

IODP-Industry Science Program Planning Group Meeting

Draft Minutes

7-8 July, 2006
Den Haag, The Netherlands



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Executive Summary

This was the first meeting of the IODP/Industry Science Project Planning Group. This group will build on earlier work carried out by the IODP Industrial Liaison Panel (ILP). The purpose of the IIS-PPG is to identify subjects of cooperative scientific research between the IODP and selected industries, and to promote development of IODP drilling proposals to address these objectives within the context of the IODP Initial Science Plan (ISP). The motivation for the IIS-PPG is described in the “Partnering with Industry” section of the ISP (page 89).

To facilitate preparation of industry related proposals, we generated three consensus statements at the meeting:

IIS-PPG Consensus 0607-1: The IIS-PPG requests the national funding agencies to consider mechanisms for funding small business participation on drilling expeditions (through separate grants or contracts, or some other mechanism).

IIS-PPG Consensus 0607-2: IIS-PPG representatives have experienced some difficulties in retrieval of measurements and other data from the legacy and electronic IODP databases. IIS-PPG requests IODP-MI to raise these concerns with the appropriate data custodians with a view to considering possible improvements.

IIS-PPG Consensus 0607-3: IIS-PPG will prepare 2-3 page white papers describing possible **missions*** on the following themes: i) rifted margins, ii) Mesozoic paleo-oceanography, iii) source-to-sink sediment transport processes, iv) high-scientific-value single wells, and v) shallow compaction and fluid flow. White papers are to be delivered by September 1 for rifted margins in time for the Continental Break-up and Sedimentary Basin Formation Workshop and by September 30 for the rest.

Drilling legs are only one component of a science program. Our methodology starts by describing in the white papers some key, high priority **missions*** that may themselves cover a number of drilling legs to a variety of geographical locations. Based on these **missions*** proponents will prepare preliminary proposals to the IODP planning process. Precruise site surveys and analysis often require their own funding. Even when extensive 3-D seismic survey data exists reprocessing is often necessary to address the

IODP objectives. Feedback from the IODP SAS will be used in proposals to national agencies and academic-industry consortia to obtain funding for the pre-cruise work. Full drilling proposals will then be submitted. Ideally the precruise activities will have stand-alone science objectives, so they will still be worthwhile even if the drilling proposals are unsuccessful. Following a successful drilling program a second phase of funding from national agencies or academic-industry consortia will be necessary to process, interpret and report on the drilling results.

* At the meeting we used the word "missions" for these activities but we recognized that there might be some confusion with the "mission concept" being developed by SPC and SSEP. As a practical matter we will develop white papers on these projects and themes whether or not they meet the criteria for "IODP missions".

Pre-amble

This was the first meeting of the IODP-Industry Science Project Planning Group (IIS-PPG). This group will build on earlier work carried out by the IODP Industrial Liaison Panel (ILP). For example the booklet "Opportunities for Scientific and Industry Cooperation in the Integrated Ocean Drilling Program, 2003-2013" [Integrated Ocean Drilling Program, 2002] outlines a number of industry science themes. There were also IODP-Industry workshops on October 15-16, 1999 (in Houston) [Armentrout and Gradstein, 1999], on September 6-7, 2001 (in Sunbury-on-Thames) [Armentrout and Moran, 2001], and on May 19-20, 2005 (Houston) [Integrated Ocean Drilling Program, 2005].

The purpose of the IIS-PPG is to identify subjects of cooperative scientific research between the IODP and selected industries, and to promote development of IODP drilling proposals to address these objectives within the context of the IODP Initial Science Plan (ISP) [Integrated Ocean Drilling Program, 2001]. The motivation for the IIS-PPG is described in the "Partnering with Industry" section of the ISP (page 89)(Appendix 1).

Industry is a broad term that encompasses a range of non-academic organizations that could potentially be involved with the ocean drilling program. Traditionally on the DSDP and ODP "industry" referred to petroleum (oil and gas) companies. These can be further sub-divided into "majors", "independents" and "NOCs" (National Oil Companies). Within the petroleum industry other companies provide geophysical survey, equipment, geotechnical, drilling, and engineering services. Large corporations can also be divided into upper management, exploration and production, research and development and "foundations". Other industries with which IODP could interact include the geothermal, mining, and biotechnology industries. So interactions of IODP with the industry could be pursued at many different levels, with many different types of companies and in many different disciplines.

The industry representatives on the IIS-PPG at the moment represent primarily major petroleum companies. In the future, however, there could be fruitful interactions with mining and biotechnology companies and we should consider broadening the representation on the IIS-PPG.

The petroleum industry particularly has considerable experience in many aspects of IODP activities but it should be recognized that IODP is a unique international scientific organization that has evolved under different circumstances from industry. Although the petroleum industry could provide valuable advice on management and operations issues, the responsibility for accomplishing the drilling objectives of IODP resides with the Implementing Organizations.

Mandate

The mandate of the IIS-PPG as given in the Terms of Reference (Appendix 2) is: “The IIS-PPG shall:

- Most importantly, define industrial priority research of joint academic/industry interest within the IODP context using high quality industry datasets, and promote development of IODP drilling proposals to address such objectives within the context of the ISP.
- As appropriate, develop effective links between academic and industry scientists, facilitate communication and cooperative scientific and technical development activities between the IODP and industry, and foster integrated multidisciplinary research projects.
- Engage industry professionals as ambassadors in communicating and promoting IODP activities.”

Minutes of IIS-PPG Meeting 1, 7-8 July 2006

Introduction

Prior to the meeting Harry Doust prepared a Discussion Document (Appendix 3) which summarized many of the problems and possible solutions to industry involvement in IODP and laid out a road-map for the IIS-PPG over the next three years. The meeting did not address everything in this document. Instead it proceeded roughly in three phases. In the first phase planning group members presented recent industry liaison efforts. These resulted in long lists of possible drilling proposals. In order to focus our efforts we decided to address a small number of themes or missions into which individual drilling proposals could be placed. We chose to start with themes of interest to the members present but there is no reason why other themes could not be considered in a later round. In the third phase we discussed proposal strategies and timelines.

Current Industry Involvement in IODP

There was considerable industry involvement in ODP (Appendix 4) and there is already considerable industry involvement in IODP. For example there were five industry participants on IODP Leg 311 (Cascadia Margin Gas Hydrates). Also among the current active proposals there are 35 industry co-proponents on 18 proposals (Appendix 5) and there are 18 industry members in the Scientific Advisory Structure not including the IIS-PPG (Appendix 6).

IODP Leg 308, "Overpressure and fluid flow processes in the deepwater Gulf of Mexico: slope stability, seeps, and shallow-water flow" (Co-Chief Scientists Peter Flemings and Jan Behrmann, Proposal # 589) is a good example of an industry supported leg although only one industry scientist, Carlos Pirmez (Shell) sailed on the cruise. An Ancillary Project Letter (APL) associated with this cruise (Proposal # 664: Brazos-Trinity Source-to-Sink: Testing the Fill and Spill Model) was apparently unsuccessful.

Increasing the Awareness of IODP in Industry

Nobu Eguchi and Manik Talwani made presentations on the structure of IODP-MI, the proposal process and the role of the IIS-PPG (Appendices 7 and 8). Manik noted that IODP has hired a consultant to advise on high-level industry contacts, which are likely to be on an individual basis rather than through a coordinating committee.

Tim Byrne, as representative from the SPC, made a presentation on the status of the drill ships, the drilling schedule and the status of proposals under consideration (Appendix 9). The SPC and SSEP have defined "missions" as: "A mission is an intellectually integrated and coordinated drilling strategy originating from the scientific community that (a) addresses a significant aspect of an IODP Science Plan theme on a

global basis over an extended period of IODP, and (b) merits urgent promotion in order to achieve overall IODP program goals.” Later in the meeting we discussed a number of industry-related topics that could be considered for “missions”.

Figure 1 from Harry Doust’s presentation (Appendix 10) summarizes some of the current proposals that are of interest to industry.

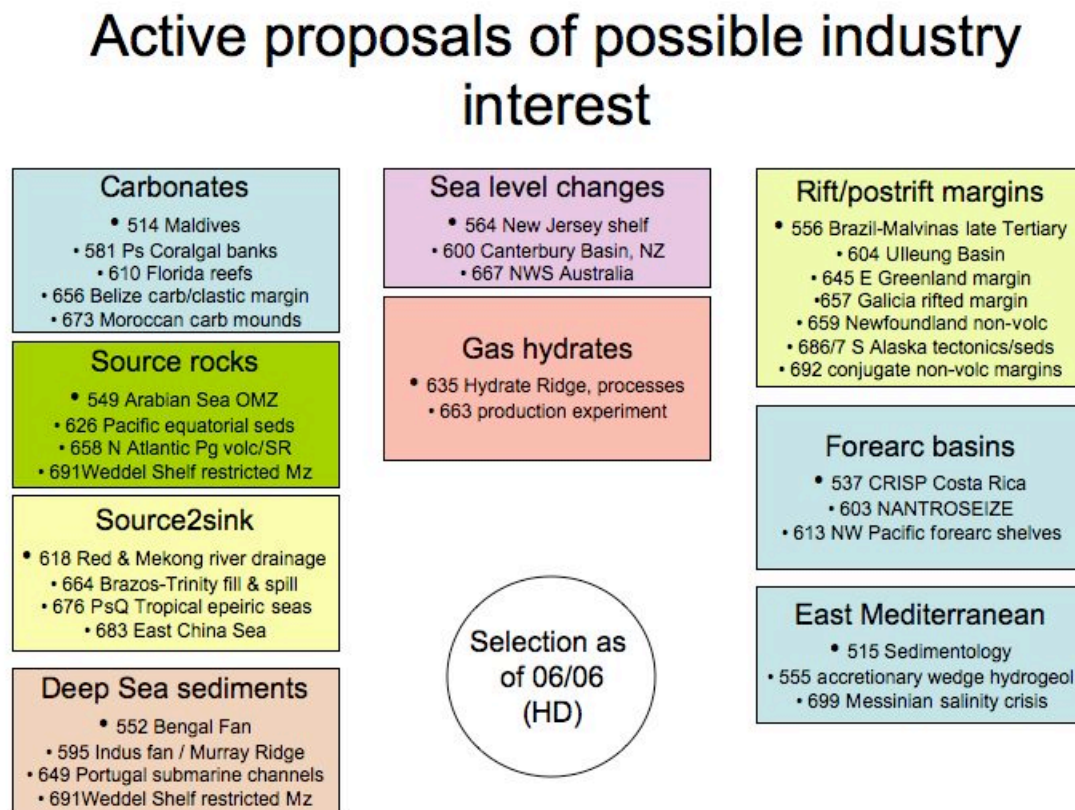


Figure 1:

Some mechanisms for encouraging industry awareness of IODP were discussed including:

- Have the IMI booth at petroleum industry professional meetings (EAGE, SEG, AAPG, GSA, Spring AGU).
- Encourage IODP scientists to host special sessions at industry professional meetings. For example, the AGU Spring meeting is co-sponsored by the SEG and this would be a good opportunity to advertise IODP science to both the academic and industry communities at the same time.
- The IIS-PPG could facilitate sponsorship of workshops to review themes of industry interest and to help generate proposals. For example, the Workshop on “Investigating Continental Breakup and Sedimentary Basin Formation” which is already being planned for September 2006 is of particular industry interest and it already has 10 or 11 industry participants.

Recent Industry Liaison Efforts

Harry Doust presented an overview of the IIS-PPG mission, a summary of previous Industry Liaison activities, and a road-map for moving forward with the IIS-PPG (Appendix 10)(Figure 1).

Didier-Hubert Drapeau summarized the conclusions of an industry liaison workshop held in Paris on 23 March 2006 (Appendix 11). Four high priority targets of interest to both Total and French academic scientists were: 1) drilling within the ocean/continent transition, 2) high pressure/high temperature drilling, 3) drilling in the Mediterranean for deep objectives, and 4) studying the relationship between climate change and the depositional turbidite systems of the Congo river.

Richard Davies presented the results of a NERC UK/European Industry/IODP workshop held in the UK on 27 June (Appendix 12). This workshop provided the list of topics for the missions given below (plus micro-seismic monitoring).

Yasuhiro Yamada noted that Japanese industry and IODP would commence discussions later in 2006. There are a number of areas where industry liaison could be fruitful in Japan including: 1) contacts with the Schlumberger Fuchinobe lab, 2) high temperature drilling at the Unzen volcano, 3) acoustic emissions and micro-seismology associated with enhanced oil recovery and hot dry rock projects, 4) seismology of active faults (for example, near Kobe) and 5) pore pressure issues related to planning the NanTroSEIZE boreholes.

Role of ECORD

Raymond Schorno (Appendix 13) noted that ECORD is a consortium of European countries and Canada which constitutes a third funding source, in addition to Japan and the US, for IODP. Unlike Japan and the US there is another level of management. Although ECORD funds workshops and travel, funding for science activities is carried out through national agencies (France, UK, etc). This results in a third layer of committee structure. It was noted that the UK and France were relatively advanced in industry/IODP cooperation, but that the remaining ECORD countries lagged behind (scope for Norway, Netherlands, etc!). ECORD can assist PPG in supporting dedicated workshops, encouraging scientists to submit priority proposals and find dedicated funds for auxiliary projects.

Workshop on “Investigating Continental Breakup and Sedimentary Basin Formation”

This workshop is being led by Mike Coffin and Dale Sawyer and will be held on September 16-19, 2006 in Pontresina, Switzerland. Given the overlap between this

workshop and our “mission” on rifted margins we felt it was very important to have some links between the IIS-PPG and the workshop. None of the IIS-PPG members could attend, so we considered having “ambassadors” from companies. For example two representatives from Total will be attending the workshop. Various options were discussed and would be pursued after the meeting.

Drilling Proposal Strategy and Timeline

Drilling legs are only one component of a science program. Our methodology starts by describing in white papers some key, high priority themes or “missions” that may themselves cover a number of drilling legs to a variety of geographical locations. Based on these missions proponents will prepare preliminary proposals to the IODP planning process.

Precruise site surveys and analysis often require their own funding. Even when extensive 3-D seismic survey data exists reprocessing is often necessary to address the IODP objectives. Feedback from the IODP SAS will be used in proposals to national agencies and academic-industry consortia to obtain funding for the pre-cruise work. Full drilling proposals will then be submitted. Ideally the precruise activities will have stand-alone science objectives, so they will still be worthwhile even if the drilling proposals are unsuccessful.

Following a successful drilling program a second phase of funding from national agencies or academic-industry consortia will be necessary to process, interpret and report on the drilling results.

Tentative time lines are shown here (with possible examples).

	09/06	04/07	10/07	<3yr	<5yr
White papers	Pre -proposals	Full proposals	to SPC/Ops	drilling	
Mission #1	1,2,3	1,2			
Mission #2	1,2	2			
Mission #3	1,2,3,4	3,4			

Proposal generation might include MSc and PhD students (possibly partly funded by industry). Post drilling, Industry would be involved in sample analysis and expedition review.

White Papers Describing Possible Missions

The following White Papers describing possible themes or missions will be prepared (*the first named panel member is requested to take the initiative to start the paper, please?*):

1. **Rifted Margins.** This includes: distal parts of passive margins / heat-flow at OCT, along-strike segmentation, passive flank uplift. Areas for potential

expeditions: South Atlantic pre-salt, Shetland-Faroes-Iceland, Labrador Sea.
Action: DR, RD, D-HD.

2. **Mesozoic Paleo-oceanography and Source Rocks.** This includes the mechanisms (oceanographic, tectonic, sedimentary), the special character of the JU/KU periods, contrasts on conjugate margins pre- and post-breakup, local anoxic situations (eg base of slope), ocean basin development (eg. S Atlantic).
Action: AP, DR, HD.
3. **Source-to-Sink and Passive Margins**, especially related to 3D facies architecture of deep water channels. Action: D-HD, DR, HD, (RS)
4. **Shallow Compaction and Fluid Flow** (building on GoM work) in reference to water depth, pressure regimes, sedimentation rates and slope stability. Areas should include different settings. Action: AP, YY, RD, D-HD.
5. **High scientific value single wells.** Examples include: Sea of Okhotsk, E.Mediterranean pre-Messinian, Balearic Basin/Golfe de Lion, Canada Basin plus other Arctic, Venezuela Basin, GoM, Crustal age of Banda Sea. Action: DR, RD.

Two other themes were reviewed, but currently rank lower than the above:

1. **Monitoring micro-seismicity:** Linked to NANTROSEIZE/CRISP with focus on hydrothermal processes and gas hydrates (Japanese interest)
2. **Influence of biological and chemical systems on petroleum system** development.

Each **white paper** will comprise <3 pages covering: the hypothesis to be addressed, the current status of expertise on the subject, the link to ISP, suggested geographic area(s) for investigation, the data to be used and their location / availability, the status of site survey data, suggested proponents and lead champions, the strategy for proposal facilitation. White papers are to be prepared by start Q4/06 (White paper 1 by end August 06)

There was considerable discussion about whether and how industry could provide financial sponsorship (“seed money”) for MSc or PhD students to take the lead in preparation of expedition proposals. IIS-PPG will address this issue at the next meeting. In the meantime it was proposed that the Research foundations of a number of larger industrial corporations could be contacted with a view to building a student fellowship fund (say built from US\$10k/company/year).

Consensus Statements

To facilitate preparation of industry related proposals, we generated three consensus statements at the meeting:

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Next Meeting

Since we had poor attendance from the US members at this meeting we decided to hold the next meeting in Houston in January or February 2007. Andrew Pepper volunteered to host the meeting. The plan is to have completed the five "mission" white papers by the end of September so that committee members could think about particular drilling proposals that would be consistent with the missions. Then at the winter '07 meeting we could decide which drilling pre-proposals we would encourage for submission to the April 2007 proposal deadline.

Acknowledgements

We would like to thank Ru Smith and Shell for hosting the meeting. Although Ru is not a member of the IIS-PPG he is a marine sedimentologist working on reservoir modeling and depositional systems in the Shell Rijswijk laboratory. We must also acknowledge Harry Doust's significant contributions as Chair of the former IODP Industrial Liaison Panel. This was Harry's last meeting as Chair.

REFERENCES

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Appendices

Appendix 1: Page 89 of the IODP Initial Science Plan

Appendix 2: IIS-PPG Terms of Reference

Appendix 3: Discussion Document: IIS-PPG Plans

Appendix 4: Scientists who Sailed from Private Companies on ODP

Appendix 5: Industry Co-proponents on Active Drilling Proposals

Appendix 6: Industry Participation in the Science Advisory Structure

Appendix 7: Eguchi's presentation

Appendix 8: Talwani's presentation

Appendix 9: Byrne's presentation

Appendix 10: Doust's presentation

Appendix 11: Drapeau's presentation

Appendix 12: Davies' presentation

Appendix 13: Schorno's presentation