypotheses: 1) meteoric recharge and local flow cells; and 2) subglacial recharge and proglacial lakes. The program’s objective will aid in establishing the distribution of freshwater, the pressure field, age of the ground water, and concentrations and fluxes of nutrients, organic matter, and methane. The study will rely on a five site transect, with three holes planned at each site – Hole A for LWD, Hole B for coring and fluid sampling, and Hole C for microbiological sampling. Dugan noted a series of potential problems including the presence of unconsolidated sand (borehole collapse, poor recovery, fluid contamination), shallow gas, overpressure, and the acquisition of pristine pore water samples. As a result of the potential problems with poor core recover in sandy intervals alternative drilling approaches will be considered including a rotosonic technique, which has been used successfully elsewhere. Minimal methane venting was reported in the study area, largely focused at the rims of pockmarks. Similarly, there is evidence for only minor overpressure, although modeling suggested that overpressure should be considered during the planning process. The presentation included a general site-by-site review and a discussion on the upcoming site survey. Site survey data are not currently available and it is probable that the actual site locations will be adjusted. The marine mammal and sea turtle monitoring program was also discussed. The proposed study area was outside the boundaries of marine sanctuaries. It was recommended that the exclusionary zone be modeled based on 160 db as opposed to the discussed 180 db originally considered.

EPSP requests that in addition to the general site survey that a shallow hazard survey similar to that used for the New Jersey margin drilling be undertaken. The proponents are referred to the document “Guidelines for drillsite selection and near-surface drilling hazard surveys” prepared by Bruce and Shipp. (This document is available through IODP-MI or the EPSP Chair.) Prior to final approval there will be a need to have:

- An independent assessment of the distribution and risk of shallow gas (products should include a map with the distribution of any gas accumulations, if present, and the proposed drill sites);
- Side-scan sonar over the sites to identify possible surface hazards. If these data are unavailable, the panel will consider granting approval with the stipulation that a visual (ROV) inspection be made prior to final positioning;
- A map of subsurface channel distributions with proposed site locations; and
- Confirmation that there are no fisheries or other commercial restrictions or issues (e.g., submarine cables)

Sites should be located on hazard survey line crossings. EPSP recommends, for operational flexibility reasons, that additional alternate sites be proposed prior to panel review.

Preview Proposal 705-Pre2 – Santa Barbara Basin: Craig Nicholson presented the scientific overview and a general discussion of the proposed drilling locations. The purpose of the proposed coring program is to obtain a high resolution (sub-decadal) climate record extending back ~1.2 Ma. The potential for such a record was suggested by the position of the basin, where it is influenced by both the California Current and California Counter Current, the elevated level of productivity resulting from upwelling, the basin’s silled character, the material recovered at ODP Site 893 and material from a suite of piston cores along the Mid-Channel Anticline. The material recovered permitted the examination of only the past 700 ka. The recovered sediments indicated relatively constant and elevated sedimentation rates controlled by tectonics and not climate, making this an ideal study location. Nicholson presented what the panel believed to be a rather aggressive drilling program, in a known petroliferous basin. The proposed program included a series of 400 to 600 meter holes and potentially a 1500 meter hole. Furthermore, several of the proposed sites were located on or near the crest of the Mid-Channel Anticline. At this point, rather than a detailed site-by-site review EPSP conducted a discussion on what would need to be accomplished prior to final panel review and receiving a positive recommendation. There remained a consensus that a viable program could be developed that would meet both the proponent’s scientific goals and the need to maintain a safe and environmentally sound drilling program.

The panel requests that the safety package presented for review include a suite of structure and amplitude maps on the “picked” horizons. This will allow for a conformance check to determine if gas accumulations exist in proximity to planned sites. Based on post-meeting comments it is recommended that both regional and site specific maps be included in the safety package so that both the general and site specific structural geometry can be understood. If structural highs are selected as drilling sites there should be a clear evidence that the units to be penetrated are exposed to the sea floor (e.g., the proposed Site SBC-04 appears to be correctly positioned and proposed Site SBC-03 incorrectly positioned). Available seismic data and additional data gathered should be processed to highlight the shallow portion of the stratigraphic sequence. AVO should be performed, if possible. However, AVO will probably not be effective in detecting heavy hydrocarbons because of their probable low API gravity. As part of the safety package members of EPSP have asked that displays of seismic data linking nearby industry wells be included along with the appropriate annotation (in particular occurrence of HC shows, if any, from mud and composite logs, nature of such HC shows [e.g. fluorescence, cut, stain, relative mud gas peaks & gas composition], related lithologies [in particular sands], pressure data, mud losses or mud inflows. In cases where there were no HC shows encountered, this should be stated as well. It is suggested that the proponents review the depths to known production in the basin and attempt to limit penetrations to depths shallower than established production. As previously discussed it is doubtful that the panel would approve any individual deep site, without clear supporting evidence that no structural or stratigraphic trapping mechanism exists. It is, therefore, recommended that the proponents attempt to maximize the potential stratigraphic column penetrated through the use of composite core holes. It is recommended that a number of contingency sites be located in case problems develop either during the safety review or the drilling operation. The proponents are asked to discuss the different drilling techniques with the operators to ensure that they will provide suitable samples for the proposed science (e.g., it is doubtful that rotary drilling will provide the quality of samples required for this study). It is also suggested that the proponents also work with the probable operator to develop an operational monitoring/operating protocol similar to that used on Expeditions 308 and 311. As with all shallow drilling plans, an independent shallow hazard assessment will need to be conducted prior to the final EPSP review. (This remains an operator issue.) ~~An EPSP watchdog needs to be assigned, preferably with a geophysical and/or industry background.~~
Michael Enachescu has volunteered to act as EPSP watchdog.

Meeting was recessed at 18:00.

Meeting was called back to order at 8:30 on June 12, 2003

Review Proposal 549-Full6 – Northern Arabian Monsoons: Gert-Jan Reichart presented the scientific overview and a site-by-site review. The proposed program had five scientific objectives including an examination of: 1) Late Neogene evolution of annual to millennial-scale variations in the intensity of the oxygen minimum zone (OMZ); 2) biogeochemical cycles; 3) astronomical pacing of the Indian monsoon during global cooling; 4) tectonic-scale paleoceanographic and climate changes; and 5) the deep biosphere. Among the specific questions proposed are: 1) did OMZ changes occur before the onset of northern glaciations; 2) how has the phosphorus and nitrogen cycles impacted the open ocean OMZ; 3) has the astronomical phase relationships for the Indian monsoon changed during the Plio-Pleistocene; and 4) what impact did the closure of the Indonesian gateway have on ocean circulation and East African aridity? The drilling program includes 10 proposed sites, including alternates, along two transects. All proposed sites were located on crossing lines. In addition, multi-beam data were available for each site. All sites were located on the Indian

Plate in order to remove the influence of convergence. Each site is planned to be tripled cored, with the last hole to be logged using conventional tools. It was also noted that regionally there may be some concerns of shallow gas because of the availability of organic matter. The following represents the results of the site-by-site review.

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
POM-1	23.0933°N	66.4650°E	400	Approval is recommended as requested
POM-2B	23.1317°N	66.4917°E	300	Approved is recommended as requested
POM-3	23.0325°N	66.3900°E	525	Not approved. Site relocated to avoid the anticlinal structure
POM-3B	23.0238°N	66.3897°E	525	Positioned by the panel to CDP-250 on line MD-04-20 with approval recommended to the requested depth
MR-1	23.3067°N	63.8092°E	400	Approved is recommended as requested
MR-2B	22.2625°N	63.3367°E	300	Approved is recommended as requested
MR-3B	22.3283°N	63.0800°E	350	Approved is recommended as requested
MR-4B	23.4883°N	65.3567°E	500	Approved is recommended as requested
MR-4C	23.5108°N	65.3692°E	400	Approved is recommended as requested
MR-6B	23.5405°N	65.3183°E	100	Approved to a depth of 150 m. Panel has approved the deepening of the hole.
MR-6C	23.4900°N	65.2917°E	100	Not approved. Site relocated to avoid the change in seismic character
MR-6D	23.4728°N	65.2012°E	150	Positioned by the panel to CDP-260 on line MD-04-09 with approval recommended to the requested depth

No VSP is planned as part of the planned drilling program. No marine mammal or turtle issues have been identified. The primary populations of these animals are located well west of the proposed study area, closer to the coast of Oman.

~~Sites POM-3B and MR-6D are approved pending the submittal of completed Site Safety sheets to EPSP and IODP-MI. Updated sheets have been provided by the proponents for the two new sites locations.~~

Review Proposal 716-Full2 – Hawaiian Drowned Reefs: David Clague presented the scientific overview and a site-by-site review. The program had four primary scientific objectives: 1) the definition of central Pacific sea-level changes during the past 500 kyr; 2) determining the nature of paleoclimate variability within the central Pacific; 3) establishing the nature of coral reef responses to abrupt sea-level and climate changes; and 4) establishing the subsidence history of Hawaii. The presence of multiple terraces, reliable age dates, and a constant and rapid subsidence rate (2-3 m/kyr) makes this an ideal study location. The program will focus on a suite of cores collected from four areas around the margin of the island of Hawaii, which will penetrate a series of drowned reefs.

Each reef drowning event occurring during deglaciation, with reef development occurring during the glacial periods. The program included 20 drilling locations, with water depths ranging from 109 to 1289 m. It was noted that as has been the case with prior reef drilling, seismic data would not provide meaningful site selection data and that site selection and safety review will be based on such data as bathymetry, backscatter images, video observations, and sediment sampling. No ROV observations were available for water depths less than 150 meters. It was also reported that coralline algae may persist to depths of 100 m or so, but no living corals were observed at the shallowest of the proposed drilling locations. Some deepwater corals are present in the area, but they are located on the edge of vertical slopes. Sites are positioned away from these locations. Clague further noted that sites were located in order to reduce the presence of volcanics. Sites are as close as 1.5 miles from shore and there may be noise issues that will need to be considered. Whales are present in study area between November and May. Drilling would, therefore, take place between June and October, preferably in the later part of the “whale-free” window, to “catch” the lowest tourist season and the best weather-window. The panel noted that the range of water depths could introduce some operational complications. As has been the case with prior coral drilling operations, cuttings are not considered to be a potential problem, with this material being lost in the reef’s cavernous porosity. Permitting will require approval from a number of agencies. It was noted by Colin Graham, for ESO the MSP operator, that there may be issues with the bathymetric data resolution and that this should be taken into consideration as part of the approval process. David Clague responded that the proponents have the best available bathymetric data from hull-mounted systems with 3 m resolution in 150 m depth, to 10 m at 1150 m depth. He further noted that this bathymetry defines each site relative to the steep break-in-slope of the nearby reef-face and relative to details of the reef structure on the reef top. All data are differential GPS navigated. Donald Potts also noted that he has encountered ammunition in shallow waters off of Hawaii away from officially marked ammunition disposal sites and that the operator should take the necessary precautions. Based on prior work in the area by the Hawaii Undersea Research Laboratory the required pre-drill visual inspection of each site should provide the necessary information to safely locate (i.e., the munitions have not been buried by sediments).

Following the overview presentation which included a description of each location, EPSP acted on the proposed drilling package. The results of the panel’s recommendation are presented below.

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
KON-01A	19.600341°N	156.010975°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KAW-03A	20.018587°N	155.866458°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KAW-04A	19.995815°N	156.032933°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KAW-06A	20.036417°N	156.065696°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KAW-	20.137266°N	156.079341°W	150	Approval is recommended for

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
07A				coring within a 150 meter radius for the center point (latitude/longitude)
MAH-01A	20.055411°N	156.189697°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
MAH-02A	20.050262°N	156.192035°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KOH-01A	20.290268°N	155.651218°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KOH-02A	20.273958°N	155.490294°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
HIL-01A	19.758805°N	154.985708°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KAW-01A	20.011332°N	155.848480°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KAW-02A	20.017325°N	155.857206°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
KAW-05A	19.978715°N	156.029159°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
MAH-03A	20.140405°N	156.238194°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
MAH-04A	20.065165°N	156.266945°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
MAH-05A	19.994893°N	156.229296°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
HIL-02A	19.883005°N	155.029932°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
HIL-03A	19.867141°N	154.973387°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)
HIL-04A	19.869407°N	154.954576°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
HIL-05A	19.876999°N	154.939618°W	150	Approval is recommended for coring within a 150 meter radius for the center point (latitude/longitude)

EPSP requires pre- and post-drill images for each drill site. All coring should be via rotary drilling and conducted with seawater as the drilling fluid. A whale-watch will be required.

Review Proposal 654-Full2 – Shatsky Rise: Will Sager presented the scientific overview and site-by-site review. The planned program was design to test the plume and plate model for oceanic plateau formation. Oceanic plateaus do not appear to conform to plate tectonic models nor is there clear evidence available to support the plume head hypothesis. The aim is to examine igneous basement, which should provide information on mantle convection and the origin of oceanic plateaus. Basement associated with the plume head model is expected to contain evidence of lower mantle material. The Shatsky Rise is a large plateau (about the size of California), which has developed along a migrating triple junction. The age progresses from SW to NE. It was noted that although a number of factors (such as initial massive rapid eruption transitioning to smaller eruptive volume, excess heat, significant uplift, and an age progression) are consistent with a plume origin others (such as the basalt geochemistry, which appears MORB-like) are inconsistent with such an origin. The specific objectives of the program are to test the age progression and speed of eruption of the southern massif and to examine geochemical and isotopic signatures of basement. It was noted that although organic-rich sediments are present, they are thermally immature and as such pose little safety risk. The panel was asked to permit deeper basement penetrations than originally planned. The recommended approved depths take into consideration this request. There was some discussion about the plan to drill to about 50 m above basement before the start of coring. The issue was raised that SPC might require continuous coring. EPSP did not, however, require continuous coring at these locations. The results of the site-by-site review are presented below.

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
SRSH-2A	30.8197°N	156.3647°E	353	Approval is recommended to requested 553 m to permit additional basement penetration
SRSH-2B	30.9060°N	156.5412°E	552	Approval is recommended to requested 752 m to permit additional basement penetration
SRSH-3(A)	32.3095°N	158.9980°E	573	Approval is recommended to requested 773 m to permit additional basement penetration
SRSH-3B	32.5078°N	159.2347°E	454	Approval is recommended to requested 654 m to permit additional basement penetration
SRSH-5	32.8497°N	157.8820°E	303	Approval is recommended to requested

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
				503 m to permit additional basement penetration. The site may be located within a radius of 150 meters from the stated location in order best position on the valley floor
SRSH-6	34.4220°N	159.3822°E	235	Approval is recommended to requested 435 m to permit additional basement penetration
SRSH-7	34.7378°N	159.3770°E	342	Approval is recommended to requested 542 m to permit additional basement penetration
SRSH-8	31.0958°N	156.9330°E	263	Approval is recommended to requested 463 m to permit additional basement penetration
SRCH-3	36.0087°N	158.3495°E	492	Approval is recommended to requested 692 m to permit additional basement penetration
SRCH-4	36.0748°N	159.2843°E	457	Approval is recommended to requested 657 m to permit additional basement penetration
SRCH-5	36.1157°N	158.4588°E	465	Approval is recommended to requested 665 m to permit additional basement penetration
SRNH-1	37.8212°N	162.9870°E	352	Approval is recommended to requested 552 m to permit additional basement penetration
SRNH-2	38.0067°N	162.6452°E	249	Approval is recommended to requested 449 m to permit additional basement penetration
SRNH- 2A	37.9888°N	162.6547°E	405	Approval is recommended to requested 605 m to permit additional basement penetration

Preview Proposal 618-Add4 – South China Sea: Peter Clift presented a review of the science plan and an overview of the two remaining planned sites. The study was developed to examine the interaction between climate and tectonics in East Asia. Specifically the program was designed to look at how the uplift of the Tibetan Plateau drove climate. Part of the study will focus on the evolution of the region's river systems. The history of the Red River can be traced because of the unique chemistry of the regional sources. For example, one of the questions that will be examined is when did the Yangtze River become diverted and stop contributing to the Red River. The stated objectives include: 1) the creation of erosion and weathering records on tectonic time scales back to the Oligocene; 2) reconstruction of the East Asian monsoon intensity history; 3) dating of the uplift of the Tibetan Plateau; 4) changes in continental weathering regimes; and 5) a comparison of

exhumation histories using multiple approaches. Site VN-3, Nam Con Son basin, would recover material delivered by the Mekong River. The plan is to recover a complete Oligocene-Recent record. Although part of a known producing basin, no oil or gas fields are in the immediate vicinity of the site. There have also been no reported occurrences of shallow gas in the basin although a number of bright spots appear present at and close to the preferred location of Site VN-3. The proponents believe that there is limited risk of overpressure at the VN-3 site because of the reduced Plio-Pleistocene cover. The geothermal gradient suggests that the penetrated section will be thermally immature. The second site, PA-1 is located in the Yinggehai-Song Hong basin. This site has received sediment from the Red River. The plans at this location are to drill to the top of the syn-rift section. Gas fields are present in the basin, including China's largest offshore field. Some of the amplitude anomalies are thought to represent sandstones and not gas accumulations. Overpressure has been reported in the basin, but is not thought to be an issue at the proposed location. Site PA-1B, the preferred drilling location penetrates a bright spot. The proponents have interpreted this as a sand body lacking hydrocarbon charge. It was stated that CDEX may want additional site survey data prior to developing drilling plans.

The proponents are asked to prepare structure and amplitude maps and to check for conformance. The proponents are also requested to acquire drilling summaries from nearby wells. An attempt should be made to avoid a possible bright spot at VN-3A which appears present on both cross-lines. Final proposed locations should be located on crossing lines in areas free of bright spots. Although the proponents do not believe that there is a significant risk of over-pressure the panel does request that an attempt be made to use available seismic data to estimate pore pressures.

CDEX has been asked to determine whether sufficient information is available to go forward with Proposal 618 as a viable riser contingency by June 26, 2009. If a positive response is received EPSP will hold a special meeting at CDEX in Yokohama on September 11, 2009. A request has been made by both CDEX and IODP-MI to extend the meeting deadline. We are currently waiting on additional guidance.

Review Proposal 603B/C-Full2 – NanTroSEIZE and APL-738 Nankai Trough Submarine Landslide History: Greg Moore reviewed for the panel the background and justification for the Nankai programs. He also presented a request to deepen C0002E from the current TD of 1401 mbsf to oceanic crust at 7000 m as well as three additional non-riser sites. The additional depth at C0002E is a result of refinements to the region's velocity structure. The proponents believe that the hydrocarbon risks are low as a result of both the low total organic carbon contents and the poor reservoir potential. Although hydrate indicators have been cored no obvious free gas has been identified in the region. The most significant issues thought to threaten the program are the position of the Kuroshio Current and typhoons. Dieter Strack has added that the seismic lines shown in the safety package across site C0002E have been subjected to a multiple removal processing below ca. 5 km depth in order to achieve a better imaging of the mega-splay fault and top of the Oceanic Crust. As a result, high frequencies have been removed below ca. 5 km depth and the remaining low frequency seismic signals do not provide much useful information on the section below 5 km (except for showing the two major faults). In other words, it appears that most of the lower 4 km of the hole will have to be drilled more or less into the unknown. Contingency planning as requested by EPSP is, therefore, extremely important. The results of the site-by-site review are presented below.

Site	Latitude	Longitude	Proposed Drill Depth (m)	Comments and Panel Recommendation
C0002E	33.3002°N	136.6365°E	7000	Contingent approval is recommended pending receipt of required information
NTS-01A	33.1570°N	136.6815°E	350	Approval is recommended as requested
NTS-01B	33.1518°N	136.6952°E	350	Approval is recommended as requested
NTS-01C	33.1675°N	136.6641°E	350	Approval is recommended as requested

EPSP has requested that it be provided with a revised well plan to the requested 7 km. (The plan provided is based on a 6 km hole.) In addition, a decision-tree should be provided to the panel for monitoring and terminating the hole. This should be formatted in a manner similar to that developed for Expeditions 308 and 311. This material should be provided to the panel no later than January 1, 2010. The panel will review the material and forward questions or final approval recommendation to CDEX and IODP-MI by February 1, 2010.

General Discussion on NanTroSEIZE Developments and How the EPSP Plans to Respond to Changes in Approved Programs: The discussion began with a brief presentation by Shin'ichi Kuramoto reviewing the results of the CDEX peer review meetings and the CDEX responses to the questions raised. It was understood that these peer review meetings play an important part in the planning process. Although invited to attend these meetings the lack of funding has precluded non-Japanese EPSP member attendance. Members of EPSP felt that based on the terms of reference they act as a primary guardian of the IODP's environmental and safety legacy and need to be actively engaged in the planning and review of all sites, including those associated with riser operations. Over the past several years the panel has changed its composition in order to include a review of drilling plans. It currently appears that the panel is provided a final plan for approval rather than being an active member in the planning process itself. All agreed that there needs to be an attempt to improve communications and that this should be a focus for all parties.

It was also noted that there have been a number of changes to expedition plans by the different operators following panel review and approval recommendation. These changes have included modifications to the planned monitoring program. Although it is understood that the operators have final responsibility for drilling decisions, plans, and operations, it was noted that in some cases EPSP's recommendation to approve a site was based on the total drilling package presented. Following discussion it was agreed that unless the changes are a result of active operations the operators will provide to the panel their proposed changes in time for review and comment. The members of the panel also agreed to respond in a timely manner to the modifications, including a no comment statement, when appropriate.

NEXT Meeting: The next planned meeting will be held in Yokohama, Japan, June 2010. The dates have not yet been fixed, but will avoid June 1-4. To be included on the agenda will be a general discussion of riser drilling.

Adjournment: Meeting was adjourned on 17:30.