JOIDES SITE SURVEY PANEL MEETING

February 23 - 25 2000
Geological Institute, Zurich, Switzerland

Members: Diebold, John (*LDEO, NY, USA*) -- Chair
Anselmetti, Flavio (*ESF*)
Caress, David (MBARI, USA)
Driscoll, Neal (*WHOI, USA*)
Enachescu, Michael (*Husky, Canada*)
Flood, Roger (SUNY, USA)
Hine, Albert *(USF, USA)*
Holbrook, Steve *(UWYOM, USA)*
Kleinrock, Martin *(VU., USA)*
Kuramoto, Shin'Ichi *(GSJ, Japan) x*
Lee, Chao-Shing *(PACRIM)*
Leroy, Silvie(*France*)
Lyle, Mitchell *(BSU., USA)*
Meyer, Heinrich *(BGR, Germany)*
Silver, Eli *(UCSC, USA)*
Whitmarsh, Robert (*SOC, UK*)
Yao, Bochu (GMGS, China)

Liaison: Allan, James *(NSF, USA)*
Brueckmann, Warner (JOIDES Office)
Klaus, Adam (*ODP/TAMU*)
Becker, Keir (*SCICOM/OPCOM*) x
Quoidbach, Daniel (*ODP Data Bank*)

Apologies:
Ball, Mahlon (*PPSP*)

7 **PRELIMINARY MATTERS** (Diebold)

8 Reports

8.3 SCICOM/OPCOM(Becker)

Becker described the ODP – OD2000 transition strategy for SSP. I.e., keep the proposal pipeline full, providing proposal pressure for the new programs.

SSP Consensus: SSP supports the continuation of support for the advisory panel structure throughout the ODP – OD2000 transition. This will maintain proposal pressure and provide continuity of effort necessary to insure a successful transition.

2.2 JOIDES (Brueckmann)
Scicom rankings from UCSB meeting
OPD phase out, IODP phase in

2.3 PPSP (Quoidbach)

2.4 ODP Data Bank

Since the last meeting

- 206 new data items received
- prepared the cruise data package for Leg 188
- Filled 14 data requests for scientists preparing proposals or Legs
- Helped proponents of Legs 194, 195, 196, 197, and 198 prepare for PPSP review

IESX project with Logging Group

9 System is being used on Leg 188 with available digital seismics data. This will establish the data handling routines for the system. Incorporate shipboard experience.

10 Pilot project in FY 2001 for Legs 194 (Marion Plateau) and 196 (Nankai II) using cost savings.

11 Proposing revised data submission guidelines to indicate how digital seismic data will be protected from general use through password protection scheme. Goal is to allay fears of data hijacking while allowing use of data by SSP and PPSP.

12 System to operate full-time in starting FY 2002.

Databases
The new Filemaker database is in use. Due to complications getting the consultant re-hired after initial contract expired the project was brought in-house. System was modified to make it more streamlined. Old data has been reclassified and loaded into the new system, but more quality control and lists need to be performed. Basic functionality is in place, but navigation and reports are still rudimentary. New numbering scheme is being used old number of 12894-B = new number of 1289402. Data entered into the new system will be numbered from 2000000. Still need to incorporate web interface for some of the layouts, but as FileMaker Pro used XML for web display, this is currently only fully supported on Windows version of Internet Explorer 5 browser. IE5 for mac is in beta testing. Netscape 5 is in alpha testing. Proposal and site review portions of the database are not yet functional.

Portable Intranet
Purchased Powerbook G3 for portable server. Upgraded to AppleShareIP 6.3 for file and print sharing, and web serving. Scanned all active proposal material and stored in PDF format. First test will be this meeting. Feedback appreciated.

Proposed Revision to Data Submission Guidelines

All data submitted by proponents to the Site Survey Data Bank are considered proprietary to the Ocean Drilling Program unless they are freely available from other data repositories (e.g., the National Geophysical Data Centers).

Members of SSP and PPSP are given access by the Databank Manager to any pertinent site survey data deemed necessary to carry out their mandated tasks.

Digital seismic survey data are protected by a password assigned by the Databank Manager to the Principal Investigator submitting the data.

Digital and other data requests in support of additional pre-cruise planning or post-cruise studies not covered in the SSP or PPSP mandates can be honored through the release of the password or approval by the Principal Investigator.

All data requests not considered essential to ODP operations are denied.

2.5 TAMU (Klaus) Lab mods

2.6 NSF (Allan)
Funded cruises: Summer 2001 – Tucholke,Collins, Megamullions Winter 2001 – 2002 – Driscoll, G. of Aden**.** The 17 % request increase NSF budget will, if granted, have a beneficial effect on future site survey funding. Tech support on UNOLS ships is no longer included in science budgets, making site survey proposals, particularly seismic, more competitive. The NSF-funded US OBS pool [SIO, WHOI, L-DEO] will also be funded and budgeted in a similar way.

2.7 ISSEP (Whitmarsh)

Deep holes Criteria needed

ESSEP (Hine)

5 Deep biosphere proposals - no answers so far for SSP requirements
6 Hydrates proposals

Shallow water drilling - need new SSP criteria? Who evaluates geotechnical – and what kind of drilling platform is to be used defines what's needed. Shallow water safety High Res Surveys needed, too, as before. Note PPSPs bullets.

3. SITE SURVEY IMPLICATIONS OF RECENTLY DRILLED LEGS

3.1 Leg 186: (Klaus)
3.2 Leg 187: (Klaus)

4. SITE SURVEY STATUS OF UPCOMING SCHEDULED LEGS FOR 99 & 00 *

4.1 Leg 189: Southern Gateway

Proposal #: 485 Full 3/485 Add 2 February 23, 2000
Proposal Title: The "Southern Gateway" Between Australia and Antarctica
SSP Proponents: NA
SSP Watchdog: Driscoll
SSP Ranking: 1A

As noted at the July 1998 SSP meeting at Lamont, the proponents have completed the primary requirements asked by the SSP. We still note that 2 alternate sites do not have crossing lines (SET01A, ETP01A). Nevertheless, the crossing lines for these alternate sites can be acquired on the JR if necessary.

SSP also acknowledges receipt of a digital file for shiptrack and site locations as well as a postscript file showing the shiptrack and sites superposed on bathymetry.

We wish the proponents well on their drilling leg.

4.2 Leg 190: Nankai

Proposal Title: Deformation and Fluid Flow Processes in the Nankai Trough accretionary prism
Proposal #: 445 Add2 **Target type: C (active margins)**
SSP watchdog: Eli Silver
SSP proponents: None
SSP Ranking: 1A

SSP review: The site survey panel finds the new sites proposed to be well documented and adequate data are in the data bank. We urge the proponents to provide the data bank with the processed 3D data when they are available.

SSP consensus: All new sites (ENT 04A-09A) are backed by data in the data bank.

4.3 Leg 192: Ontong Java

Proposal Title: Assessing the origins, age and post-emplacement history of the Ontong-Java Plateau through basement drilling
Proposal#: 448 **Target Type: D, E**
SSP Watchdog: Whitmarsh
SSP Proponent(s): none

SSP review: since July, 1999 the proponents have submitted records sections of sonobuoys 17 and 31 as requested by SSP. Unfortunately the sections are at a scale and in a form that precludes the Panel evaluating the velocity interpretation of the data made by the proponents. This can be achieved if the proponents submit blown up versions of the following data subsets; sonobuoy 17 0-10 km, 4-11 secs; sonobuoy 31 0-10 km, 0-7 secs. It would assist the Panel if the picked hyperbolic reflection curves were marked up in such a way that they can be correlated with the calculated interval velocities previously submitted. It would also help the Panel correlate the sonobuoy sections with the submitted MCS profiles across the sites if the same filter settings were used on the sonobuoy sections as on the MCS seismic sections.

SSP Consensus: Blown-up and marked up sections of sonobuoys 17 and 31 need to be submitted at an amplitude scale and filter settings that allow the Panel to fully evaluate the previously submitted interval velocity interpretation of the proponents.

Site Survey Readiness Classification: no change

4.4 Leg 193: Manus Basin 479

Proposal Title: Massive sulfide mineralization n felsic volcanics of the Eastern Manus back-arc basin, Western Pacific
Proposal#: 479 **Target Type: F**
SSP Watchdog: Diebold

SSP Proponent(s): none

SSP Consensus: All required data in support of proposal 479 (PACMANUS Basin) is in the data bank.

Site survey classification: remains 1A.

4.5 Leg 194: Marion Plateau 510 (Hine)

Proposal Title: Sea Level Magnitudes Recorded by Continental Margin Sequences on the Marion Plateau
Proposal #:510 FULL 3
Target Type: B
SSP Watchdog: HINE
SSP Proponent(s): ANSELMETTI
SSP Review: FEB 2000 ZURICH
SSP Consensus: Since the July 99 SSP meeting at Lamont, several key events have occurred and should be noted. First and foremost, this proposal has been scheduled as Leg 194 to be drilled in early 2001 and the co-chiefs have been chosen. Secondly, PSPP has suggested moving two primary sites a short distance within the tight site survey seismic reflection grid. Sites CS-02A and CS-05A have been moved to these new locations as defined in an email from Dr. Isern (co-chief) to Dan Quoidbach (cc) dated December 19, 1999. Third, Dr. Anselmetti (co-chief) indicated to Dr. Hine (watchdog) that final permission to drill within the Great Barrier Reef National Park has not yet been obtained, and probably no decision will be made until April, 2000. It is TAMU`s responsibility to seek and obtain such permission. If permission is denied, four sites CS-03A, CS-09A, CS-05A, CS-06A) will have to be moved to Line MAR 20 which runs outside the Park boundary and subparallel to the seismic line on which the sites are presently located. We encourage the co-chiefs to pick alternate sites sooner rather than later in case permission is denied. SSP can review these alternate sites (new primary sites) at the July, 2000 SSP meeting at Lamont if needed. Since this leg is designated Target B, crossing lines are required. In the unfortunate event that the co-chiefs have to move out of the GBR Park boundary, crossing lines will have to be shot on the JR. Finally, Dr. Isern reported to Hine via email (dated 01-24-00) that the sonobuoy data to determine velocities did not yield useful results. So, existing stacking velocities and velocity data based on Leg 133 will have to be used to determine target depths and depth to key horizons. The co-chiefs are asked to submit the stacking velocity data based on their spring 1999 site survey cruise to the data bank as soon as possible. We note that updated navigation was submitted to the Data Bank since the July, 1999 SSP meeting.
Site Survey Readiness Classification: 1B

4.6 Leg 196: Nankai II

Proposal Title: Nankai trough LWD/ Advanced CORK experiments
Proposal No: 517 Full Target type: C (active margins)
SSP watchdog: Sylvie Leroy
SSP proponents: None

SSP review: The SSP finds the new sites proposed to be well documented and adequate data are in the data bank. We urge the proponents to provide the data bank with the processed 3D data when they are available.

SSP consensus: All new sites (ENT 04A-09A) are backed by data in the data bank.

Site Survey Readiness Classification: 1A

4.7 Leg 197: Hawaiian/Emperor Hotspot

Proposal Title: Motion of the Hawaiian Hotspot During Formation of the Emperor Seamounts: a Paleomagnetic Test

Leg # 197 Proposal #: 523-Full
Target Type: G
SSP Watchdog: Diebold
SSP Proponent(s): none
SSP Review:
All of the primary sites are at or near previously drilled DSDP and ODP holes. Alternate sites are located according to data ancillary to locating those sites. The Data Bank has so far played the major role in assembling the available data, and single channel data have been located for every site. The one required data type, 3.5 kHz echo sounder profiles, are thought to exist, but Data Bank employees have not yet had the time to find it and make sure. The proponents have promised take a more active role in doing this work between now and the July 2000 SSP meeting.
SSP Consensus:
Although all of the primary sites have been drilled before, some of them were drilled before the existence of the ODP Data Bank. Therefore the required 3.5 kHz echosounder data for these sites and the alternate sites, while thought to exist, have not been extracted, annotated with site locations, and placed in the Data Bank. When this is done, the proposal will be classified 1A from an SSP point of view. Currently it is classified 2A.

Site Survey Readiness Classification: 2A

4.8 Leg 198: Gas Hydrates on Hydrate Ridge

Proposal Title: Hydrate Ridge
Proposal #: 546
Target Type: C (Hydrate)
SSP Watchdog: Roger Flood
SSP Proponent(s):
SSP Review: 546 has advanced to Leg 198, scheduled for late, 2001. No new data has been submitted to the Data Bank since our July meeting. An email was recently received by Dan at the Data Bank saying that some new information is available as a result of Alvin dives, a deep-tow survey, and cores collected by GEOMAR. These data give a better idea as to the lateral variability of venting, hydrate and other structures. However, as noted before the existing seismic data is not good enough to determine the sites given the structural complexity. This is to be resolved later this year by a NSF-supported 3D seismic survey to be undertaken in June/July 2000 and a high-resolution seismic cruise to be undertaken in October 2000 by GEOMAR. Anne Trehu, proponent and co-chief for this leg, met with PPSP at their December meeting and was given guidance about the data products, analysis and drilling strategy for gas hydrates. PPSP will review the sites in their December, 2000, meeting.

The primary need for SSP is for crossing lines at the proposed sites in order to show the structure of the hydrate deposit, both MCS data and high-resolution seismic data. These data are to be collected this summer and fall. Some initial results of a June/July 3D seismics cruise should be submitted by the week of the July SSP meeting. Information on surface morphology from deep-tow and Alvin studies in 1999 should also be submitted by the July 1 SSP deadline. The SSP rating is now 2B; substantial items of required data could be available for FY 2001 drilling if a scheduled site survey proceeds as planned.

SSP Consensus: Critical data for site selection will be collected during June/July and October surveys. Preliminary data from the June/July cruise should be submitted for the July SSP meeting as well as observations of surface morphology collected during 1999 studies. The proposal rating is 2B.

Site Survey Readiness Classification: 2B

4.9 Leg 199: Paleogene Equatorial Pacific APC Transect

Proposal Title: A Paleogene Equatorial APC Transect
Proposal#: 486 Target Type: A
SSP Watchdog: Yao Bochu
SSP Review: Since the Berlin SSP meeting in Feb. 1998, the proponents have submitted a very large data set to the ODP Data Bank. The SSP suggests for completeness that no required data for Target A sites are missing, SSP ranks this proposal as 1A. Previously, the SSP requested more detailed descriptions of bathymetry, copies of fully processed 3.5KHz data for Target A sites. In January 1999, the proponents submitted a CD-ROM of bathymetry data and physical properties of sediment cores, and EW9709 shipboard coring sheets about the well sites to the ODP Data Bank. Therefore, I believe the data package for this proposal is complete.
SSP Consensus: The site survey works in this proposal are completed.
Site Survey Readiness Classification: 1A.

4.10 Leg 200 H2O 500

Proposal Title: Drilling fast spread Pacific crust at the H2O long-term seafloor observatory
Proposal #: 500
Target Type: E
SSP Watchdog: David Caress
SSP Proponent(s): NA
SSP Review:
This scheduled drilling leg 200 will drill a reentry hole at the Hawaii-2 Observatory (H2O) site in the eastern Pacific; a broadband seismometer will be installed within the hole as part of the worldwide ION program. The precise borehole site has not been determined, but it must be within 2 km of the existing H2O junction box. The available SCS and 3.5 kHz profiles indicate that the sediment thickness is 50-75 m and that there is a shallow, strong reflector at a depth of 20 mbsf within the sediments. The proposal and its site description forms interpret this reflector as a possible chert layer. OPCOM requested that SSP review the data and assess the likelihood that this layer really is chert. OPCOM's concern is that if a significant chert layer is encountered, then additional drill string trips will be required and the drilling will take longer and be more expensive than presently planned.

SSP reviewed the two SCS profiles and one 3.5 kHz profile that have been submitted to the databank. We concur that there is a reflector within the sediments at a depth of ~20 mbsf. We think that the reflector could plausibly be either a chert layer or the top of a carbonate sequence. However, the panel found that the two SCS profiles were not plotted at a scale that allowed close examination of the shallow reflector. An 18 February 2000 email mentioned two attached plots of the digital 3.5 kHz data, but only one file was attached, and it appeared more like a photocopied paper record. All of the plots also lack annotation indicating the site location. Although this proposal has been scheduled for drilling, the proponents have still not provided an exact site location.

SSP would like to see properly scaled and annotated plots of the SCS and 3.5kHz data, but we are not confident that the data will be sufficient to discriminate between chert and carbonate as the source of the shallow reflector. We recommend that OPCOM plan leg 200 allowing for the consequences of encountering a shallow chert layer. We also point out that a significant amount of drill ship time might be freed up if the leg is lengthened and no chert layer is encountered; OPCOM will need to identify an alternative use of the ship time in the event that the drilling goes unexpectedly well.

In order to better assess the shallow reflector and its potential impact on the scheduled drilling, SSP requires the following:

- A primary and an alternate site location. Specifying a 2-km radius around the junction box is not sufficient.
- New plots of the SCS data shown with true amplitudes and with the vertical scale expanded to focus on the upper 150 m.

- New plots of 3.5 kHz data shown with true amplitudes and with the vertical scale expanded to focus on the upper 150 m.
- Hydrosweep bathymetry from recent H2O servicing cruise on R/V Thompson.

SSP Consensus:
The available SCS and 3.5 kHz profiles indicate that the sediment thickness is 50-75 m and that there is a shallow, strong reflector at a depth of 20 mbsf within the sediments. The proposal and its site description forms interpret this reflector as a possible chert layer. OPCOM requested that SSP review the data and assess the likelihood that this layer really is chert. SSP reviewed the two SCS profiles and one 3.5 kHz profile that have been submitted to the databank. We concur that there is a reflector within the sediments at a depth of ~20 mbsf. We think that the reflector could plausibly be either a chert layer or the top of a carbonate sequence.

SSP would like to see improved plots of the SCS and 3.5kHz data, but we are not confident that the data will be sufficient to discriminate between chert and carbonate as the source of the shallow reflector. We recommend that OPCOM plan leg 200 allowing for the consequences of encountering a shallow chert layer. We also point out that a significant amount of drill ship time might be freed up if the leg is lengthened and no chert layer is encountered; OPCOM will need to identify an alternative use of the ship time in the event that the drilling goes unexpectedly well.

In order to better assess the shallow reflector and its potential impact on the scheduled drilling, SSP requires the following:
- A primary and an alternate site location. Specifying a 2-km radius around the junction box is not sufficient.
- New plots of the SCS data shown with true amplitudes and with the vertical scale expanded to focus on the upper 150 m.
- New plots of 3.5 kHz data shown with true amplitudes and with the vertical scale expanded to focus on the upper 150 m.
- Hydrosweep bathymetry from recent H2O servicing cruise on R/V Thompson.

Site Survey Readiness Classification: 1B

4.13 Leg 201 SE Pacific Paleoceanography 465

465: SE Pacific Paleoceanography
SSP Watchdog: Lyle
SSP Proponents: None
Target type(s): all Sites A

This proposal has now been scheduled as ODP Leg 201.

We know that new site survey data will be coming for the following drillsites: COC-01, CAR-01, CAR-02, and CAR-03, on the Cocos and Carnegie Ridges around the Panama Basin. These sites will be surveyed on the NEMO-4 cruise in May of 2000. The above-named sites will most probably be moved because of the new surveys. This new data should be lodged as soon as possible with the Site Survey Data Bank. Lyle also notes that he will be collecting the seismic reflection data on NEMO-4 and requests that another watchdog be appointed to examine the final part of this data package.

This proposal has been previously rated 1A because all sites could be drilled based upon data previously provided to the data bank. Because we expect the above-named sites to be moved based upon the scheduled cruise, we now rate the proposal 1A/2A.

SSP Consensus: We expect that new site survey data for the 4 northern drillsites will be available in June after the NEMO-4 cruise and encourage the proponents to submit this data package to the Site Survey Data Bank as soon as possible after the cruise.

Site survey readiness status: 1A/2A

5. POTENTIAL FUTURE DRILLING – 2001 PROSPECTUS

5.1 455 – Rev3: Laurentide Ice Sheet outlets

Proposal Title: High Resolution Transects of Laurentide Ice Sheets Outlets
Proposal #:455-Rev3
Target Type: A/B
SSP Watchdog: F. Anselmetti
SSP Proponent(s): None
SSP Review:
No new data has been submitted since the last SSP meeting in July 1999. The panel is aware that an IMAGES Marion Dufresne cruise took place in summer 1999, which was supposed to result in 30-50 m long cores at some of the sites. According to an e-mail from the proponents dated 06/29/1999, these results might have significantly changed the proposed drilling strategy. The panel would like to see this new drilling strategy, in particular a plan documenting primary and alternate sites, as well as information stating which sites are removed from the proposal.
The site survey readiness status for HUD01A-HUD07A and LAW02A-LAW05A remains 1A. Since no new data for Sites HUD08A, LAW01A and LAW06A have been submitted, the status for these sites remains 2A.
We encourage the proponents to submit the newly collected data and a revised drilling strategy indicating primary and alternate sites by the July 1 deadline, in order that these items can be considered at the next SSP meeting in July 2000.

SSP Consensus:
No new data has been submitted since the last SSP meeting. The site survey readiness status for Sites HUD01A-HUD07A and LAW02A-LAW05A stays 1A, whereas it remains 2A for Sites HUD08A, LAW01A and LAW06. The panel encourages the proponents to submit the newly collected data and a new drilling strategy by the July 1 deadline, so that these items can be considered at the next SSP meeting in July 2000.
The site survey readiness classification is 2A/1A (Substantial/a few items of required data are not in the Data Bank but are believed to exists and are likely to be available in time for consideration for FY 2002 Drilling schedule)

Site Survey Readiness Classification: 2A/1A

5.2 477 – Full2: Okhotsk and Bering Seas Plio-Pleistocene History

Proposal Title: The Okhotsk and Bering Seas: High resolution Plio-Pleistocene Evolution of the Glacial/Interglacial Changes in the Marginal Seas
Proposal #: 477 – Add3
Target Type: A; Paleoenvironment
SSP Watchdog: Diebold
SSP Proponent(s): none
SSP Review:
The proponents have responded to SSEP advice, and focussed their selection of sites considerably. In addition, a new site survey has been carried out, and additional, previously existing data has been located by the proponents. It is expected that these data will be delivered to the data bank shortly. Receipt of the new data should raise the classification of the BOW and GAT sites to 1A; ready for drilling. The preexisting data include cross lines for the UMK and COP sites However, the remaining ASR, KAM and SHR sites are located on single single-channel seismic lines, with no crossing lines. In addition, no 3.5KHz are present for these or the COP and UMK sites, and no core descriptions, except for the UMK sites. The proponents are encouraged to continue in their efforts to improve the site survey data package for this drilling proposal.

SSP Consensus:
When the promised Hakuho-Maru data are deposited in the data bank, Bering Sea BOW and GAT sites may be ready for drilling; delivery of R/V Akademik Lavrentyev and USGS data will provide crossing lines for the COP and UMK sites, but other essential data will still be missing. It is unclear from correspondence with the proponents whether the missing data are available or not, nor whether additional site surveys are proposed or scheduled.
Site Survey Readiness Classification: 1B (BOW, GAT, UMK) / 5 (ASR, KAM, SHR, COP)

5.3 478 – Full4: Eastern Nankai Subduction Processes

Proposal Title: Characterization of Eastern Nankai subduction processes
Proposal No: 478-Full4 Target type: C (active margins)
SSP watchdog: Eli Silver
SSP proponents: None

SSP review: Available seismic data are inadequate to clearly image the structural relations between the Tokai thrust and the decollement. Better seismic data and crossing lines for all sites are required. Crossing lines are also needed for the FTZ sites. High resolution seismic lines 901-915 are indicated to exist but are not in the data bank.

SSP consensus: The proposed sites have inadequate seismic data and lack crossing lines. A 3D seismic study is indicated for mid-2000. Please send the processed data to the data bank when ready. We also urge that crossing lines be run for the FTZ sites.

Site Survey Readiness Classification: 3A

5.4 482 – Full2: Wilkes land Margin

Proposal Title: Wilkes Land
Proposal #: 482
Target Type: B
SSP Watchdog: Roger Flood
SSP Proponent(s):
SSP Review: Add3 and Add4 have been received since the proposal was last reviewed in February, 1999. Add3 proposes three new sites: WLSHE-07A, WLSHE-08A and WLSHE-09A. WLSHE-07A (with similar objectives to WLSHE-01A) and WLSHE-09A (with similar objectives to WLSHE-04A) have no crossing lines nearby. WLSHE-08A is at the crossing of existing seismic lines where the objectives of WLSHE-02A and WLSHE-05A can also be met. Add4 revises site priorities and describes survey activities. Although not all Data Bank records are available at this meeting in Zurich, four sites appear to have sufficient data: WLSHE-08A, WLRIS-01A, WLRIS-02A and perhaps WLSHE-02A.

We received a message from the proponent that the Italian/Australian MCS cruise, cancelled last year, will occur Feb. 11 to March 20, 2000. This cruise will collect crossing lines needed at several of the deep (500+ m proposed depth) sites that are based only on single lines. A new proposal is planned for March, 2000, incorporating some of this new data. Please provide updated site forms for all proposed sites. Other site-related records such as 3.5 kHz profiles should also be submitted, perhaps grouped as a package for each site. The specific cores or sediment samples which are related to each site should also be identified. Also, please provide the seismic velocities being used to calculate depth from travel time. Since stacking velocities are being used, please also compare these data to regional sonobuoy data, and provide the regional data. Digital navigation data for the seismic lines should also be provided to the Data Bank if this has not already been done for existing lines, and for new lines as soon as available. A number of alternate

sites are now available, but not all alternate sites have crossing lines. The lateral variability of reflection sequences at sites with no nearby lines should be evaluated. Do these sites allow an alternate drilling plan to be followed if ice cover prohibits occupying the primary sites? The proponent also may want to come to the Data Bank at LDEO before the SSP meeting to be sure that the new sites are properly annotated on the records in the Data Bank. The next SSP data deadline is July 1, 2000.

SSP Consensus: We are pleased that a long awaited MCS cruise to this area is apparently underway to collect sufficient data for selecting sites on the shelf and rise. An updated proposal is expected based on these data. Three or four of the sites already specified appear to have sufficient data now. The SSP rating is 2B because data is needed from the ongoing cruise for several of the proposed sites. This should change to 2A once the location and quality of the new data is known.

Site Survey Readiness Classification: 2B

5.5 489 – Full2: Ross Sea

Proposal Title: Ross Sea
Proposal #: 489
Target Type: B
SSP Watchdog: Roger Flood
SSP Proponent(s):
SSP Review: This proposal was last reviewed by SSP in July, 1998. Since that time -Add2 and -Full3 were received. Add2 is an update. Full3 provides a three-site drilling strategy and an updated operations plan, including a discussion of likely ice cover and alternate sites. However, it is not clear if any of the sites are consistently ice free in the January-March time period. 489-Full3 also appears to have moved all but one of the site locations, as indicated by latitude, longitude and water depth. Sites also now penetrate deeper. Mostly sites appear to have shifted along seismic profiles, but in some cases the sites are moved from one seismic profile to another nearby profile. The sites listed on the site forms have the same names but different positions, creating some confusion. We do not have the seismic lines available at our meeting at Zurich, so detailed analysis of the new sites was not possible. A proposed set of revised site names is given below to go with the new positions. Site names and locations need to be clarified, site forms with new names need to be submitted to the Data Bank as soon as possible, and the locations of sites on seismic profiles in the Data Bank need to be revised for the July 1 SSP deadline. To resolve some of the confusion related to site locations and profiles in the SSDB, the proponents may wish to provide annotated data packages for each proposed site.

Present Name	New Name
RSSHE-01B	RSSHE-01C
RSSHE-02B	RSSHE-02D
RSSHE-02C	RSSHE-02C (site name unchanged, not moved)
RSSHE-06B	RSSHE-06C
RSSHE-07B	RSSHE-07C
RSSHE-08B	RSSHE-08C

Seismic velocities used to convert travel times to subbottom depths are based on MCS stacking velocities. How do these velocities compare to those derived from sonobuoys? Sites RSSHE-08C and RSSHE-07C indicate basement penetration of 18 and 30 m. However, these are penetrations into continental rocks, or "acoustic basement." Site RSSHE-08C has a proposed depth of 1450 m, but the site is some distance from a crossing line. Lack of a crossing line precisely at this deep site may present a problem given that the site is planned to sample near a deep fault. Digital navigation data is also still needed for PD and NBP lines by the Site Survey Data Bank.

SSP Consensus: 489-Full3 provides an updated description of the proposed program. However, site positions appear to have changed. The confusion over site names and positions needs to be clarified as soon as possible. Stacking velocities also need to be compared with regional sonobuoy velocities to

evaluate possible systematic errors. Digital navigation data is also needed for some lines. The proposal is rated 2A; substantial items of required data are not in the data bank, but are believed to exist and should be made available by the July 1 SSP deadline.

Site Survey Readiness Classification: 2A

5.6 499 – Rev: Equatorial Pacific ION

Proposal Title: ION Equatorial Pacific Site
Proposal #:499-Full
Target Type: E
SSP Watchdog: David Caress
SSP Proponent(s): NA
SSP Review: This proposal will drill a cased, cemented hole in the equatorial East Pacific and install a reentry cone. A seismometer will be installed in the hole as part of the ION program. The proposed site OSN-2 has previously been ranked 1A by SSP (July 1998). The site has not changed since that ranking.

SSP Consensus: This proposal remains ranked 1A.

Site Survey Readiness Classification: 1A

5.7 503 – Full2: East Antarctic Ice Shield and Weddell Basin (Anselmetti)

Proposal Title: Weddell Sea: Cenozoic History of the East Antarctic Ice Shield and the Evolution of the Restricted Mesozoic Weddell Basin

Proposal #: 503-Full2
Target Type: B/D
SSP Watchdog: F. Anselmetti
SSP Proponent(s): None
SSP Review:
The panel acknowledges the receipt of digital navigation data for Sites WS01A-WS08A. The watchdog also acknowledges detailed feedback and communication with the proponents.
The panel reissues its recommendations concerning the choice of alternate sites for WS04A using the existing seismic dataset, which will make the drilling strategy most efficient and flexible to retrieve best scientific results during any ice condition.
The site survey readiness classification remains 1B. Few crossing seismic lines, are still missing. We encourage the proponents to submit these data and the additional alternate sites till the July 1 deadline, so that these items can be considered during the next SSP meeting in July 2000.

SSP Consensus:
The site survey readiness classification remains 1B (A few required items are missing in the Data Bank, but the data are believed to exist and to be readily available). The panel encourages the proponents to submit these few missing items to the data bank and to choose additional alternate sites for WS04A till the July 1 deadline, so that these items can be considered during the next SSP meeting in July 2000.

Site Survey Readiness Classification: 1B

5.8 505 – Full3: Mariana Convergent Margin Subduction Factory

Proposal Title: Mariana Convergent Margin
Proposal: 505 **Target Type: C**
SSP Watchdog: Whitmarsh

SSP Proponent(s): none

Since July 1999 the proponents have submitted navigation, MCS profiles, sidescan sonar and swath bathymetry data to the Databank.

The 6 proposed sites are now (February 2000) in various states of site survey readiness. The Panel learnt informally that a proposal exists for a further site survey cruise to the sites. 3.5 kHz profiles are believed to exist across the above sites and should be submitted to the Databank.

Sites MAF-8A, 9A and 10A lack only 3.5 kHz profiles and therefore deserve the Site Survey classification 2A (but see below regarding velocity information). The drilling target at Site 9A on the crest of Celestial Seamount is poorly imaged and the proponents are encouraged to improve this. Sites MAF-2B, 3B and 4B lack a multichannel seismic profile across each site as well as 3.5 kHz information and therefore, in view of the proposed survey cruise, deserve the Site Survey classification 3B.

Velocity information is particularly important at all six sites because it is required to convert the TWT of drilling targets to depth sub-bottom. The copies of figures 1 and 2 attached to the description of Site MAF-2B are illegible but appear to include relevant regional published velocity information (from Leg 60 related publications?) with which depths to drilling targets can be estimated. The Panel would like to see this velocity information, in so far as it is relevant to the structure of the serpentinite flows at the sites, presented in a table with clear interval velocities and corresponding sub-seafloor depth ranges, together with the precise sources of published data.
Regional seismic velocity information is believed to exist but is currently unclear and this is a deficiency of the proposal at present, given the unknown and probably unpredictable velocity of serpentinized peridotite flows.

SSP Consensus: The unclear seismic velocity of the sub-seafloor down to drilling targets is a major deficiency at all sites but can possibly be rectified by the re-submission of existing regional data. The proponents should submit 3.5 kHz profiles, believed to exist for all sites. Three sites need to have seismic reflection profiles across them before they can be considered further. The proposed survey cruise should plan to acquire cross lines at all six proposed sites.

Site Survey Readiness Classification: sites 8A, 9A and 10A (graded 2A), sites 2B, 3B and 4B (graded 3B).

5.9 521 – Full4: Himalayan Uplift / Indian Monsoon / Indus Fan

Proposal Title: Himalayan Uplift and the History of the Indian Monsoon Recorded in the Indus Fan
Proposal #: 521-Full4
Target Type: A and secondary B
SSP Watchdog: Michael E. Enachescu
SSP Proponent(s): Heinrich Meyer, BGR; indirect

SSP Review: This proposal consists of one deep hole located in the deep water of the Indus fan (3000m) asking for 2700m sediment penetration. This well site IF-1 and its alternates (sites 1A and 1B) will core the middle Indus fan to investigate the tectonic and erosional history of western Himalayas and its possible links to the Indian monsoon. Drilling these sites will clearly challenge current JOIDES capabilities.

The panel acknowledges the proponents for responding to our suggestions and demands expressed at the July 1999 meeting. We were told that original copies of main lines with consistent scale are with the DB. Logs and geochemical info from the Wintershall Indus Marine A-1 well necessary to assess gas hazard are with the proponent and can be viewed by a Safety Panel rep after signing a confidentiality agreement. All geophysics maps were accordingly modified to account for exploration well status. Recently, depth converted seismic stratigraphic profiles, interpreted from site location lines were sent to the Data Bank. Correct site locations and properly labeled geologic profiles were received. All the required Site Survey

data for a target A type are now in the Data Bank. The lead proponent and co-authors have to be congratulated for their efforts in documenting the IF sites.

However, there are new considerations expressed by the SCICOM watchdog Dr. Mike Coffin, which we cannot but agree with. The proposed borehole will be a very costly well at the drilling limitation of *Joides Resolution*. The seismic stratigraphic study attached to the proposal uses good quality MCS for location selection. Significant progress in dating and description of fan packages were made. Color profiles describing geometry of fan successions are in the DB, A report on this study should be in the DP by this summer. Nevertheless, the seismic stratigraphic study lacks true 3-D or dense 2-D coverage, necessary for detailed correlation of fan architecture. The present depth conversion of seismic horizons is based on MCS velocities from short streamer surveys (e.g. Sonne 1200m; Pak 2750m), that may introduce significant errors in estimation of depth to markers and thickness of formations.

In light of these reservations we will upgrade the proposal's standing but share the SSEP and SCICOM reservations about the adequacy of the existing data to (a) locate the optimum drillsite and (b) fully define the depositional history and environment there.

SSP Consensus: The SSP acknowledges that all required data, display corrections and colored depth profiles requested during previous meetings are in the DB. Required survey data for this type of site is in DB and has been analyzed by the proponents and properly inspected by the panel. A comprehensive seismic stratigraphic report will arrive before the July 2000 SSP meeting. No hazards are identified on seismic lines, but presence of gas should be closely monitored by an on-board experienced petroleum geochemist.

Site Survey Readiness Classification: 1B

5.10 525 - Full: MAR Mantle Peridotites

Proposal Title: Proposal for Drilling Mantle Peridotite on the Mid-Atlantic Ridge from 14° - 16° N
Proposal #: 525
Target Type: F
SSP Watchdog: Driscoll
SSP Proponent(s):
SSP Review: This proposal is for drilling of mantle peridotites along the Mid-Atlantic Ridge from 14° to 16°N, where igneous crust is locally absent and the structure and composition of the mantle can be determined at sites over 100 km along strike. There are 7 primary and 4 alternate sites, all of which are classified as Target Type F: hard-rock drilling. This target type requires the following data types for drilling: swath bathymetry, photography or video over site, rock samples, and navigation. A substantial amount of data has been deposited into the data bank.

Regional swath bathymetry was submitted to the data bank, but it is insufficient for drilling. SSP requests enlarged swath bathymetry maps for each site with the site marked. Dive videos exist for all primary sites and 3 of the 4 alternate sites; however, only the Shinkai videos have been submitted to the data bank at this time and the SSP requests that the Nautile dive tapes be deposited in the data bank. Descriptions of rock samples for all sites are in the data bank. SSP does request the bathymetric maps with compiled sample locations for all known dredging and submersible cruises that Jack Casey was asked to submit to the data bank. Plots of all dives exist in the data bank; it is recommended that digital navigation of these dives also be supplied. The site survey readiness status of these sites is ranked 2A.

SSP Consensus: No new data have been submitted to the data base and thus the SSP consensus remains the same. The following data is believed to exist, and is requested for submission to the data bank: enlarged swath bathymetry maps for each site with the site marked, Nautile dive videos, bathymetric map with compiled sample locations, and digital navigation of Shinkai and Nautile dives.

Site Survey Readiness Classification: 2A

5.11 534 - Full: Extreme Warmth/Shatsky Rise

Proposal Title: Paleogene/Cretaceous Shatsky Rise
Proposal #: 534
SSP Watchdog: Lyle
SSP Proponents: None
Target type(s): all Sites D

No new data has arrived at the data bank since July. Readiness status remains the same.

SSP Consensus: No new data have arrived at the data bank.

Site survey readiness status: 1B

5.12 535 – Full2: Lower Crust / Shallow Mantle / Slow-spreading Ridge

Proposal Title: 735 Deep: The Nature of the Lower Crust and Shallow Mantle at a Slow Spreading Ridge
Proposal #:535 – Full2
Target Type: E (Open ocean crust with sediments < 400 m)
SSP Watchdog: H.Meyer
SSP Proponent(s): None
SSP Review:
This proposal is to drill a hole immediately adjacent to site 735B up to 3000 m through the gabbroic massif exposed on the Atlantis Bank in the southern rift mountains of the slow spreading Southwest Indian Ridge. It is intended to obtain a complete gabbro section, determine the crust-mantle boundary and get a section of the uppermost mantle beneath the crust at a slow spreading-ridge.

Site 735B was first established during Leg 118 in a water depth of 731 m and cored to a depth of 500 mbsf. On leg 176 this site was extended to 1508 m.

All site survey data, which were necessary for drilling Leg 118 and Leg 176 were in the data bank. The proposed hole is only a few meters adjacent to the drilled 735B, so no further data are required.
New results from surveys with 'remotely operated vehicles' in 1998 were added to the data bank.

We would like to point out, that SSP cannot verify the MOHO and mantle objectives of this proposal from the data in the data bank.

SSP Consensus: All required data for proposal 535 are present in the data bank and the proposal is ready for drilling.

Site Survey Readiness Classification: 1A

5.13 549 - Full: Monsoonal Variability, etc, Northern Arabian Sea

Proposal Title: Moonsoonal Variability and Oxygen Minimum Zone Intensity in the Northern Arabian Sea
Proposal #: 549 Target Type: A

Watchdog: Yao Bochu

SSP Review: The proposal suggests seven ODP well sites located on the basis of MCS profiles, high resolution seismic profiles and SCS profiles with GPS navigation. Gravity, magnetic data and sediment cores are available for nearby Leg 133 sites. In January 1999, the proponents submitted crossing seismic profiles(across the sites of the MR-1,MR-2 and MR-3) to the ODP Data Bank, but we didn't find the profiles in ODP Data Bank during the July, 1999 SSP meeting held at Lamont. We believe that the data should exist in the Data Bank and could be available in the time for consideration for FY 2002 drilling .

SSP Consensus: The site survey work in the proposal is completed, but the crossing profiles were not found in the Data Bank, though it is believed they should exist there.

Site Survey Readiness Classification: Quantitative classification is 1B.

5.14 553 - Full: Gas Hydrate on the Cascadia Margin

Proposal Title: Gas Hydrate on the Cascadia Margin
Proposal #:553
Target Type: C, D
SSP Watchdog: Steve Holbrook (Feb 2000)
SSP Proponent(s): N/A
SSP Review:

The proponents aim to study fluid flow and dynamics of the gas hydrate system on the Cascadia margin. Five sites are proposed: CAS-1A, -2A, -3A, -4A, and -5A.

The addendum (553-Add) referred to in the SSEPs review letter (1 Dec 1999) was not included in the watchdog book; therefore, the SSP may be missing some information on the revised status of this proposal.

No new data have been submitted to the SSP Data Bank since the last SSP meeting. Comments on the previous SSP Report Form therefore still apply (but will not be repeated here).

Reference is made in the proponents' Letter of Response (dated April 1999) to new 3-D MCS data expected to be collected in summer 1999 -- we understand that that survey did indeed take place? If so, data from that survey should be submitted to the Data Bank.

Statements on p. 11 of the proposal suggest that the proponents may believe that site survey data from Leg 146 in the data bank satisfy the site survey requirements for this proposal. That is not the case. A new site survey data package should be submitted for this proposal to proceed to 1A readiness status. Although Site CAS-01 is near ODP Site 889, the other sites are new and not near existing ODP sites, so the Leg 146 site survey data package is not entirely applicable to this new proposal.

SSP Consensus:

Because the summer 1999 site survey cruise did occur, the site survey readiness has been raised from 2B to 2A (substantial items of required data are not in the data bank, but are believed to exist and are likely to be available in time for consideration for FY 2002 drilling). However, new data should be submitted to the data bank for this proposal to achieve 1A status.

In particular, the Leg 146 site survey data does not fulfill all site-survey requirements for this new proposal; a new site survey data package should be submitted.

Site Survey Readiness Classification: 2A

6. POTENTIAL FUTURE DRILLING – SSEPs PICKS

6.1 512-Full2 Core Complex

Proposal Title: Quantifying the Processes of Oceanic Core Complex Formation
Proposal #:512
Target Type: F plus
SSP Watchdog: Marty Kleinrock
SSP Proponent(s): NA
SSP Review:
In order to study the formation of oceanic core complex massifs, the proponents propose to conduct a series of holes to bit destruction (expected to be approx. 100m deep, one of which might be deepened) in the gabbroic and ultramafic rocks exposed in the footwall of a detachment fault at the Western RTI of the MAR-Atlantis FZ. In addition, a single hole to bit destruction is proposed through a hangingwall block and the detachment below. There are several issues that the proponents must address.

1. At present, there are no data present in the ODP Data Bank, though much data are believed to exist. The proponents are requested to compile and provide to the Data Bank all existing data required for such bare rock drilling, and additional data as specified in the Site Survey Detail Form accompanying this report (February 25, 2000).
2. There are required data expected to be collected in a seafloor mapping and sampling cruise scheduled for November 2000 using DSL-120, Argo-II, and Alvin. Once these data are collected, the proponents should forward them to the ODP Data bank.
3. The proponents need to specify their tentative sites and complete Site Survey Detail forms for a modified Target-type F (bare rock drilling) for each proposed site (as described in the accompanying form). The ranking of 2B is tentative, depending on final specification of sites and objectives.
4. It seems advantageous to drill through the upper block and detachment and into the lower block. If this is to become a specific high priority objective, the depth to the detachment should be known prior to drilling. Although collection of clean multichannel seismic data may be difficult, given the rough topography, this may be the best chance to determine this depth. Although the proponents do not refer to any such existing, proposed, or scheduled data, we note that Tucholke and Collins have been funded to collect seismic data from a series of core complexes along the MAR that we believe includes the massif in question. The proponents are encouraged to coordinate with Tucholke/Collins to see if such a data set can be collected for proposed upper block drill sites.
5. Items 1, 3 and 4 should be completely resolved prior to July 1, in time for the next SSP meeting

SSP Consensus:
Required data are not in the data bank, not believed to exist, but could be available in time for consideration for FY2002 drilling if a scheduled site survey proceeds as planned. Drilling the upper block site would benefit from multichannel seismic data.

Site Survey Readiness Classification: 2B – tentative; depends on specific sites that are ultimately selected.

6.2 514-Full4 Maldive Archipelago

Proposal Title: Timing and amplitude of Oligocene/Miocene sea level fluctuations in the Inner Sea of the Maldive Archipelago: An intra-oceanic carbonate system.
Proposal #:514 Full-3
Target Type: A/D*
SSP Watchdog: Flavio Anselmetti
SSP Proponent(s): NA
SSP Review:
The proponents plan to drill seven sites along a 21 km long transect in the Inner Sea of the Maldives, which will investigate the amplitudes and timing of Oligocene-to-Miocene sea-level fluctuations. All sites are well embedded in a spectacular 6’000 km long, and thoroughly interpreted MCS grid. The panel acknowledges receipt of some of the seismic sections. Most of the required data, however, was not yet

submitted. The panel encourages the proponents to submit in particular all multichannel seismic sections and 3.5 kHz data, on which sites are positioned, or which are significant to the drilling proposal, as well as digital navigation files, velocity information, trackmaps and other relevant information. Positions (shotpoints) and penetration depths of proposed sites should be indicated on all seismic sections. The panel also would like to see a clear drilling strategy, stating which sites are primary, and which ones are alternate. We also encourage the proponents to select extra alternate sites, in order to have high flexibility while drilling. All these items should be submitted before the July 1st deadline, in order that these items can be evaluated at the SSP July'00 meeting.
Since the dense seismic grid gives already a very good quasi-3D information, the missing crossing lines for some of the sites can be acquired when approaching the drillsites with the drilling vessel. The panel suggests that PPSP looks at this proposal, in order to evaluate the potential for encountering hydrocarbons.

SSP Consensus:
The site survey readiness status is 2A. (Substantial items of required data are not in the Data Bank but are believed to exist and are likely to be available in time for consideration for FY 2002 Drilling schedule). The proponents are encouraged to submit before the July 1st deadline all relevant seismic lines, digital navigation files, trackmaps, velocity information as well as a clear drilling strategy stating primary and alternate sites. The panel recommends PPSP to evaluate this proposal.

Site Survey Readiness Classification: 2A

6.3 519-Full2 Tahiti Sea Level

Proposal Title: The Last Deglacial Sea-Level Rise in the South Pacific: Offshore Drilling in Tahiti (French Polynesia) and on the Australian Great Barrier Reef
Proposal #:519
Target Type: A
SSP Watchdog: Neal Driscoll
SSP Proponent(s): NA
SSP Review:
The proposed drilling will use the Portable Remotely Operated Drill (PROD) in conjunction with submersible (JAGO) observation and mapping, downhole measurements and high resolution seismic profiles in Tahiti and the Great Barrier Reef to reconstruct the deglaciation curve for the period of 20,000-10,000 years BP. The water depths for the proposed sites range from 50-300 m and are not accessible to the JOIDES Resolution. The proponents state that the required site survey data will be collected (boomer, multi-electrode sparker, and 10 cubic inch airguns). At present, no data have been submitted to the data bank. Given the shallow water targets, the proponents need to adhere to the ODP site survey requirements for shallow water drilling. Furthermore, the proponents propose to collect multiple cores at each site with each core penetrating 50-100 meters with 10 meters of penetration into the underling. Finally, the success of this proposal depends heavily on the success of PROD.

SSP Consensus: Required seismic data are still not in the data bank and are not believed to exist. A site survey proposal has been submitted to IFREMER for a cruise in 2001.

Site Survey Readiness Classification: 4

6.4 520-Full Kyushu-Palau Ridge

Proposal Title: Continental crust formation in the Western Pacific: Drilling at the Kyushu-Palau Ridge
Proposal #: 520-Full3
Target Type: G
SSP Watchdog: Heinrich Meyer

SSP Proponent(s): none
SSP Review:
The aim of this proposal is to drill tonalic rocks on the Kyushu-Palau Ridge, which is a remnant of a juvenile oceanic island-arc of the Western pacific. The objective is: Understanding the process of early development of continental crust.

Data for this site have been acquired (at least one MSC line, refraction-, swath bathymetry-, gravity- and magnetic data , etc.), but no data is submitted to data bank. After SSP meeting 1999 these data were already required without success. So the possible classification has to increase from 2A to 7.
The data used in the proposal have a very bad quality. It is impossible for SSP to evaluate the adequacy.

SSP Consensus:
All relevant data for this target type G, especially clear MCS- and 3.5 kHz data have to be submitted to the data bank before July 1, 2000 for examination at the next SSP meeting.

Site Survey Readiness Classification: 7

6.5 522-Full2 Fast Spreading

Proposal Title: An In Situ Section of oceanic crust spread at superfast rate
Proposal #:522
Target Type: E
SSP Watchdog: Sylvie Leroy
SSP Proponent(s): NA
SSP Review:
The proponents propose to drill a complete upper crustal section including volcanic rocks, sheeted dikes and into gabbros in 15 Ma crust generated at a superfast spreading ridge. Three sites have been proposed in water depths ranging from 3500 and 4000 m. At present, the MCS and preliminary velocity data of one site are in the DB. Amplitude modeling of the OBH should be carried out and put down the DB. The data are of very high quality. SSP note that the proponents have yet to mark the position of the sites in all documents. The location of the sediment cores is not reported on the cruise trackmap, and this should also be done. SSP recommends the proponents propose alternate sites along the same seismic grid.
We are looking forward to seeing the remaining processed MCS profiles and 3.5 kHz for the other sites.

SSP Consensus:
Substantial items of required data are not in the DB but are believed to exist are likely to be available in time for consideration for FY2002 drilling schedule.

Site Survey Readiness Classification: 2A

6.6 533-Full2 Arctic Ocean

533: Paleoceanographic and tectonic evolution of the Central Arctic Ocean
SSP Watchdog: Lyle
SSP Proponents: None
Target type(s): A and G

This proposal was first examined at the February 2000 SSP meeting. We wish to thank the proponents for promptly providing the primary seismic reflection lines for this proposal. We look forward to seeing swathmap bathymetry and chirp high resolution subbottom profiling data from the SCICEX 1999 surveys. The swathmap bathymetry is needed at all sites but is especially important at Sites LORI-01, LORI-03, and LORI-04, where there is significant local topographic relief. The chirp sonar data is needed at all sites to best understand the stratigraphy.

Other critical information should be submitted to the data bank. We need a map showing the positions of the seismic shotpoints large enough to actually work with. The seismic lines should be annotated with the locations of the drillsites and the depth of proposed drilling. It is also important to submit velocity data for basement objectives. Most importantly, all sites should have seismic reflection cross lines. This requirement is especially important for sites with "basement" objectives (actually Paleocene continental margin)

Concerns about specific sites: LORI-2A. The proposed location of LORI-2A is on the edge of a basement structure, which might prove to be a safety hazard. In addition, there is a possibility that the middle stratigraphic section (the target section) might be involved in a slump. The position of this site should be examined closely and alternates for this drilling objective should be proposed.

SSP Consensus: Significant data in support of this drilling proposal have been deposited in the data bank. A significant amount of critical data is also known to exist and should be deposited in the near future. However, seismic reflection cross lines for the proposed drillsites have not yet been collected. We encourage the proponents to explore means to collect these important data.

Site survey readiness status: 5—impossible for FY2002: required data are not in the Data Bank and not believed to exist. A site survey needs to be conducted but is not proposed at this time.

6.7 537-Full3 Proto-Seismogenic Zone

Proposal Title: Drilling the Proto-Seismogenic Zone with Joides Resolution
Proposal #: 537-Full3 Target Type: C
SSP Watchdog: S. Kuramoto
SSP Proponent(s): E. Silver

SSP Review:
This proposal was reviewed by SSP in February 25, 2000 at Zurich. At that moment, SSP has not received any data from the proponents. However, the data are thought to exist, including new, as yet unprocessed data which were collected by BGR in 1999. Some preliminary data are showed by our SSP member Dr. H. Meyer. We recommend that the proponents submit these data to the DB as soon as possible.

SSP Consensus:
Ask proponents to send data to the DB as soon as possible.

Site Survey Readiness Classification: 2A

6.8 539-Full2 Blake Ridge

Proposal Title: The Dynamics of Methane Cycling in a Large Gas Hydrate Deposit on the Blake Ridge
Proposal #: 539-Full2 Target Type: B
SSP Watchdog: S. Kuramoto
SSP Proponent(s): S. Holbrook

SSP Review:
This proposal was first reviewed by SSP in February 25, 2000 at Zurich. At that moment, the Data Bank has not received any data from the proponents. However, some data, published by USGS might be submitted, and a site survey is scheduled in September and October, 2000. R/V Ewing will survey the proposed sites by 2D seismic and 3D seismic survey in the proposed drilling area on the Blake Ridge. We recommend that he proponents send these data to the DB as soon as possible.

SSP Consensus:
Ask to proponents to send data to the DB as soon as possible.

Site Survey Readiness Classification: 2B

6.9 544-Full2 Costa Rica Subduction Zone

Proposal Title: Fluid Flow, Seismic Cycling, and Pressure-Temperature Characteristics of the Costa Rica Subduction Zone
Proposal #:544-Full2
Target Type: C, D
SSP Watchdog: Steve Holbrook (Feb 2000)
SSP Proponent(s): Eli Silver
SSP Review:

The CDP map in the data bank is apparently mislabeled: transferring the inferred CDP position of Site 1039R from the CDP map yields an incorrect position on the seismic section (seaward; over the gabbro sill).

Sites 1039-S and 1039-T have no seismic data; the SSP recommends that Site 1039-S be moved slightly eastward to lie on the next available seismic line (CR30?); the proponents should also consider moving Site 1039-T about 1 n.m. northwest to lie on seismic line CR10. The seismic section (Line CR20) in the data base does not have the newly proposed sites labeled, only old site designations CR-1 and CR-2 (from Leg 170). New seismic sections with labels of the currently proposed sites should be sent to the data bank.

Although not all of the previously submitted Leg 170 site survey data was available to the watchdog at the Zurich SSP meeting, Sites 1040R and 1043R lie close enough to previously drilled sites to be considered 1A in site survey readiness.

SSP Consensus:

Sites 1040R and 1043R lie close enough to previously drilled sites to be considered 1A.

Sites 1039S and 1039T should be moved onto existing seismic lines; Site 1039R should be located properly on the CDP navigation map. These sites are considered 1B in site survey readiness.

Site Survey Readiness Classification: 1B

6.10 545-Full2 Juan de Fuca Ridge

Proposal Title: The Hydrologic Architecture of the Basaltic Oceanic Crust: Crustal-scale Properties and Multiple Hydrothermal Systems on the Eastern Flank of the Juan de Fuca ridge
Proposal #: 545
Target Type: D
SSP Watchdog: CS Lee
SSP Proponent(s): NA
SSP Review:

This proposal was first examined by the SSP members at the February 2000 meeting. We noticed that the proponents will have two site surveys in August-September 2000: A German-lead program to collect MCS data around the proposed drill sites, and a joint US-Canadian-UK-French cruise to collect more heatflow and core data. However, the data may not be submitted to the Data Bank until winter 2001. The proponents wish the SSP members to use the Leg 168 data and its previous site survey data to evaluate the sites.

At this SSP meeting the Leg 168 data were not available. The Data Bank Manager will check the existing data package after the meeting and will contact the Proponents to identify which data are most relevant to the new sites before the July SSP meeting.

SSP Consensus:

The SSP members wish to know from the proponents how important the additional MCS and heat-flow are to the selection of final proposed sites. Are the existing Leg 168 survey data adequate, or are the new data

required for selecting optimum site positions for this study? Can the new data be submitted any earlier than winter 2001?

Site Survey Readiness Classification: 1B or 2A depending on the importance of the new data to selecting exact site locations.

6.11 551-Full Hess Deep

Proposal Title: Exploring the Lower Crust and Mantle at a Fast-Spreading Ridge: New Drilling at Hess Deep
Proposal #:551
Target Type: H
SSP Watchdog: Marty Kleinrock
SSP Proponent(s): NA
SSP Review:
The proponents propose to conduct a series of up to3 holes of at least 300m deep in the gabbroic and ultramafic rocks created at the East Pacific Rise and presently exposed in the Hess Deep in order to study the nature of the generation and evolution of the lower oceanic crust. This general area of Hess Deep was the subject of ODP leg 147, where ODP sites 894 and 895 were drilled. Hence, there is a great deal of relevant data existing at the ODP Data Bank. As of now, however, a few items need attention.

1. A portion of the data originally filed under the Leg 147 have been tentatively forwarded to the Proposal 551 file at the ODP data Bank, but at present none of the proposed sites (sites HD-01A, 02A, and 03A) nor the proposed alternate site (site HD-04A) are identified on any of the maps or data. Hence, it is impossible to efficiently evaluate the details of site survey information for any of these sites at this Winter SSP meeting. The proponents are requested to initiate a detailed discussion with the ODP Data Bank personnel to guide them to forward the appropriate data from the Leg 147 file to the Proposal 551 file and to identify the new proposed sites onto those data. Alternatively, the proponents may find it advantageous to provide the Data Bank with a newly compiled set of existing data with proposed sites and other relevant information included.
2. There are required data that still need to be collected, specifically video and detailed sonar/bathymetry. It is believed by SSP that this work will be proposed in summer 2000. This is encouraged.
3. The proponents need to complete Site Survey Detail forms for Target-type H (offset drilling) for each site.
4. There are believed to exist GEOMAR seismic data north of Hess Deep that may provide an important constraint on the initial crustal thickness prior to rifting. The proponents are encouraged to investigate these data.
5. The proponents are encouraged to review the existing and any future high-resolution data to assure that the drilling is into true outcrop and not slumps.
6. Items 1 - 3 should be resolved prior to July 1, in time for the next SSP meeting

SSP Consensus:
Required data are not in the data bank, not believed to exist, but could be available in time for consideration for FY2003 drilling if a site survey is proposed and proceeds as proponents plan.

Site Survey Readiness Classification: 5 (though will be 3B if site survey proposal is resubmitted in summer 2000 as expected)

6.12 555-Full2 Crete

Proposal Title: Backstop Hydrology and Deformation Mechanisms Related to Incipient Continental Collision an Exhumation Processes off Crete, Eastern Mediterranean Sea

Proposal #: 555Full2

Target Type: C
SSP Watchdog: Heinrich Meyer
SSP Proponent(s): none
SSP Review:
This is a proposal to drill three sites south of Crete (E.Mediterranean) from the distal part of the Mediterranean Ridge accretionary prism across its backstop. The main objectives are:
Mass and fluid transfer at an accreting convergent margin,
spatial variability of fluids from mineral dehydration and diagenetic alteration at depth,
the control of seismicity by in situ physical properties
and deep biological activity near the updip limit of the seismogenic zone to be contrasted with study of living bacteria within shallowly buried sediments in the same area.
Long term investigations using CORK shall help to study variations through time.

A lot of data mentioned in the proposal and nearly all requirements for this target type should be available. These data are believed to exist and some of them have been seen, but up to now nothing is in the data bank. In respect to an in time submission we classify the readiness to 2A, although it might be 7.

Some recommendations for the data package resulted from the figures in the proposal are summarized in the following consensus.

SSP Consensus:
All relevant data for this target type C should be submitted to the data bank in time to the SSP July meeting. The site locations have to be fixed and marked on all lines, profiles and the track charts. Also the horizontal scale should be clear. When crossing lines are not available corresponding parallel lines (with projected site locations) are necessary. The document should contain the field and the processing parameter as far as possible**.**

Site Survey Readiness Classification: 2A

6.13 559-Full Walvis Extreme Climates

Proposal Title: Early Cenozoic Extreme Climates: The Walvis Ridge Transect
Proposal #:559
Target Type: A
SSP Watchdog: Neal Driscoll
SSP Proponent(s): NA
SSP Review:
The proponents propose to conduct a depth transect across the Walvis Ridge to determine the paleoceanographic variations associated with several prominent episodes of early Cenozoic climate change (e.g., the Latest Paleocene Thermal Maximum (EOGM). Six sites (double/triple coring) have been proposed to recover intact sediments in water depths ranging from 2500 and 4500 m. At present, low resolution seismic data exist in the region (R/V Thomas and Vema). To improve the quality and coverage of the seismic reflection data, the proponents are in the process of scheduling a cruise on the R/V Meteor for a regional survey of the proposed sites. The preliminary request for ship time to acquire the high resolution seismic data has already been submitted and the cruise should be completed by early 2001. Some of the proposed sites are not located along seismic lines (e.g., W-6) and it is unclear what criteria were used to locate these sites.

SSP Consensus:
Required data are not in the data bank. Proponents should submit the existing single-channel seismic reflection, 3.5 kHz, and core data from the region, which were used to locate the sites in the proposal (e.g., Leg 74 geophysical data). Required seismic data, both primary and crossing lines, are likely to be collected in 2001 on a R/V Meteor site survey cruise.

Site Survey Readiness Classification: 3A

6.14 560-Full Woodlark Basin

Proposal Title: Return to Site 1108: A study of low-angle normal faulting
Proposal No: 560 Target type: C (active margins)
SSP watchdog: Eli Silver
SSP proponents: None

SSP review: The new study of gases encountered at Site 1108 now allows drilling to occur. The new data collected on the Ewing is excellent and provides a much better basis for both selecting the site and understanding the broader significance of the drilling.

SSP consensus: Site 1108 is now ready for drilling.

Site Survey Readiness Classification: 1A

6.15 564-Full New Jersey Shelf (Enachescu)

Proposal Title: Global Sea Level and the Architecture of Passive Margin Sediments: Shallow-Water Drilling at the New Jersey Continental Shelf
Proposal #: 564-Full
Target Type: A and secondary B
SSP Watchdog: Michael E. Enachescu
SSP Proponent(s): None

SSP Review: This proposal consists of three shallow water (33 to 36 m) holes located on the New Jersey/Mid-Atlantic Sea-Level Transect (MAT) and demanding each for 762m (1000ft) sediment penetration. All sites are located on the New Jersey inner shelf and are beyond Joides Resolution safe operation capabilities. If funds are secured from different sources including ODP, the holes will be drilled using an oil industry jack up platform. The site survey validation process will then follow the industry standards.

Numerous multi-channel and high-resolution data sets related to MAT were inspected prior to leg 150 and 174. The various sets exist in the DB but must be repackaged to address the specifics of the new proposal. Swath bathymetry and sonar data is available, but not yet in the DB. So we ask the proponents to complete and organize the data and re-write specifics site survey description forms after a final selection of the drillsites MAT-1 to Mat-3. *Final drill sites will be selected after analysis and review of CH0698 hazard grid.*

We suggest that the detail seismic stratigraphic study and associated maps of the main interpreted sequences that were prepared for the SSEP review must be included with the proposal. They are absolute necessary too support the scientific objective of the MAT transect and allow for regional correlation of markers.

All this remaining repackaging and documenting of the new selected sites should be received at the DB prior to the deadline of July 2000 SSP meeting.

SSP Consensus: The SP acknowledges that most of the required data for this type of site is in DB, but must be properly organized. Final sites, once selected and displayed on data, should be analyzed and discussed by the panel. Some data still has to be processed and analyzed. All required missing data, final site location and attached stratigraphic study should arrive at DB prior to July 2000 meeting. The authors

should discuss all data and a detail site survey hazards report should be done be a marine drilling contractor. This site survey report should be tabled with the SSP.

Site Survey Readiness Classification: 2A

6.16 566-Full2 Nankai Hydrates

Proposal Title: Gas Hydrate Drilling in the Active Margin. Occurrence, Amount, and Origin of Gas Hydrate of Nankai Trough
Proposal #:566-Full2
Target Type: C
SSP Watchdog: Steve Holbrook (Feb 2000)
SSP Proponent(s): Shin Kuramoto
SSP Review:

The proponents aim to study gas hydrates, cold seeps, and associated physical, geochemical, and microbiological processes on the Eastern Nankai Trough margin. In particular, a double BSR will be studied. The proponents propose six holes, four of which focus on the double BSR (Sites DBSR-1, -3, -4, and -5), and two of which focus on fluid flow along the Kodaiba Thrust (KOD-1, -2). The SSEPs have encouraged the proponents to focus on the DBSR sites, perhaps as a mini-leg; for that reason, we concentrate here only on the DBSR sites and disregard the KOD sites.

There is no map showing the locations of all the proposed drill sites. The locations of DBSR-1 and DBSR-5 can be guessed at from their position on a seismic profile; however, Sites DBSR-3 and DBSR-4 are not shown on either a map or a seismic section.

SSP Consensus:

KOD sites were not considered at this meeting, as they will be dropped from mini-leg plan. No data exist in the data base. Required data should be submitted by July 2000, including (if possible) new data from the scheduled French/Japanese 3D seismic survey scheduled for spring 2000. Sites DBSR-3 and DBSR-4 are not shown in any location figure or seismic section in the proposal.

Site Survey Readiness Classification: 2B

6.17 570-Full Drilling at EPR

Proposal Title: Origin and Evolution of Fast-Spread Ocean Crust: Drilling at the East Pacific Rise 9-10N
Proposal #:570-Full
Target Type: F
SSP Watchdog: David Caress
SSP Proponent(s): NA
SSP Review:
This three-leg proposal will drill 1 near-axis and 3 on-axis bare-rock holes on the EPR between the Clipperton and Siqueros transforms. The proposed drilling will allow the proponents to address the formation of crustal layer 2A, along-axis melt transport, microbiology within the upper crust, and axial hydrothermal processes. The off-axis hole (EPR-1) is proposed to be drilled to 600 mbsf, two on-axis holes (EPR-2 and EPR-3) are to be drilled to 200-300 mbsf, and a third (EPR-4) on-axis hole to 500-600 m.

The proponents have referenced a vast amount of data collected along the targeted section of the EPR, including data submitted to the databank for previous on-axis drilling during leg 142. However, the databank does not have the resources required to sort through and organize such large datasets. Given the large amount of available data, for the practical purposes of site evaluation and drilling planning it is

imperative that the proponents prepare data packages specific to each site. These data packages will be available on board the drilling vessel, and must be designed to facilitate shipboard design-making and data interpretation.

The panel requests that the proponents select alternate site locations and prepare data packages for each of the primary and alternate sites. The data packages should contain:

- Bathymetry
- Sidescan mosaics where available
- Crossing seismic reflection profiles
- Seismic velocity models
- Seafloor photographs specific to the site
- Seafloor videos specific to the site in the form of a "highlights" video
- Rock samples in the immediate site vicinity
- Water current estimates where available
- Navigation of all other data
- Other site-specific data considered relevant to the drilling operations and/or scientific objectives.
- Relevant regional data, including bathymetry, magnetics, and gravity

All maps and profiles should be annotated with site locations. The utility of some datasets can be increased by submitting data in multiple forms. For example, bathymetry might be submitted in the following forms:

- GMT format bathymetry grid
- Shellscript to produce GMT map plus the resulting Postscript file
- Paper plot of the Postscript file

SSP Consensus:
This three-leg proposal will drill 1 near-axis and 3 on-axis bare-rock holes on the EPR between the Clipperton and Siqueros transforms. The proposed drilling will allow the proponents to address the formation of crustal layer 2A, along-axis melt transport, microbiology within the upper crust, and axial hydrothermal processes. The off-axis hole (EPR-1) is proposed to be drilled to 600 mbsf, two on-axis holes (EPR-2 and EPR-3) are to be drilled to 200-300 mbsf, and a third (EPR-4) on-axis hole to 500-600 m.

The proponents have referenced a vast amount of data collected along the targeted section of the EPR, including data submitted to the databank for previous on-axis drilling during leg 142. The panel requests that the proponents select alternate site locations and prepare data packages each of the primary and alternate sites.

Site Survey Readiness Classification: 2A

6.18 571-Full Peru Margin deep biosphere

Proposal Title: Controls on Microbial Communities in Deeply Buried Sediments
Proposal #:571
Target Type: A
SSP Watchdog: Neal Driscoll
SSP Proponent(s): NA
SSP Review:
The proponents propose to drill a series of sites along the Peru Margin and eastern equatorial Pacific to address a number of objectives concerning the controls on microbial communities in deeply buried sediments. The sites range from 426 to 5070 m water depth with penetrations ranging from 124 to 400 mbsf. The following objectives will be addressed by the proposed drilling:

13 Are different sedimentary geochemical regimes characterized by different microbial communities or only reflect different distributions of similar communities?

14 How does the flow of electron acceptors through deep sediments affect microbial communities and sediment chemistry?

15 What is the impact of previous oceanographic conditions on microbial communities now buried in deep-sea sediments (i.e., are microbial communities tape recorders of past environmental conditions)?

In order to build on previous site surveys and to remove the need for additional detailed site surveys, the proponents propose to drill in the immediate vicinity of existing DSDP (320, 321) and ODP (680, 681, 684, 685, 846, and 851). The proponents have submitted much data to the databank. However, site locations and scales need to be annotated on the seismic data for PRU-01A, PRU-02A, PRU-03A, and PRU-04A. No data was provided for proposed sites PRB-1A and PRB-2A. Proposed sites EQP-1A and EQP-2A are complete with navigation and crossing lines, but they need to be relabeled to be consistent with the sites in the proposal.

SSP Consensus:
Required data for sites PRB-1A and PRB-2A are not in the data bank. The seismic data for sites PRU-01A, PRU-02A, PRU-03A, and PRU-04A need to annotated and better linked to the navigation maps. In addition, crossing lines for the sites need to be submitted. Proposed sites EQP-1A and EQP-2A are complete with the exception of being labeled for the Equatorial Pacific (Leg 138) site survey package.

Site Survey Readiness Classification:
PRB-1A and PRB-2A **- 2A**
PRU-01A, PRU-02A, PRU-03A, and PRU-04A **–2A**
EQP-1A and EQP-2A **–1B**

6.19 577-Full Demerara Rise

Proposal Title: Demerara Rise: Equatorial Cretaceous and Palaeogene Paleoceanographic Transect, Western Atlantic
Proposal #:577
Target Type: B
SSP Watchdog: CS Lee
SSP Proponent(s): NA
SSP Review:
This is a new proposal. The proponents are using Shell 1974(?) MCS data and Esso-Elf-Shell well data (Demerara-2A-1) as the major database for this drilling proposal. The industrial seismic data around the Demerara-2A-1 (in the shallow water area) make up a grid with a line spacing of 2-5 km. Near the proposed sites the line spacing increases to 20-30 km (in the 2000-3000m water depth area). The SSP members have checked the old Shell seismic data and agree with the proponents that they will need to be re-processed.

The proponents have indicated in a letter to the Data Bank that one of them has submitted a site survey proposal to NSF and plans to collect high resolution single channel seismic lines on the crossing lines along with SeaBeam data.

They will also submit another "piggy-back" cruise proposal to collect additional crossing lines and cores.

SSP Consensus:
For these sites seismic data on crossing lines, swath bathymetry, core, and velocity data will be required. A local consultant company has recently collected some 6000 km of MCS data in the area. The SSP members urge the proponents to contact this company for more information and possible coordination of surveys.

The proponents have indicated that there are no hydrocarbon shows in the Demerara-2A-1 well (75 km away from the proposed sites). However, because of the industrial activities in the region, the proposal should be previewed by PPSP.

Site Survey Readiness Classification: 2C

7. Other Business

Response to SCIMP Recommendation 00-1-12:

1. Based on the experience of SSP, it is not prudent at this time to institute an absolute requirement that all legs submit digital seismic data to the Data Bank. For the current (and perhaps future) non-riser drilling platform, it is not uncommon for viable and important seismic data to exist only in analog format, and for such data to lead to successful drilling legs. While the SSP strongly supports moving towards the goal of 100% digital data, we consider SCIMP Recommendation 00-1-12 as currently drafted to be unnecessarily inflexible in the short term. SSP is strongly in favor of the upcoming IESX pilot study (planned for legs 194 and 196, on the basis of a trial during leg 188) the results of which may provide guidance for a manageable path for the migration towards digital data, and also some better estimates of the resources required.

2. Requiring or encouraging proponents to send digital data to the Data Bank (SCIMP recommendation 00-1-12) has significant ramifications for SSP, and even more so for the DB. Digital data submitted to the data bank would have to be downloaded, archived, and QC'd (e.g., SEGY-header checks, plotted out) to ensure that submitted data adhered to quality requirements. The Lamont Data Bank is not currently equipped (in terms of computational or human resources) to handle such a task. Because of this, it is not feasible under present circumstances to institute Recommendation 00-1-12. In order to foster necessary communicate between SSP and SCIMP on these and other site-survey issues, SSP requests that a system of representation (via a liaison) be established between SCIMP and SSP. SSP wishes to participate with SciMP evaluation of JR U/G capabilities and to have SSP liaison at their Amsterdam meeting [R. Whitmarsh has been authorized and funded by ODP UK to attend this meeting and act as SSP Liaison.]

3. SSP looks forward to working with IPSC on site-survey-related issues during the transition to IODP.

7.1 Membership and attendance

Excellent attendance this meeting. This was first meeting for Caress, Lee, Leroy,
Last meeting for Flood. July will be last meeting for Driscoll, Hine, Silver & Whitmarsh.

7.2 SSEP liaisons, 8-10 may Cambridge, UK.

Diebold ISSEP alt is Whitmarsh
Flavio Anselmetti ESSEP

7.3 Watchdog letters and reports

7.4 Meeting schedule – 26 – 28 Feb 2001 – Peking alternate is 25 – 27 Canada – Calgary, hosted by Enachescu

7.5 New criteria for deep holes – This subject has been discussed before among the SSP. The lack of proposal pressure for deep riserless holes is coming to an end, and in addition, similar requirements must be developed for OD2000 riser sites.

SSP members concur that two elements are always required to locate deep sites adequately and to plan drilling. These are: a grid of seismic reflection profiles with sufficient coverage to properly characterize the site, and high quality seismic velocity determination.

The required density of the seismic grid will vary according to the complexity of the geologic/tectonic setting. For example, to drill oceanic crust in an abyssal plain, a few good lines, crossing at the site might be sufficient [though more is better] while on a depositional fan, a grid dense enough to map out buried channel structures would be necessary to insure that complete sections were likely to be obtained. In the case of some deep riserless (and all riser) holes, true 3D seismic coverage will be required.

High quality seismic velocity determination is needed for time-to-depth conversion. This is required for planning before and during drilling. A variety of types of data may be sufficient:

A. Stacking velocities from 2D or 3D Multichannel seismic profiling, supported by semblance plots with picked points, only when streamer lengths are at least twice the target depths.
B. Ocean Bottom Seismograph profiles with closely spaced near-surface sources [ie, tuned airgun arrays.] It should be demonstrated that the data include rays turning within the target depth intervals.
C. Ocean bottom seismographs with near-bottom sources [ie, NOBEL, etc.] Same caveat as B.
D. Sonobuoys with near-surface sources, in which both reflections and refractions have been modeled in a self-consistent manner.
E. Near-bottom wide-angle reflection profiles [ie. DTAGS, with effective streamer lengths at least twice required seafloor penetration.]
F. Downhole logs from previous drilling, including AVO/VSP experiments, in the immediate vicinity.
G. Ocean Bottom Cable survey data with sufficient offset, as outlined in B., C.