

JOIDES Arctic Detailed Planning Group

Minutes from the 2nd Meeting, June 18-19 2001
Washington DC, USA

Members present

Jan Backman	Stockholm University, Sweden (Chair)
Tim Francis	Geotek Ltd., UK
Mikhail Gelfgat	Aquatic Company, Russia
Thomas Janecek	Florida State University, USA
Wilfred Jokat	Alfred Wegener Institute, Germany
Heidi Kassens	Geomar, Germany
Anders Karlqvist	Swedish Polar Research Secretariat, Sweden
Kate Moran	University of Rhode Island, USA
Kozo Takahashi	Kyushu University, Japan
Chris Wiley	Department of Fisheries and Oceans, Canada

Members absent

Margo Edwards	University of Hawai'i, USA
Martin Hovland	Statoil, Norway

Liaisons present

Gene Pollard	ODP/TAMU
David Rea	SCICOM
Trevor Williams	LDEO Borehole Group

Liaison absent

Alister Skinner	TEDCOM
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Guests

Steve Bohlen	JOI
Bruce Colbourne	National Research Council Canada, Institute for Marine Dynamics
John Farrell	JOI
Harry Hogeboom	Lloyd's Registry
Bruce Malfait	US National Science Foundation

Arctic DPG Goal and Timeline

The overall goal and timeline of the DPG is to develop a project management plan encompassing the logistical, technical, and budgetary requirements for scientific drilling on Lomonosov Ridge. The DPG will:

- devise operational strategies and identify technological options for achieving the scientific objectives of Proposal 533,
- identify the organizations that can deliver each of the required operational and technological components,
- produce accurate and reliable cost estimates and define any required partnership plans or agreements.

At its first meeting, the DPG prepared a preliminary written report for the March 2001 SCICOM meeting. The focus of this second meeting was preparation of the final written report for presentation to the August 2001 SCICOM meeting.

Meeting Agenda

A. Welcome and meeting logistics

The meeting began at 0900 hours on 18 June, American Geophysical Union Headquarters. Meeting logistics were presented by Bridget Chisholm, JOI.

The Chair summarized the major goal of the meeting: to finalize the DPG report so that it fully answers the following questions:

1. is it possible to drill the Lomonosov Ridge using existing technology?
2. what are the operational strategies?
3. what is the cost?

B. Approval of Minutes

Minutes from the first meeting were approved with no changes.

C. SCICOM/OPCOM Report (David Rea)

Dave Rea presented the OPCOM Consensus and summarized the SCICOM discussion about the Consensus. Rea reported that the SCICOM discussion was generally positive. SCICOM approved of the OPCOM consensus and reworded and approved it as a motion:

“OPCOM reaffirms that JOIDES desires Arctic drilling to be part of the program, and confirms that the initial draft of the Arctic DPG report demonstrates that the Lomonosov Ridge program is technically feasible. Thus, ODP management should continue to investigate the costs of Arctic drilling and the means to meet these costs. The current cost estimate of order \$6M probably cannot be accommodated within the ODP budget, but ODP management should investigate how much of the

program resources could be dedicated to Arctic drilling. We ask that the DPG continue its excellent progress toward a final report at the August 2001 SCICOM/OPCOM meetings, and we encourage the proponents and the community to pursue funding from non-ODP sources. We ask that JOI evaluate, with the help of ODP contractors, to what degree ODP resources might be used to support Arctic drilling, and be prepared to report at the August, 2001 SCICOM/OPCOM meetings."

D. JOI report (John Farrell)

JOI reported that since the SCICOM motion, they have been successful at incorporating the DPG's recommendation for an Arctic Project Manager into the 2002 Annual Program Plan that will be approved by EXCOM and NSF over the summer. JOI has also responded to the DPG by letting three contracts for analysis of topics that are critical to the planning and execution of Proposal 533.

Steve Bohlen commented that NSF has "some considerable discomfort" with ending the JOIDES Resolution early. He also said that if SCICOM/OPCOM "make it so", he did not know how NSF would respond. His interpretation of the reasons NSF had for not ending the JR lease early were: (1) NSF put in \$6M from the US to the JR for its refit in 1999 and these funds were justified because the ship would be run to the end of ODP and; (2) the scientific community told NSF that they wanted to use the JR up to the end of ODP.

Bruce Malfait stated that one gets into a wide variety of issues when looking to a new program. In looking at the history of JOIDES recommendations, past reviews of the program, and the investments that the agency has made, he said that stopping the JR early is an option that they would not prefer. He added that this option has not been discussed with any of the other partner countries in the ODP, but he expected that there would be partners who would be concerned about ending the JR early.

Anders Karlqvist commented that he represents an organization that is working in a parallel initiative to Sweden's ODP involvement. As such, this organization is providing support to this ODP initiative through the in-kind contribution of the icebreaker Oden. This was beneficial to Sweden because it supports Swedish scientists in leading edge international research, while at the same time adding to the support of the activities of ODP.

John Farrell also presented informal discussions that Bridget Chisholm had undertaken regarding the organization of complimentary tourism programs that could provide some level of funding for this expedition. The Yamal, a Russian nuclear icebreaker currently takes tourists to the North Pole at a cost

of approximately \$16-20k. Wilfried Jokat and Anders Karlqvist briefed the groups on discussions related to this topic that have recently occurred in their countries. Their conclusion was that the best option would be to arrange a program where tourists could be transported by helicopter to the NIB for short visits. Yamal would then remain on location for supporting the protection of the drilling platform during the expedition. Bruce Colbourne mentioned a different type of "tourism" program whereby students pay to participate on longer expeditions at lower costs (\$6K).

E. Review of the Draft DPG Report

The Chair revisited the draft report and asked for comments or recommended changes to the DPG responses of the SCICOM-mandated tasks in the report. Those tasks requiring external input from contractors were left until the contractor reports were made. Recommendations were made to change the following sections:

Communication Plan

The plan should remain flexible in order to incorporate the latest technological developments. Many ships are going to the Arctic in the next two seasons and will be working on improvements to the various communication devices. Therefore, we should revise the plan when these newly tested systems become proven.

We should also look to the new Canadian Standards Association standard S475: for multiple vessel operations where one central individual is responsible for management of the flotilla and therefore all associated communications.

Contingency Plans

No changes are required for the DPG report, but the DPG discussed contingency plans that would be developed by the project manager. The project manager who is responsible for the Arctic Armada will have to develop and implement a plan that includes an explanation of the medical emergency evacuation procedures for transfer of personnel to hospital in 24 hours.

The project manager will also develop a detailed communication plan that explains all possible emergency strategies to be followed as part of a standard HSE plan typically used for multiple vessels in the offshore oil industry.

Environmental Impact Statements

Once the program is scheduled in ODP, an EIS should be developed and incorporated into the charter party agreement under the direction of the project manager. The DPG suggests that the EIS follow the new draft IMO

guidelines for Arctic operations. Because this is a US-led program, the Environmental Impact Statement will have to be filed with NEPA. The ODP currently has an EIS on file, but does not include operations in the Arctic Ocean. The project manager may wish to submit an addendum to the existing ODP EIS.

Advantages & Disadvantages of Conducting Lomonosov Ridge drilling in ODP

Remove the last sentence and revise to include reference to scientific ocean drilling in general.

Laboratory

No changes recommended.

Cost Estimates

Details, such as what items are included in the day rates should be spelled out in this section (e.g., fuel costs). Coring and sampling costs can now be better integrated with the information from the Seacore study. Also, costs that could be covered by the ODP should be clearly identified.

Factors that could limit the ability to complete the program

A statement should be added asserting that modern technology has brought Arctic operations into the realm of normal marine operations, i.e., "take away the myth of the huge challenge of Arctic operations."

Project Management Structure

This should be revised to reflect the philosophy of a project management team, rather than specific individual types of managers. An example of one potential management team could be added to provide SCICOM with an overview of the range of talents required to complete the program.

Project Timeline

Modify the timeline to include milestones that must be met over the next year for completing the program in ODP.

F. Reports from the Subcontractors

Marcus Rampley (Seacore Ltd.)

Rampley reviewed the vessels in terms of drilling capability that were proposed: Botnica, Sea Sorceress, Oden. Oden is not considered suitable at all for use as a drilling platform, even if fitted with DP, due to lack of deck area and problematical moonpool facility; its current configuration is too small for the water depths we are considering. The Sea Sorceress and Botnica are suitable for installation of a mobile marine drilling systems. Other vessels are available that can be adapted for mobile marine drilling rigs. Seacore recommend the installation of purpose-built rigs (C-100/C-200) that could

utilize the standard ODP tools with some minor adaptation. Seacore also provided a cost estimate that included mob/demob, operations, crew, supplies, but does not include the cost of the ODP sampling tools. The choice of the vessel does not limit the drilling. Seacore recommended that duplicate drillstring and BHA's should be available. Options for using either aluminum or API 5" drill pipe are also included in their report.

Marius Lengkeek (Lengkeek Vessel Engineering)

Lengkeek evaluated the Botnica for suitability as a platform from the naval architectural perspective. This vessel can go into the Arctic, but it would not perform heavy icebreaking. The Botnica can operate in the central Arctic Ocean, and will be permitted to do so by its owners, if assisted by an icebreaker such as the Oden or a NIB. Botnica is suitable for this purpose, but has two limitations that should be addressed: she has limited fuel capacity (a little over 30 days) and the moonpool must be modified to protect it from ice damage during transit. Both of these limitations can be readily addressed. The Oden has enough fuel capacity to re-fuel the Botnica during the expedition and Lengkeek proposed a modification for the moonpool that is simple and low cost.

Anders Karlqvist (Swedish Polar Research Secretariat)

Karlqvist (reported on behalf of Ulf Hedman and Bertil Larsson). The Swedish Polar Research Secretariat completed a study on the weather and ice reconnaissance needed, with generous input from colleagues at AARI in St. Petersburg, Russia. The report provides detailed recommendations that broke down the data, personnel, equipment required for making decisions related to four decision-making points:

- 1 Assessment of general sea ice concentration in prioritized drilling target locations (1 month advance overview of sea-ice concentration over potential drilling site locations).
- 2 Selection of the first site to be drilled (offering acceptable ice conditions (2 days advance decision while transiting through the sea ice to the first site).
- 3 On site, two days ice and weather forecasts indicating acceptable conditions, for decision about whether or not to initiate drilling operations.
- 4 2 hours – emergency pull-out time (real-time monitoring) if ice conditions become difficult (e.g., rapidly approaching multi-year old sea-ice floes).

The report includes a complete plan with cost estimates.

G. Informal presentation of ice management in the Beaufort Sea (Harry Hogeboom, Lloyds Registry)

Hogeboom gave a slide show of the wide range of ice management activities that occurred during oil exploration of the Canadian Beaufort Sea in the 1980s. Much of this work was completed by developing new technology and ice management approaches. The icebreaker designs that have now become standard were tested and proven in the Beaufort Sea and ice management approaches were developed. Hogeboom was the project manager for one of the large exploration islands built in the Beaufort Sea for Dome Petroleum.

H. Informal report from Council Canada, Bruce Colbourne, Institute for Marine Dynamics

Colbourne provided his comments and summarized them by stating that the “name of the game was to keep the drill-ship on station”. To do this required a nuclear icebreaker with the assistance of at least one maneuverable icebreaker (like the Oden or the Terry Fox) that worked under the auspices of a project ice manager.

Dedicated icebreakers are best suited for this work in comparison to laboratory-type vessels, like the Polarstern or the Healy. Another consideration mentioned is that icebreaker masters are most inclined to be conservative about their icebreaking so that potential damage to the vessel is limited. In our situation, because of the goal, we want the ship’s master’s to maximize icebreaking activities in order to protect the drilling vessel. This is counter-intuitive for icebreaker masters so it will require strong leadership and good management.

I. ODP/TAMU Report (Gene Pollard)

Pollard presented a summary of the ODP equipment that could be available if this leg were scheduled. He also included costs for drilling supplies and parts. The equipment that is available includes:

- ⇒ 4000 m of drillpipe, enough for one string and a spare
- ⇒ 2 sets of BHAs
- ⇒ 4 bits (\$12,500 each)
- ⇒ 2 APCs and 1 XCB (\$30k for each tool)
- ⇒ plastic liners: 2100m (\$23,500)

J. Logging (Trevor Williams)

Williams presented two options for the Lomonosov Ridge, one using Reeves and one using the standard suite normally deployed on the JR from Schlumberger. The Reeves option provides flexibility, but has a limited suite of

tool types compared with Schlumberger. The Reeves option, however, is both time and cost effective. If the Reeves option is selected, they do not yet have the capability for deploying the severing tool in the event that the drill-string would require severing during emergencies. This service would have to be provided in some way, if Reeves were selected. The DPG included the more expensive Schlumberger option in the cost estimates but agreed that the project manager should consider Reeves as an attractive, economical option.

K. Review of platform options

Based on the reports presented at the meeting, it was clear that the DPG's draft option C, where the Oden was the primary drilling platform, should be eliminated. Seacore assessed that this vessel was too small for the drill rig required to meet the target depths. The DPG agreed to drop this option.

The DPG also discussed the suggestion for recommending a second nuclear icebreaker. The group agreed that this was not needed because the proposal site contingency plan allows for avoiding regions that would have severe ice conditions. The proposed contingency provides for flexibility over a range of 350 miles. All agreed that the recommendations from the Helsinki meeting of icebreaker captains and ice managers, where the icebreaker support for options A and B were discussed, provided programs with acceptable levels of risk.

L. Writing session

The remainder of the meeting were breakout sessions where participants sat together to revise the draft report, based on the discussions and the results of the three contracted reports and presentations.

M. Meeting was adjourned early afternoon on 19 June.