

iPPSP Meeting #3 – Minutes
June 16 – 17, 2003
Sola Strand Hotel
Stavanger, Norway

iPPSP members present: Bob Bruce, Neil DeSilva, Martin Hovland, Hans Juvkam-Wold, Barry Katz (Chair), Susumu Kato, Jean Mascle, Toshifumi Matsuoka, Nobuo Morita, Craig Shipp, Dieter Strack, Manabu Tanahashi, and Joel Watkins

iPPSP members absent: Juanjo Danobeitia and Tim Francis

Guests: Jan Backman (MSP-533), Jack Baldauf (TAMU), Serge Berné (Promess), Colin Brett (BGS), George Claypool (Leg 204), Mike Coffin (UORI, University of Tokyo), Andre Droxler (iSSP), Nobu Eguchi (iSAS), John King (Lake Bosumtwi), Hajimu Kinoshita (iPC), Yngve Kristoffersen (MSP-533), Ted Moore, (iPC), Kate Moran (MSP-533), Dennis Nielson (DOSECC), Yoshifumi Nogi (iSSP), Terje Olsen (Smedvig Offshore), Dan Quoidbach (LEDO SSDB), Alister Skinner (BGS), Uko Suzuki (CDEX), Shinichi Takagawa (JAMSTEC), Masaoki Yamao (GODI)

The meeting was called to order by the chair on June 16, 2003 at 08:30.

Martin Hovland, acting as host, explained the safety procedures and meeting logistics.

Self introductions were performed by panel members and guests.

Minutes of the second meeting were approved, noting that the revisions suggested by panel members after the draft minutes were circulated had been incorporated.

The proposed agenda was reviewed.

Report on ODP Drilling Activities

Jack Baldauf reviewed drilling activities beginning with Leg 204 and discussed the remaining program.

Leg 204 (Gas Hydrates Oregon) examined nine sites at South Hydrate Ridge. This leg was considered the most complex leg in the program's history because of the number of new tools introduced, changes in operations in response to observations and other scientific operations in the drilling area, the use of LWD prior to coring, and the number of staffing

changes. On-shore storage facilities for the hydrate cores were built for their storage under pressure and with liquid nitrogen in response to the amount of material recovered. Thermogenic hydrocarbons were encountered during the leg. The relative abundance of the higher molecular weight hydrocarbons was greater below the hydrate stability zone.

Leg 205 (Costa Rica) was drilled to examine fluid flow along the decollement and the igneous alteration history of the down-going plate. A modified CORK was successfully deployed at two locations. Problems were encountered in the deployment of the CORK on two other occasions.

Leg 206 (Fast Spreading Crust) drilled Site 1256 into the upper section of the crust in the eastern Pacific. The leg was designed to sample the crustal sequence in a fast spreading center. A follow-up leg is planned for the next drilling program.

Leg 207 (Demerara Rise) was a paleoceanographic cruise designed to sample along a paleodepth transect. The leg targeted Cretaceous anoxic events, the Cretaceous/Tertiary boundary, and the Paleocene/Eocene thermal maximum. The leg recovered significant amounts of black shales, recovering material from three different Oceanic Anoxic Events (OAE's). The Cretaceous/Tertiary boundary was sampled at 3 sites. The Paleocene/Eocene thermal maximum was recovered at five sites.

Leg 208 (Walvis Ridge) drilled sixteen holes as part of a paleoceanographic program. Drilling was performed along a paleodepth transect. The stratigraphic records recovered were near complete.

Leg 209 (MAR Peridotite) is currently drilling at the 15°12' Fracture Zone. Five sites have been completed on the south-side of the fracture zone.

Leg 210 (Newfoundland Margin) is planned to assess the stratigraphic sequence of the margin, the nature of the basement, and its subsidence history. Plans are for a ~2100 meter cased hole.

At the completion of Leg 210 the ship will be demobilized. Demobilization will take place between September 21 and 30, ending the current program.

Leg 204 Detailed Review

George Claypool provided a more detailed review of the results of Leg 204 as it may impact PPSP policy. It was noted that the ODP PPSPI had approved the drilling into a frozen gas accumulation of ~9.2 BCF on top of the structure. Only the first site was cored prior to logging. The remaining sites were first drilled using LWD (logging while drilling) with follow-up coring. The holes were routinely deepened because of the

position of the tool on the drill string. No real time LWD was available to the scientific party. LWD resistivity data clearly showed massive hydrates and free gas intervals. During the leg, hydrocarbon monitoring clearly lagged the coring operation. As per the *Safety Manual* the C₁/C₂ ratio was monitored. The data revealed slightly different values for the vacutainer and headspace samples. The headspace values tended to be lower (appeared more thermogenic) as a result of the loss of methane. The vacutainer data appeared similar to the actual hydrate values. Within the region, gas was largely present either in the hydrate or dissolved in water. There was no evidence for massive amounts of free gas below the BSR (i.e., it did not appear to represent a viable seal). Low C₁/C₂ ratios were observed in the shallow portion of the sedimentary sequence. These values increased with depth as a result of dilution by significant amounts of biogenic gas (methane). There tended to be a significant reduction in the C₁/C₂ ratio below the BSR. Hole 1248B was terminated because of the rapid decrease in the C₁/C₂ suggesting a greater proportion of thermogenic hydrocarbons. It was also noted that there was poor core recovery at the BSR. The gas expansion on deck was a clear safety issue. Sufficient expansion occurred in some cores to "explode", shattering the liner. H₂S was encountered in some shallow cores. The levels of H₂S required that the core technicians wear protective breathing equipment.

Key learning LWD as performed on Leg 204 was not providing real-time monitoring of the well and was not providing information on conditions near the drill bit. This suggests that those sites drilled using LWD were largely drilled "blind". This will be an item to be discussed at the next PPSP meeting in December.

Report on iPC Activities and IODP

Ted Moore briefly reviewed the status of drilling proposals that may come before the panel. There are currently seven proposals to be ranked in September. Additional proposals may be ready to rank by the September iPC/SPC meeting. A listing was provided and is presented below.

Ready to Rank

- 482 – Wilkesland
- 557 – Storegga Slide
- 573 – Porcupine Basin Mounds
- 584 – TAG II Hydrothermal
- 589 – Gulf of Mexico Overpressure
- 543 – CORK 642E
- 572 - N. Atlantic, Late Neogene

Pass to iPC

- 545 - Juan de Fuca Hydrothermal

External Review August '03 (may go to iPC/SPC for September ranking)

- 512 - Ocean Core Complex

- 547 - Ocean Subseafloor Biosphere
- 553 - Cascade Margin Hydrates
- 595 - Indus Fan

Report on iSAS Activities

Nobu Eguchi presented a brief report on iSAS activities. This review included a summary of the current panel meeting calendar and the distribution of proposals. A map was presented showing the distribution of proposals that may come before the panel in the near-future.

Riser Program Status and Operations

Uko Suzuki presented a status report on the riser program. He began with the presentation of a promotional video entitled "Journey into the Unexplored World". The first proposed riser program is planned for the Nankai Trough. It currently appears that this program will deviate from the originally proposed timeline. The timeline appears compressed relative to the original guidelines suggested by both iPPSP and the operator. A complete science review for this initial program is being delayed pending additional seismic data. The *Chikyu* has completed its first sea trial and is currently in Nagasaki for installation of equipment modules, rigging, etc. Plans are that the CDEX safety panel will meet in association with the PPSP.

Review of Proposal 533-Arctic Lomonosov Ridge

Jan Backman presented a brief reminder of the scientific and drilling proposal for MSP-533. It was noted that the program includes five primary and three alternate sites. Four of the proposed sites are planned to penetrate below the unconformity by 50 meters. The program will address a series of tectonic and paleoceanographic objectives. The proponents reported that they believed, where appropriate, that they satisfied the issues raised at the panel's December, 2002 meeting. These issued included:

- A need to clearly demonstrate that proposed drilling locations are off-structure. Structure maps, with posted control, might be a viable alternative for the lack of cross-lines;
- Better images of the shallow section are required, as is a seafloor swath map. The deeper seismic should be migrated, with "light AGC"; and
- Drilling order should be considered. The drilling sequence may permit deeper penetration.

Yngve Kristoffersen provided a review of the activity of the proponents since the preview and the geologic and geophysical framework required for the site by site review. Post-unconformity thickness is commonly 450 meters, but may be vary. Much of the variability is thought to be a result of mass wasting, resulting from ice movement. The erosion patterns suggest that the ice was diverted indicating that it was in the form of large icebergs rather than as a massive ice sheet. Problems associated with seismic data collection were reviewed. Depth control on both source and receiver was complicated by the presence of ice. These variations resulted in the need to manually

edit the data. Maps were presented which indicated that locations 13A and 14A were not associated with structural closure at or below the unconformity.

It was noted by Alister Skinner that the capability to "kill" the hole with a wireline tool exists and will be available.

A site by site review was presented by Jan Backman.

LORI-06A was approved to a depth of 650 meters for shot point range 940 to 1350 on Line 98590. (An unusual BSR was observed. The panel's consensus was that it was not a reflecting a hydrate zone as a result of its continuity.)

LORI-12A was approved to a depth of 500 meters for shot point range 575 to 625 and to a depth of 720 meters for the shot point ranges 150 to 350, 450 to 575, and 625 to 840 on Line 98580.

LORI-5A was approved to a depth of 350 meters for shot points from 500 to 1100 and to 400 meters for shot points 1100 to 1600 on line 98565.

LORI-10A was approved to a depth of 400 meters between 980 and 1180 on line 96012.

LORI-4A was approved to a depth of 200 meters for shot point ranges 150 to 275 and 300 to 500, to a depth of 375 meters for shot point range between 500 and 650, and 475 meters for shot point range 650 to 800 on line 96015.

LORI-13A was approved to 500 meters for shot points between 1400 to 2100 and to 450 meters (drape only) for shot point range between 2100 to 2300 on line 91091.

LORI-8A was approved to a depth of 500 meters for shot points between 1800 and 3300 on line 91090.

LORI-14A was approved as requested to 400 meters at shot point 240 on line UB-0105.

The approvals are base on the assumption that the seismic line width is 200 meters with the stated navigation as the center point. Deviation beyond these defined limits would require review and approval by PPSP.

The proponents have requested that a member of PPSP participate on the cruise. Alternatively, the panel was asked to provide the name(s) of potential petroleum geochemists that may be able to participate.

(Martin Hovland was the watchdog for this proposal.)

The dataset should be consistently labeled (i.e., no data shifts exist) and available for review in its entirety (i.e. truncated data limited the panel's ability to assess site viability and lengthened discussions and review).

Courtesy Review Promess-1 Drilling

Serge Berné presented an overview of the Promess-1 program which is the drilling component of the Eurostrataform project. It was originally envisioned to be a test of the European participation as the operator for mission specific platforms. Promess-1 plans to drill within the Gulf of Lyon and within the Adriatic Sea. The idea is to examine the sedimentary systems linked to two major river systems, the Rhone and the Po. Specifically, the program will examine:

- Processes associated with the formation of sedimentary strata and the architecture of sedimentary bodies;
- Processes and timing associated of slope instability and the evolution of canyons; and
- Rapid climate change.

Rapid sedimentation in the study area makes it an ideal area to examine the climate change issue. Pockmarks were identified on sequence boundaries. These are thought to be areas of venting. There was no evidence of stacking of these pockmarks. These data suggest that venting was intermittent.

The panel required no additional review of the Adriatic Sea sites. The proposed deepest penetration in the Adriatic was only 70 meters. The seismic data from the Gulf of Lyon was briefly reviewed, where penetrations as great as 300 meters were proposed. No significant concerns were raised by the panel. They reminded the proponent that shallow gas should be avoided when attempting these deeper cores. The panel suggested that the seismic data should be reviewed/reexamined with this in mind.

The panel recommended that the data be reprocessed for reflectance amplitude to identify shallow gas.

Courtesy Review of Lake Bosumti Drilling

John King presented an overview of the proposed Lake Bosumti (Ghana) drilling program. The lake formed about 1.1 million years ago as a result of meteor impact. The lake is 8 km in diameter and does not currently fill the crater. It has a maximum water depth of about 80 meters. The maximum sedimentary thickness is ~310 meters. The sediments rest on Precambrian metasediments. The upper 10 meters of the water

column is oxygenated. The remainder of the lake is anoxic. H₂S is present in the water column. The high reflectivity of the bottom water reflector represents shallow gas in the section. The gas is also thought to be responsible for the poor imaging along the lake basin flanks. Shallow piston cores reveal the presence of significant amounts of organic carbon (up to 10%). Even though the sedimentary section is organic-rich and there is seismic evidence for shallow gas recovered cores did not display significant expansion. Nine sites are planned along the available MCS lines. Drilling is planned to take place between March and June. This is considered the lake's most stable period during which turnover is least likely to occur. After the initial presentation, which included a summary of the proposed drill sites, no specific PPSP concerns were expressed about any of the proposed locations.

The primary concern expressed by the panel was how the drilling operation could impact the stability of the water column. It was recommended that the gas content and character be determined in the water column prior to drilling to determine how close to saturation it is and that gas content be measured while drilling. If gas content in the water column shows a significant, approaching saturation levels, it is recommended that coring be stopped.

Review of DOSECC (Drilling, Observation, and Sampling of the Earth's Continental Crust) Lake Drilling Capability

Dennis Nielson presented an overview of the DOSECC's lake drilling capability. The program currently has three drilling systems capable of operating over different water depth ranges. Details were presented for the GLAD 800 system, which will be used in the Lake Bosumti program. The rig has a water depth limit of ~200 meters. It is designed for operation under calm lake conditions because it lacks heave compensation capability. Minimal crew shelters are available on-board. The drilling barge is non-motorized and requires a support vessel. A 6 5/8" riser is used to stabilize the drill string. In addition to supporting the drill string the riser may be inserted into the mud to prevent sloughing. Mud and cuttings are returned to the lake flow.

Preview of Proposal 564-New Jersey Margin

Greg Mountain presented an overview of the scientific program and history of the New Jersey margin drilling program. The program was developed to examine the sea level curve and the depositional model associated with the development of clinoforms. The clinoform pattern within the area is well developed through at least the Miocene. The proponents recognized early that there was a need to use an alternate platform to complete this program. This assessment was based on the limitations placed on prior drilling within the region. Leg 150 was restricted to slope drilling. Leg 174 included plans for shallower holes, but operator restrictions imposed after site approval limited drilling to water depths greater than 75 meters. The drilling of these two legs also identified a number of potential problems associated with the use of a dynamic

positioned ship in shallow water including hole stability. Prior drilling also suggested that sand control could be a problem. It was assumed that a jack-up rig would be the preferred drilling platform.

Prior to the final review the panel requests that the following be made available:

- 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 examine for possible surface hazard. 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; and
- A map of subsurface channel distributions with proposed site locations.

PPSP requests that the implementing organization contract for the necessary shallow gas risk assessment. It is our understanding that safety required surveys are not the responsibility of the proponents but of the implementing organization. PPSP would like this assessment completed before its December 2003 meeting so that it may hold a final review of this proposal.

Any required permitting by MMS is the responsibility of the operator. The operator and proponent should work together to insure that this process is completed in a timely and efficient manner.

The panel recommended that alternate sites be proposed and that the sites be located on the hazard survey line crossings. The panel will, however, consider approval based on a series of structure maps built from the available seismic dataset.

(Craig Shipp is the assigned watchdog.)

Review of the Data Bank and MATRIX Working Groups

Andre Droxler presented a review of the progress made by the two working groups which impact both iPPSP and iSSP. iSSP was recommending greater involvement including an annual review of the data bank, and assisting in defining the role of the data bank. There was also a suggestion that a report template should be defined. The MATRIX working group discussed an integrated, "automated" approach for the problem of data requirements for drilling program development for scientific and safety purposes. The MATRIX working group simplified merging of the data requirements and provided a

foundation for the planning of a database/data bank. The recommendations from the MATRIX working group are attached.

The discussion following the presentation indicated a need to clarify the difference between recommendations and requirements. A timeline is needed to show when the data are needed in the review process and who is responsible for the collection of a given dataset (operator vs. proponent).

Panel members are asked to review the data requirements and provide any suggested revisions prior to the July meeting of the iSSP. Jack Baldauf, Alister Skinner, and Uko Suzuki will provide input from an operator's perspective.

Review Guidelines for Drillsite Selection and Near Surface Drilling Hazard Surveys

Bob Bruce presented on overview of shallow hazard survey requirements and final site selection. It was noted that the term shallow refers to the position within the sedimentary column and is independent of water depth. The draft guideline document was discussed (attached). It was noted that the single most dangerous hazard was the encountering of free gas before any pressure control system is in-place. The draft document was considered an excellent starting point clearly noting the many potential hazards and the data required to mitigate their associated risks. The discussion which followed raised questions concerning responsibilities (operator vs. PPSP). It was agreed that this discussion will be continued at the next meeting after the three operators for the program have been established.

e-Review Process

The e-review process was discussed. It was agreed that panel members will be given two weeks to review the drilling proposal and return their votes and comments to the panel chair. As with all proposals the databank will handle the distribution of the safety package. The operator should be included in the proposal distribution. If there are concerns expressed by any of the panel members or the operator a full review will occur at the next meeting. If any panel member feels that a full review is required or that a site needs to be disapproved an explanation will be required so that the proponent can take the necessary actions to satisfy the panel member's needs, if possible.

Discussion on Coral Reef Drilling

Much of this discussion will be deferred to a later meeting (December, 2003). The key concerns are environmental, specifically how the drilling operation itself may impact the reef.

Jack Baldauf will provide a name of a contact to discuss environmental issues associated with reef drilling. The panel chair will then extend an invitation to participate in our December meeting.

Preview of Proposal 519-South Pacific Sea Level

No formal presentation was made on Proposal 519. A brief general discussion took place. (The proponent was not present.) Jack Baldauf noted that prior drilling in the Great Barrier Reef by the *JOIDES Resolution* required an understanding of the environmental zonation of the reef. Different restrictions were placed on different environmental zones. It was noted by Alister Skinner that the proposal is currently in review by the Australian authorities. It was suggested that the rules and restrictions imposed by Australia be accepted as the standard since they are likely to be stricter and considered a "best practice". The panel had requested at its last meeting the following items be prepared and/or considered prior to its final review:

- A map showing the distribution of living reefs and man-made objects relative to the proposed drill sites.
- High resolution back-scatter imagery/maps.
- An assessment as to how drilling might impact hydrologic conditions and ultimately impact existing reefs. Comments on proposed abandonment/completion procedures should be included.
- The type of drilling platform should be identified and a statement concerning the environmental impact of this selection should be included in the final package.

The final review of this program will be the first attempt an e-review.

The proponent will be asked to provide all necessary material to the data bank by September 22, 2003 so that it can be distributed to the panel by September 30. Panel members will be asked to respond by October 15 so that the proponent can be advised as to whether it will be necessary to make a formal presentation at the December meeting.

Dan Quidbach will provide paper copies of the safety package to members of the PPSP and Alister Skinner who will be acting for the potential MSP operator.

(Dieter Strack is the watchdog for the proposal.)

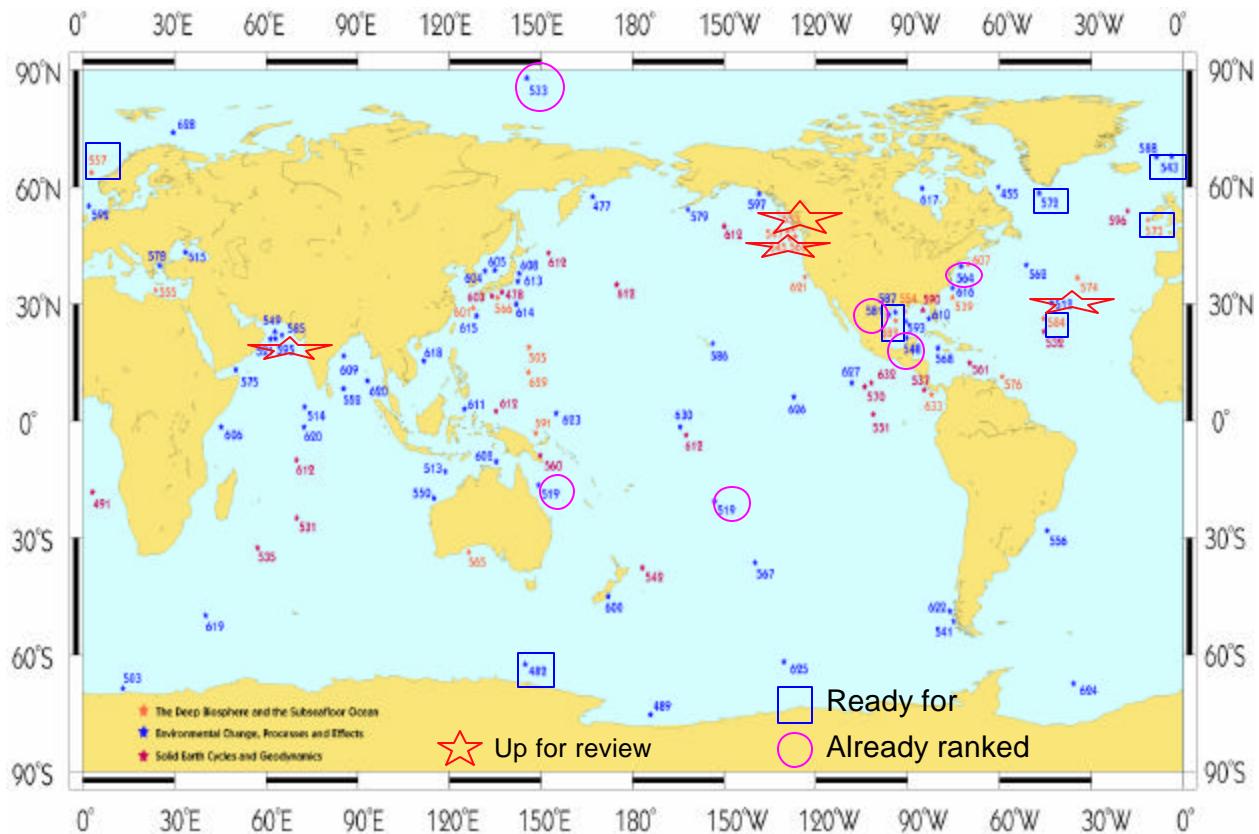
Next Meeting

The proposed next meeting date is December 15-16, 2003 (alternate dates December 18-19, 2003) in Nagasaki, Japan. Nobuo Morita will act as meeting host. Tentative items for inclusion in the meeting agenda are reviews of non-riser legs 1-3 (to be

determined by SPC), review of Proposal 564-New Jersey, preview of first riser leg, discussion on philosophy of LWD vs. coring order, definition of roles of PPSP and platform operators, and environmental consideration for reef drilling. Additional safety items may be added as suggested by members of the panel, and as needed by the SPC and SAS.

The meeting was adjourned at 4:05 (June 17, 2003).

IODP Proposed Sites



MATRIX WORKING GROUP DATA NEEDS AND REQUIREMENTS

	Information/data (common data)	Special requirements	When needed
Basic needs	Depth of penetration Tectonic/depositional setting Nearby wells	* <i>Man-made hazards</i> * <i>HC shows</i> * <i>Environmental restrictions</i>	
Surface	3.5KHz	Video/photography	“Hard” irregular rock outcrop
		Side-scan	<i>Suspect gas seep, Bottom founded</i>
		Swath bathymetry	Active margin, bare rock, tectonic window, All riser
		Surface samples	Paleo (sed), bare rock and tectonic window (rock), re-entry sites
			Surface slope >10°
Sub-surface	Lithologic projection Structural configuration (Seismic types be defined: see below)	Geotechnical properties	<i>Bottom-founded rig (MSP)</i> <i>Anchored-suspected hard bottom (MSP)</i>
		Shallow drilling hazard assessment	<i>PPSP TO REVIEW</i>
		Heat flow	<i>Suspected HC provinces, suspected high heat flow</i>
		High resolution magnetic (hazard)	<i>Bottom-founded rigs, anchored rigs (pipeline?)</i>
		Velocity profile (time-depth control)	All riser, only passive & active margin >200m non-riser, <i>Case by case</i>
		Gravity/Magnetic	All riser(influenced by basement), non-riser tectonic window

Other		*Currents *Ice *Weather window *Tidal	
		<i>Pour pressure</i> <i>Fracture gradient</i> <i>Pressure prediction</i>	<i>Riser, suspected over-pressure</i>
		<i>Maturity</i>	<i>Potential HC provinces</i> <i>>2km sediment</i>
		<i>Well program</i>	<i>Riser, over-pressure</i> <i>w/o riser</i>
		<i>Waste disposal</i>	<i>Returns to sea floor</i> <i>EEZ drilling as required</i>
		<i>Abandonment</i>	<i>Riser</i>
		<i>Environmental survey</i>	<i>EEZ drilling as required</i>

Seismic: (soft rock: sediment)
based on penetration depth

less than 100m	2D SC high resolution (including Boomer) or 3.5kHz if it images the objective or 3.5kHz/low resolution if images the objective Cross lines
101 – 1000m	2D grid MCS (passive and active margins), X-line SCS (away from margins penetration <400m), >400m with grid MCS
more than 1001m	2D grid MCS, Spacing and 3D (case by case), <i>3D (horizontal riser)</i>

Bold=black=both groups requirement

Italic=blue=iPPSP requirement

Plain=green=iSSP requirement

*=blanket requirement