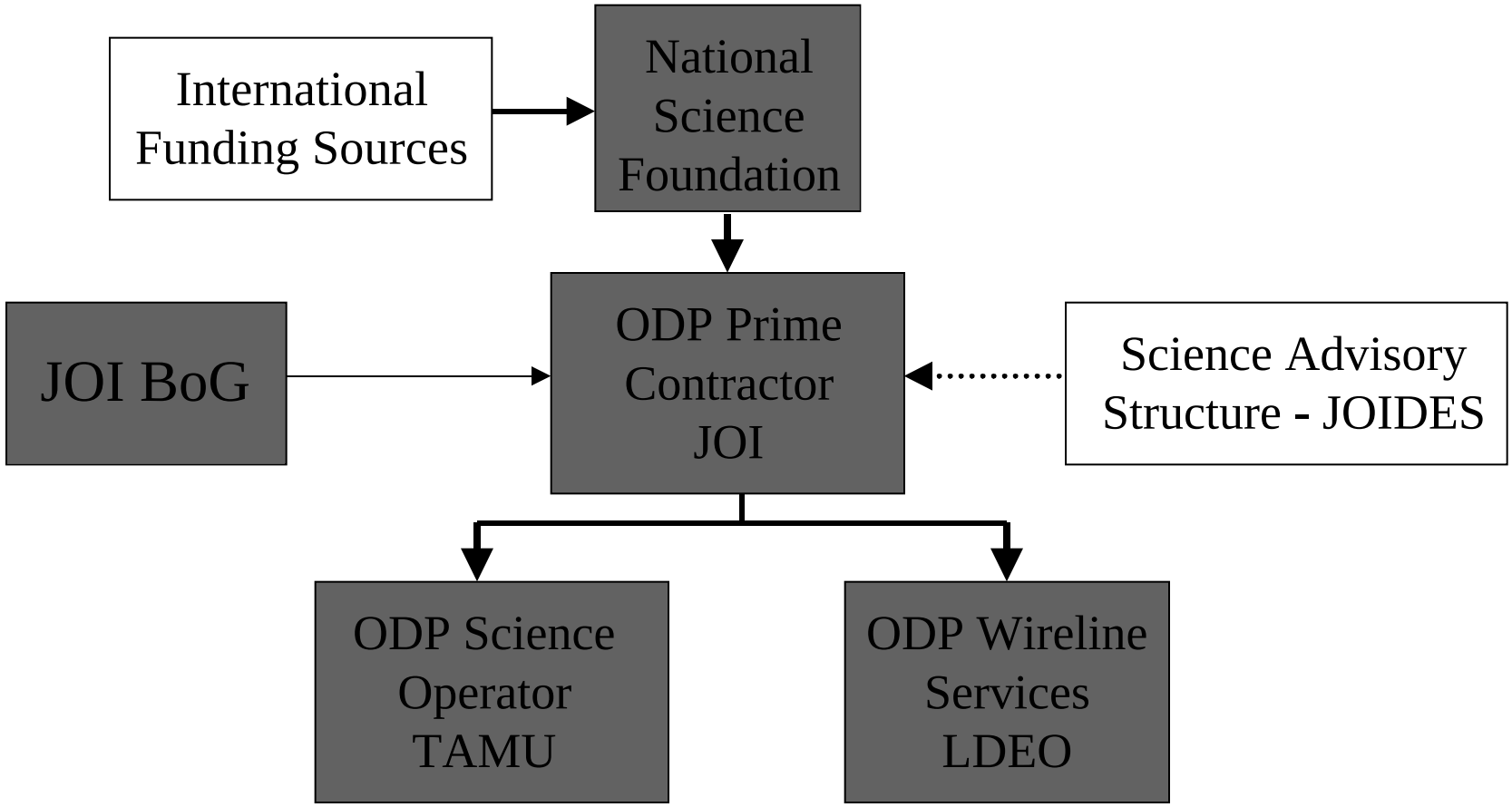
SCIMP Appendix 00-2-01

ODP Management Structure



International Membership in the Ocean Drilling Program

Full Members: $3M/year

12 scientists/year sail

Representation on all panels

All products

All technology developments

Associate Members: $0.5M to $2M/year

Scientists/year sail proportional to associate level

Representation on panels reduced proportional to level

Reduced products

International Membership

Full Members ($3M/year)

- **Australia/Canada/Chinese Taipei/ South Korea Consortium**
- **European Science Foundation (ESF) Consortium (Belgium, Denmark, Finland, Iceland, Ireland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, and the Netherlands)**
- **Germany**
- **Japan**
- **United Kingdom**
- **United States of America (funds approx. 66% of total ODP)**

Associate Members

- **France (Level 3 = $^2/_3$ of full membership)**
- **People's Republic of China (Level 1 = $^1/_6$ of full membership)**

JOI Board of Governors (BoG)

Chair: C. Barry Raleigh; Vice Chair: Arthur R. M. Nowell

- **University of California, Santa Cruz - Department of Earth Sciences ***
- **University of California, San Diego - Scripp's Institution of Oceanography**
- **University of Florida - College of Liberal Arts and Sciences ***
- **University of Hawaii - School of Ocean and Earth Sciences and Technology**
- **Lamont Doherty Earth Observatory - Columbia University**
- **University of Miami - Rosenstiel School of Marine and Atmospheric Sciences**
- **University of Michigan - College of Literature, Science, and the Arts ***
- **Oregon State University - College of Oceanic and Atmospheric Sciences**
- **University of Rhode Island - Graduate School of Oceanography**
- **Rutgers, The State University of New Jersey - Institute of Marine and Coastal Sciences ***
- **Texas A& M University - College of Geosciences and Maritime Studies**
- **University of Texas at Austin - Institute of Geophysics**
- **University of Washington**
- **Woods Hole Oceanographic Institution**

Changes at JOI

2/21/00 Kate Moran resigns as ODP Director

3/2/00 John Farrell designated as Acting Director ODP/JOI

3/7/00 Director ODP/JOI position advertised in *Eos,* etc.

3/9/00 JOI Board of Governors (BoG) meets

1) Management Oversight Com. (MOC) formed
2) ODP/IODP Transition: John Orcutt
3) JOI President announces 10/1/00 retirement
4) JOI/CORE corporate split proposed

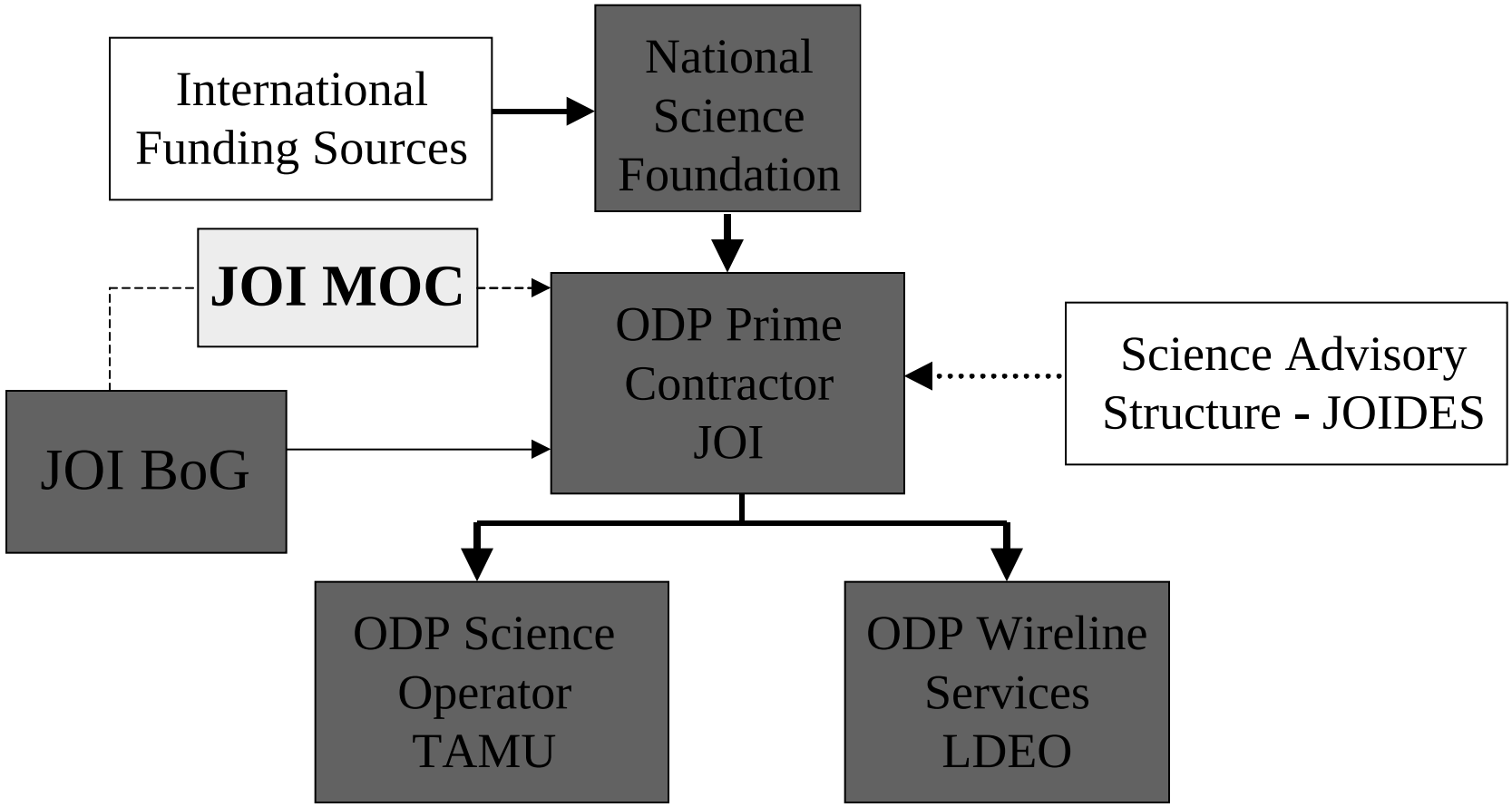
4/6/00 JOI proposal for reorganization submitted to NSF

4/23/00 JOI President/ODP Executive Director position advertised in *Washington Post, Nature, Eos,* etc.

6/28/00 JOI BoG meets (New Chair/Vice Chair to be elected)

10/1/00 JOI President retires, JOI/CORE split implemented

Modified ODP Management Structure



JOI Management Oversight Committee (MOC) Membership:

- **Robert Detrick (WHOI) - Chair**
- **James Gill (UC, Santa Cruz)**
- **Dennis Kent (LDEO)**
- **Neil Opdyke (U of Florida)**

JOI Management Oversight Committee (MOC) Terms of Reference

Definition: **The ODP Management Oversight Committee (MOC) is a Standing Committee of the JOI Board of Governors (BoG) with a specified mandate.**

Purpose: **The MOC's purpose is to represent the BoG in assisting and advising the President and the Director of ODP and USSSP on matters relating to the management of the ODP contract and the USSSP cooperative agreement with the U.S. National Science Foundation.**

Membership: **The MOC will consist of 3 BoG-appointed members, including a Chair, plus an alternate member. MOC members must be Governors or Alternate Governors of the JOI Board and must be knowledgeable about the ODP and its international scientific community. MOC members must be from institutions without conflicts of interest, such as a contractual relationship with JOI.**

Term: **Unless otherwise extended by the BoG, the MOC will terminate upon assignment of a permanent ODP Director. However, the need for the MOC will be reassessed by the BoG on the appointment of and in consultation with the new JOI President/ODP Director and may be continued for a transition period or longer if such an extension is determined by the BOG to be beneficial.**

Mandate of the JOI MOC:

- **offering advice and assistance to President and the Director;**

- **assisting the President and the Director in their interactions, and in their communications with JOI subcontractors, including the JOIDES Office;**

- **providing information to the President, and to the BoG as appropriate, on matters relating to the management of the ODP contract and the USSSP cooperative agreement;**

- **advising the President and Director on prioritization of management tasks, and on options for accomplishing these tasks if available personnel resources are insufficient;**

- **advising the President concerning recommendations for possible future changes in JOI's management structure for consideration by the BoG;**

- **any other tasks as mutually agreed with the President and BoG.**

Reporting/Meetings: The MOC will report to the BoG twice a year, or more frequently as needed. The MOC will regularly (nominally biweekly) consult with the Director by conference phone call, and will meet with the President and Director, and at their request with JOI subcontractors. The Director may communicate directly with the MOC on any matter relating to the management of the ODP contract or the USSSP cooperative agreement.

FY01 ODP Program Plan Development

April 3	**Subcontractors submit draft plans to JOI**
May 1	**JOI sends composite draft Plan to subcontractors for review**
May 15	**Subcontractors' comments due at JOI**
May 25	**Draft Plan submitted to NSF and to JOIDES Office**
June 9	**NSF returns comments to JOI**
June 27-28	**EXCOM reviews and approves the Program Plan**
August 15	**JOI submits final Plan to NSF for approval**
October 1	**FY01 begins**

ODP Budget ($k)

(FY01 tentative, pending approval by NSF)

	FY 99	FY 00	FY 01
TAMU			
Science Services	4,218	4,388	4,373
Drilling Services	5,220	5,039	4,181
Information Services	2,222	2,411	2,473
Publications	1,665	1,756	1,776
Headquarters/Administration	2,061	1,854	1,960
Ship Operations	26,194 *	23,592	23,787
TOTAL TAMU	**41,580**	**39,040**	**38,550**
LDEO	**4,936**	**5,044**	**5,273**
JOI/JOIDES	**1,984**	**2,016**	**2,277**
GRAND TOTAL ODP BUDGET	**48,500***	**46,100**	**46,100**

* As in FY 98, NSF provided $3 M in FY 99 to cover obligations (totalling $6 M) associated with the drillship mid-life refit.

Ship Schedule (FY00 - FY02)

	Leg	Port (Origin)†	Dates –
185	Izu-Mariana	Hong Kong	13 April – 15 June '99
186	W.Pacific Net	Yokohama	15 June – 15 August
	Transit/Drydock	Yokahama	15 August – 28 October
	Sea TrialsTransit	Singapore	28 October – 15 November
187	Australia-Antarctic	Fremantle	15 November - 12 January '00
188	Prydz Bay	Fremantle	12 January - 12 March
189	Southern Gateways	Hobart	12 March - 13 May
	Transit (Townsville-Guam)	Townsville	13-24 May
190	Nankai I	Guam	24 May - 17 July
191	W. Pacific Ion/HD Engr.	Yokohama	17 July - 13 September
192	Ontong Java	Guam	13 September - 12 November
193	Manus Basin	Guam	12 November - 9 January '01
194	Marion Plateau	Townsville	9 January - 5 March
195	West Pacific Ion	Guam	5 March - 11 April
196	Nankai II *	Kaohsiung	11 April - 10 June
197	Hotspots	Yokohama	10 June - 10 August
198	Paleogene	Honolulu	10 August - 9 October
199	Gas Hydrates	Victoria	9 October - 6 December
200	H2O ¥	San Francisco	6 December - 13 January '02
201	SE Paleoceanography ¥	Panama City	13 January - 10 March‡

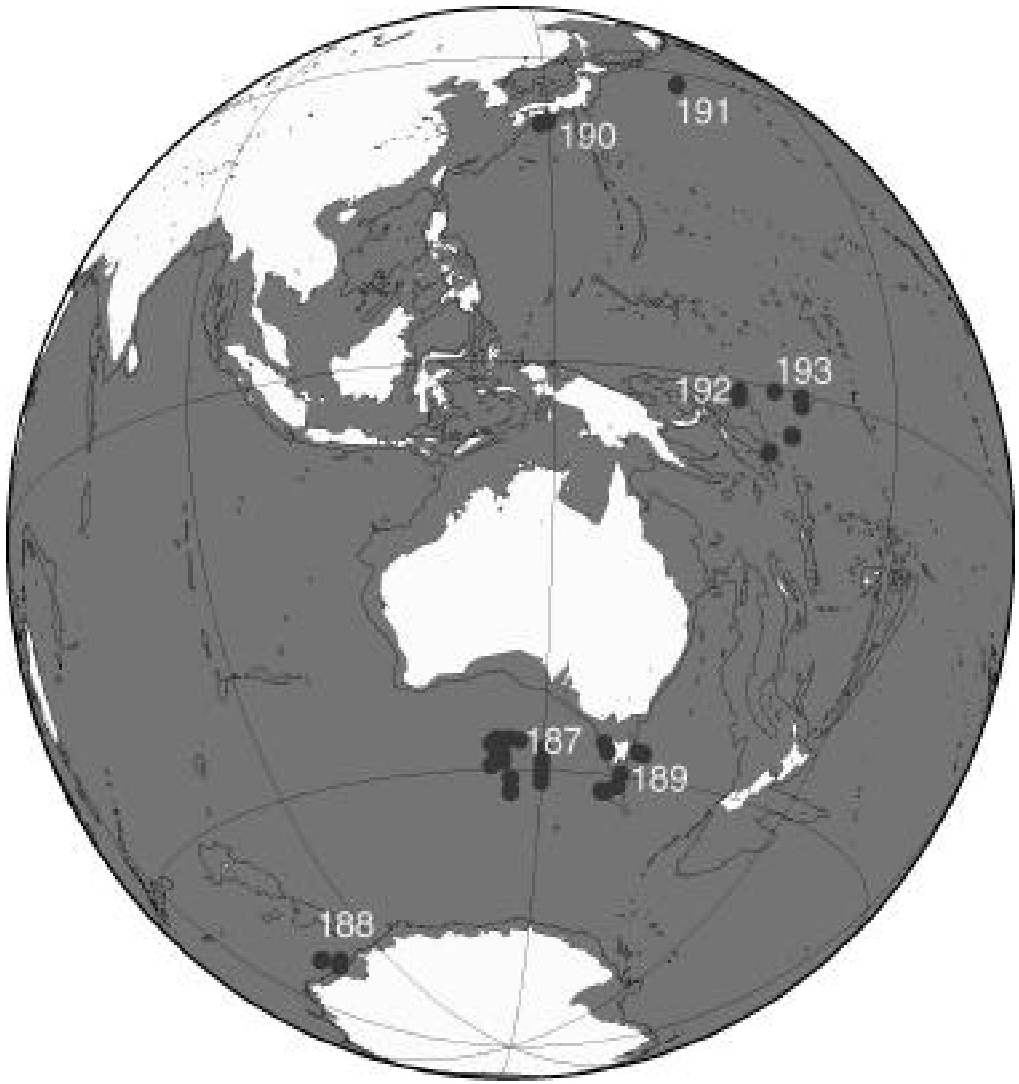
Notes:

– Port call dates have been included in the dates which are listed. For example, Leg 189 begins on 12 March with 4 days of scheduled port call. The scheduled sailing date is 16 March.

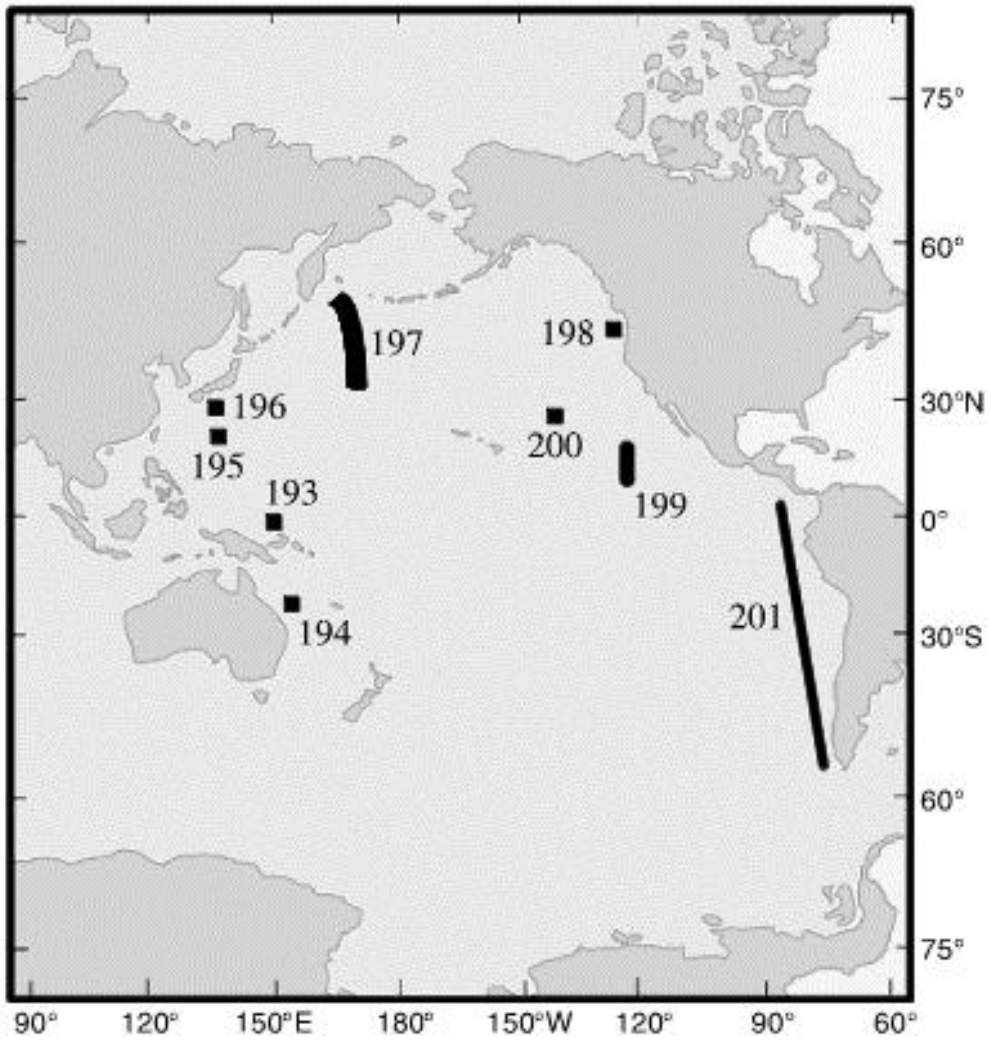
† Although 5 day port calls are generally scheduled, the ship sails when ready.

* Mid-leg port calls may occur for Legs 196 and 199.

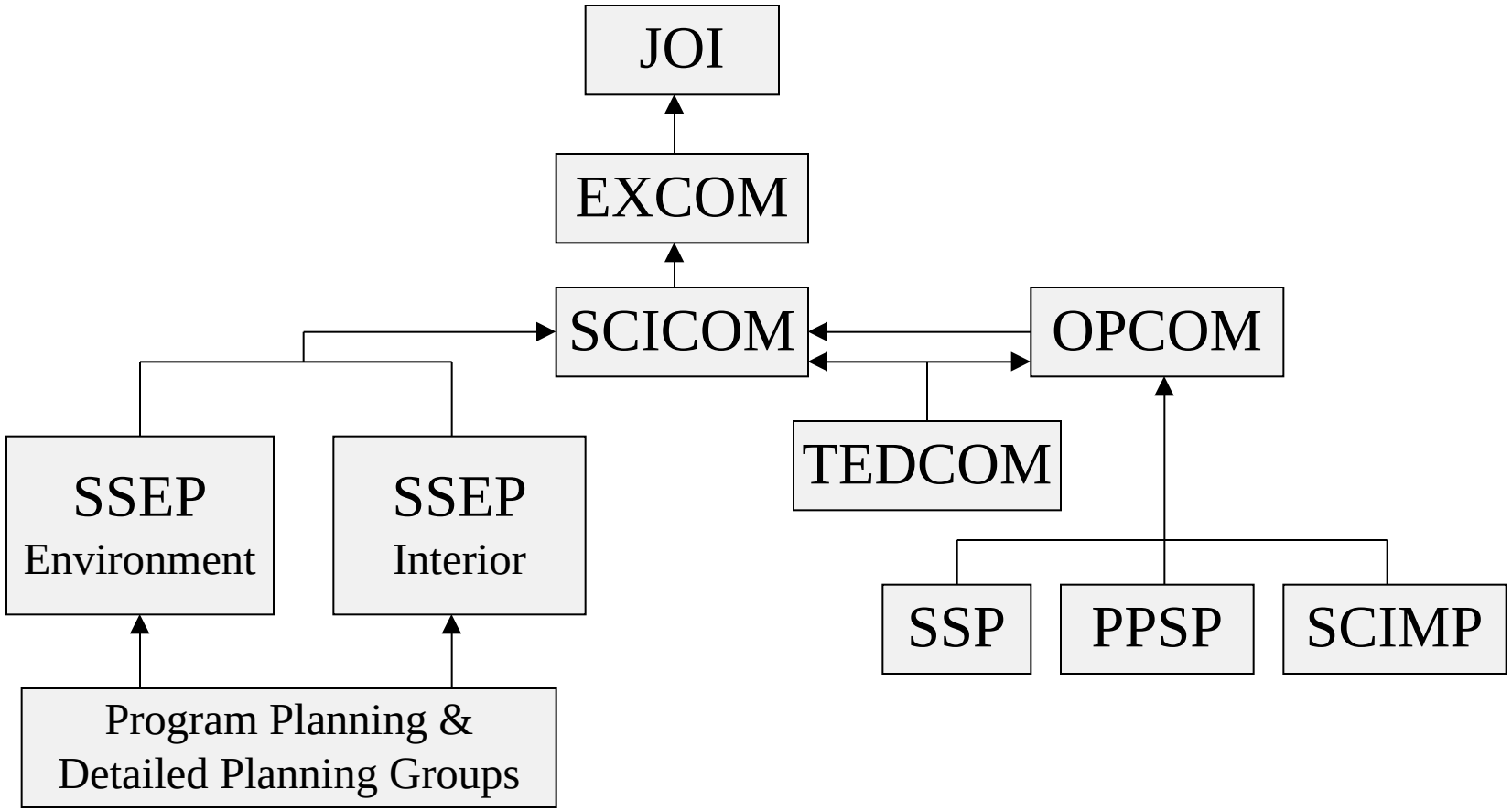
ODP Fiscal Year 2000 Schedule



ODP Fiscal Year 2001-2002 Schedule

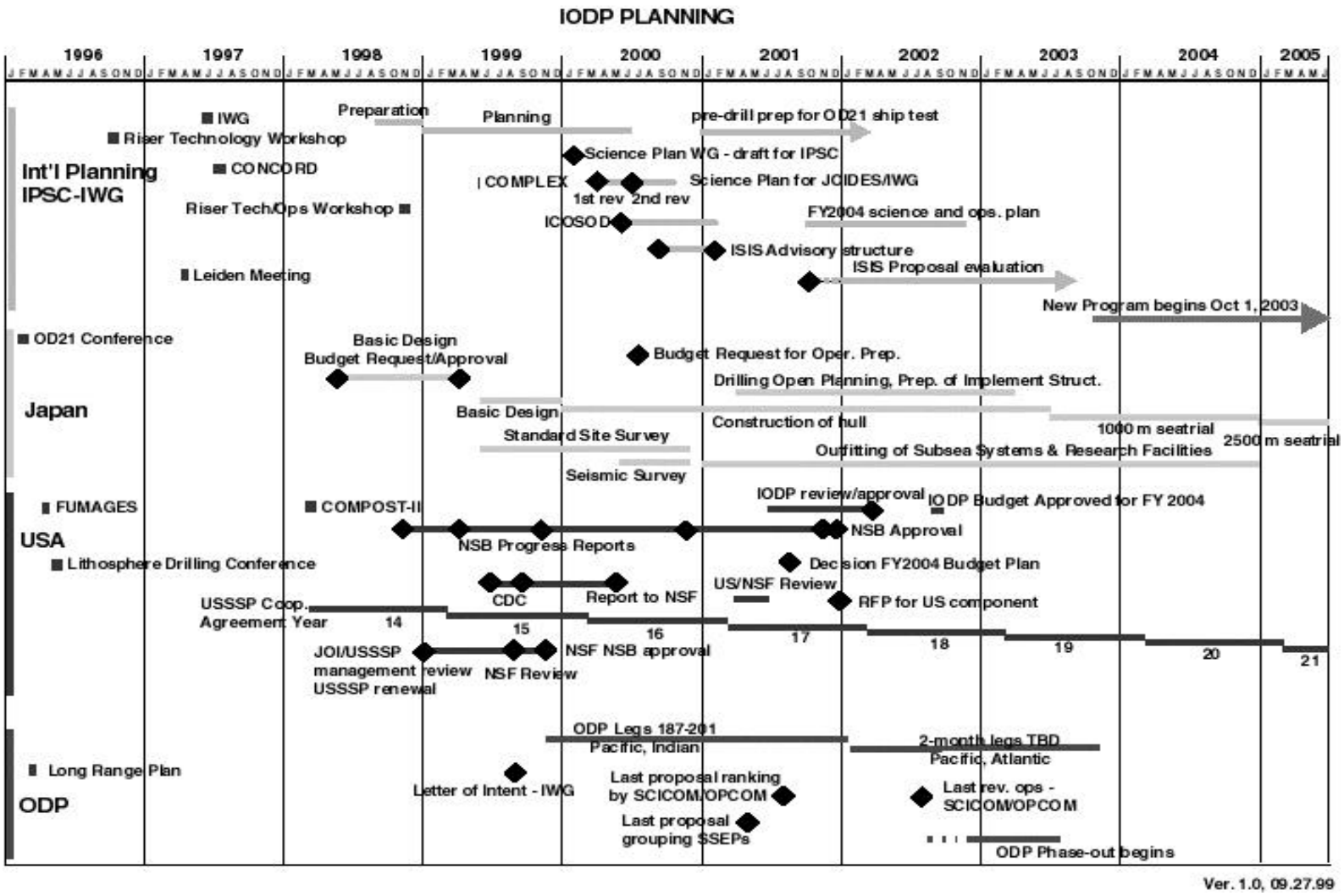


JOIDES Advisory Structure



Long Range Plan Initiatives

- **Deep Biosphere**
  - **Program Planning Group**
  - **Lab upgrades**
- **Gas Hydrates**
  - **Program Planning Group**
  - **Tool Development**
- **Alternate Platforms**
  - **Program Planning Groups**
  - **Shallow water continental margin drilling**
  - **Coral reef drilling**
  - **Arctic drilling**


IODP PLANNING
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Int'l Planning
IPSC-IWG
IWG
Riser Technology Workshop
CONCORD
Riser Tech/Ops Workshop
Leiden Meeting
Preparation
Planning
pre-drill prep for OD21 ship test
Science Plan WG - draft for IPSC
COMPLEX
1st rev
2nd rev
Science Plan for JCIDES/IWG
ICOSOD
FY2004 science and ops. plan
ISIS Advisory structure
ISIS Proposal evaluation
New Program begins Oct 1, 2003
Japan
OD21 Conference
Basic Design
Budget Request/Approval
Budget Request for Oper. Prep.
Drilling Open Planning, Prep. of Implement Struct.
Basic Design
Standard Site Survey
Seismic Survey
Construction of hull
1000 m seatrial
2500 m seatrial
Outfitting of Subsea Systems & Research Facilities
USA
FUMAGES
COMPOST-II
Lithosphere Drilling Conference
NSB Progress Reports
IODP review/approval
IODP Budget Approved for FY 2004
NSB Approval
Decision FY2004 Budget Plan
US/NSF Review
RFP for US component
CDC
Report to NSF
USSSP Coop. Agreement Year
14
15
16
17
18
19
20
21
JOI/USSSP management review
USSSP renewal
NSF Review
NSF NSB approval
ODP
Long Range Plan
ODP Legs 187-201
Pacific, Indian
2-month legs TBD
Pacific, Atlantic
Letter of Intent - IWG
Last proposal ranking by SCICOM/OPCOM
Last proposal grouping SSEPs
Last rev. ops - SCICOM/OPCOM
ODP Phase-out begins
Ver. 1.0, 09.27.99

ODP/IODP Transition Plan

John Orcutt - will develop "Plan for the Plan" and will report to EXCOM at June meeting.

Initial Discussion held on April 3, 2000 at JOI

- John Orcutt
- Bill Hay
- Susan Humphries
- Keir Becker
- Nick Pisias
- John Farrell
- Frank Rack

SCIMP Appendix 00-2-02

ODP LOGGING SERVICE REPORT
SCIMP JUNE 2000

EXECUTIVE SUMMARY

Cruise Highlights:

Leg 188 Prydz Bay

Wireline logging was carried out at all three sites drilled by Leg 188 across the Antarctic continental margin; LWD (Logging-While-Drilling) was carried out at two of those sites with the CDR (resistivity/gamma ray) and Power-Pulse MWD (Measurement-While-Drilling) tools. Downhole logging provided a continuous, in-situ record of remotely sensed rock property data that was particularly useful at Sites 1166 and 1167, where core recovery was poor (<30%).

Downhole weight-on-bit (WOB) and other drilling parameters were recorded using MWD for the first time in ODP. There is significant information on the efficacy of the passive heave compensation system in the comparison between downhole WOB and the WOB measured at the surface, which is used by the drillers in the course of normal drilling operations.

Leg 189 Southern Gateways

Logging operations at Hole 1168A were conducted after the hole had been drilled to a depth of 883 mbsf. Magnetic susceptibility variability in the logs correlates with the with the clay and siliciclastic component in the cores, and the strong covariance observed in core and downhole susceptibility measurements should allow the core material to be mapped back to true stratigraphic depths—providing both an estimate of the size and location of core gaps, and the number of sedimentary cycles missed due to imperfect recovery. The sonic velocity logs were also used to construct a two way travel time vs. depth curve for the site, providing a first step toward core-log-seismic integration and demonstrating that some major reflectors correspond to biostratigraphic and lithologic boundaries.

Active Heave Compensation

Uphole and downhole drilling data were acquired on Leg 188 using leased Anadrill equipment to evaluate drill string motion under different sea states. Downhole weight on bit, torque and geophysical measurements were made in conjunction with surface weight on bit and torque as measured by both Anadrill and the new FUSION system installed in dry dock. The shipboard active heave compensation system was not available for this experiment so only the passive compensation system was used. Data analysis is underway at LDEO with assistance from TAMU and Schlumberger engineers.

Large Diameter Tool Project

Current limitations in ODP restrict downhole tools to those that can be lowered through a 10-cm drill pipe, yet they must be able to make measurements in holes that are often as large as 40 cm in diameter. This seriously limits tool selection, sometimes impacts log quality, and excludes the use of many existing industry devices that are larger than 10 cm. Downhole samplers that extract in situ pore fluids like the Modular Formation Dynamics Tester tool (MDT) could be used if a

technical means existed to deploy them from the JOIDES Resolution. To this end, we are pursuing a conceptual design of a large diameter tool deployment system that will allow deployment of the MDT via the ODP drill string.

Core/Log Integration Project (CLIP)

Sagan and Splicer were updated to allow the opening of Janus output files without modifying them first. The updated versions were installed on Unix computers in the Downhole Measurements and Sedimentology Labs. Final at-sea beta testing of Sagan during Leg 189 was successful.

Seismic Data Integration

Initial at-sea trials of the IESX seismic data integration software were successfully conducted during Leg 188. Shorebased tests of printing capabilities were also successful.

Logging Manual

Copies of the Logging Manual CD-ROM were distributed to all *JOIDES Resolution* co-chief scientists from the last two years, and comments and opinions were solicited. ODP Logging Services has constructed a web page that users of the Logging Manual can visit in order to provide suggestions and input into the next version of the manual. Because site proponents comprise another important target audience for the manual, copies of the CD-ROMs were also distributed to SSEP panel members.

I. STANDARD LOGGING OPERATIONS

Leg 187

No logging

Leg 188 Prydz Bay

Wireline logging was carried out at all three sites drilled by Leg 188 across the Antarctic continental margin; LWD (Logging While Drilling) was carried out at two of those sites with the CDR (resistivity/gamma ray) and Power-Pulse MWD (Measurement While Drilling) tools. Downhole logging provided a continuous, in-situ record of remotely sensed rock property data that was particularly useful at Sites 1166 and 1167, where core recovery was poor (<30%).

At Site 1165, the downhole logs identified a reduction in porosity at the opal A to opal CT transition, the location of carbonate-cemented beds, and the density changes due to varying diatom abundance. A synthetic seismogram was created from downhole porosity to identify the causes of major reflections in the seismic section. The logs are cyclic in some intervals in the Lower–Middle Miocene.

Site 1166 was chosen with the aim of recovering pre-glacial Cenozoic sediments in order to provide an age for the arrival of glaciers in Prydz Bay, and a record of changes in paleo-environments and biota with the onset of glaciation. The downhole logs identified 6 log units with distinctive signatures for the clay, sand and diamict lithologies of the pre-glacial to glacial units that were encountered. Large gamma-ray fluctuations occurred in organic-rich units and highly varied magnetic susceptibility in diamict units. Resistivity and velocity log data, along with seismic reflection profiles, define a transgressive sequence boundary between early glacial deltaic sands and glaciomarine units.

Site 1167 was logged using LWD tools, after poor hole conditions had restricted the conventional wireline logging of the site to a 60-m interval. Spectral gamma ray and resistivity logs were gathered for the upper 2/3 of the cored sequence and again allowed inference of lithologies identified in the core (e.g. clay layers within the diamict) into the unrecovered sections. Other noted characteristics were the extent of a red bed in the upper part of the section and the transition from granitic clast dominance to sandstone clast dominance within the cored section.

The aims of LWD/MWD at Holes 1166B and 1167B were twofold: to record spectral gamma and resistivity logs with the CDR (Compensated Dual Resistivity) LWD tool; and to record downhole weight-on-bit (WOB) and other drilling parameters using MWD for the first time in ODP. There is significant information on the efficacy of the passive heave compensation system in the comparison between downhole WOB and the WOB measured at the surface, which is used by the drillers in the course of normal drilling operations.

Leg 189 Southern Gateways

Wireline logging was carried out at 4 of the 5 sites drilled by Leg 189. The Triple-Combo toolstring was run routinely while the GHMT-Sonic toolstring was deployed at Sites 1168, 1170

and 1172. Poor weather and operational concerns prevented the FMS-Sonic toolstring from being run at any site other than 1170 where it was used successfully. Intervals of clear cyclicity are apparent in the gamma ray, magnetic susceptibility, resistivity; density and porosity downhole logs in the sediment sequences spanning the Quaternary to Eocene and will be essential for developing post-cruise cyclostratigraphies. Magnetic susceptibility and natural gamma variability in the logs correlates with variations in the clay and siliciclastic content of the cores. The strong covariance observed in core and downhole measurements allows (through the use of SAGAN) the core material to be placed back into its original stratigraphic position--providing an estimate of the size and location of core gaps and number of cycles missing due to imperfect recovery. In addition, the GHMT provided good total field measurements and the resulting in situ magnetostratigraphy may be useful in refining the shipboard magnetostratigraphy, particularly at Sites 1168 and 1172. Generally, the logs allow for both inter-site correlation and the ability to assess the paleoenvironmental and paleoclimatic significance of fine scale changes in lithologic cyclicity.

II. SPECIALTY TOOLS AND ENGINEERING DEVELOPMENTS

Active Heave Compensation

Results of the first deployment of the DSA core barrel tool during Leg 185 indicate downhole bit motion due to heave. A second deployment of the DSA core barrel tool during Leg 191 is planned in the leg prospectus and was supported by TEDCOM. Results will be compared with Leg 185 core barrel tests to evaluate the improvements made to the passive heave compensation system in drydock.

Uphole and downhole drilling data were acquired on Leg 188 using leased Anadrill equipment to evaluate drill string motion under different sea states. Downhole weight on bit, torque and geophysical measurements were made in conjunction with surface weight on bit and torque as measured by both Anadrill and the new FUSION system installed in dry dock. The shipboard active heave system was not available for this experiment so only the passive system was used. Data analysis is underway at LDEO with assistance from TAMU and Schlumberger engineers.

Large Diameter Tool Project

Current limitations in ODP restrict downhole tools to those that can be lowered through a 10-cm drill pipe, yet they must be able to make measurements in holes that are often as large as 40 cm in diameter. This seriously limits tool selection, sometimes impacts log quality, and excludes the use of many existing industry devices that are larger than 10 cm. Downhole samplers that extract in situ pore fluids like the Modular Formation Dynamics Tester tool (MDT) could be used if a technical means existed to deploy them from the JOIDES Resolution. To this end, we are pursuing a conceptual design of a large diameter tool deployment system that will allow deployment of the MDT via the ODP drill string.

Core Barrel Temperature Tool

A dewar-system feasibility study was successful for a new core barrel temperature measurement device in high borehole fluid temperature environments. The new technology will assist logging and drilling operations where downhole tools are at risk in excessively hot holes. Results of the

feasibility study and plans to modify the DSA tool will be presented at the meeting. SciMP endorsement is requested for a potential deployment during Leg 193.

Third Party Tool Support

LDEO continues to support third party tools through our existing design, manufacture and repair facilities on the LDEO campus. Our shorebased support center has recently been enhanced with the addition of a 1000' test hole and accompanying pressure test vessel.

The NSF funded high-resolution gamma tool (PI: D. Goldberg) continues on schedule through its third party tool development track. Final plans for deployment of the tool during Leg 191 are in Appendix II. SCIMP endorsement is requested for at-sea deployment during Leg 191.

Third-party tool support was also provided for Keir Becker's memory temperature tool, which is planned to be deployed during Leg 193. The tool was last used during Leg 169. The BRG engineering group repaired the tool and will ship it to the JR in October.

III. SHIPBOARD LOG ANALYSIS

Core/Log Integration Project (CLIP)

Sagan and Splicer were updated to allow the opening of Janus output files without modifying them first. The updated versions were installed on Unix computers in the Downhole Measurements and Sedimentology Labs. Final at-sea beta testing of Sagan during Leg 189 was successful.

Seismic Data Integration

Initial at-sea trials of the IESX seismic data integration software were successfully conducted during Leg 188. Shorebased tests of printing capabilities were also successful.

IV. SHOREBASED LOG ANALYSIS

ODP Conventional Data

The following holes were processed and prepared for inclusion in the database at LDEO-BRG:
Leg 185-Hole 1149B
Leg 188-Hole 1166A
Leg 189-Holes 1168A, 1170D, 1171D, 1172D

FMS Processing

The following holes were processed at the Aix-en Provence (France) processing center:
Leg 188-Hole 1166A

GHMT Processing

The following holes were processed at the Aix-en Provence (France) processing center:
Leg 188-Hole 1166A

Training

Dr. Chris MacLeod visited Leicester for discussions with Drs. Harvey and Brewer regarding analysis of data from Hole 735B.

Dave Feary (Leg 182 Co-Chief) visited LDEO to use GeoFrame and IESX software for analysis of Leg 182 data.

Bernard Celerier from the University of Montpellier visited LMF to work on Leg 180 FMS data.

Caroline Philippot and Florence Einaudi participated in GeoFrame training at Schlumberger-GeoQuest in Montrouge.

Elia d'Acremont from University of Paris VI visited LMF to work on Leg 165 log data.

Saneatsu Saito and Moe Kyaw Thu participated in Schlumberger training at Niigata Prefecture.

Harold Tobin from New Mexico Tech visited LDEO for training prior to sailing on Leg 190.

V. DATABASE

The ODP Log Database has been updated through Leg 186 including Schlumberger original and processed data (conventional, geochemical, and FMS), specialty tools (borehole televiewer, multi-channel sonic, and temperature), borehole images, and sonic waveforms.

Data Migration

All temperature data from Leg 123 to Leg 149 (61 holes) have being reviewed and/or processed for inclusion in the online database.

Historical FMS processing was reviewed and several holes were reprocessed to take advantage of enhancements available with the new GeoFrame processing techniques.

Post Cruise Distribution of Log Data

CD-ROMs for Legs 183-189 have been completed and sent to Freisen Printers to be included in the Initial Reports publications. The Leg 185 CD-ROM is currently in production.

Copies of the Logging Manual CD-ROM were distributed to all *JOIDES Resolution* co-chief scientists from the last two years, and comments and opinions were solicited. ODP Logging Services has constructed a web page that users of the Logging Manual can visit in order to provide suggestions and input into the next version of the manual. Because site proponents comprise another important target audience for the manual, copies of the CD-ROMs were also distributed to SSEP panel members.

ODP Logging Web Statistics FY 00

Month	Total Requests	Total Visits	Unique Visitors	Repeat Visitors	Average Daily Visits
Oct-99	29786	3199	1141	326	106
Nov-99	39697	3370	1749	374	112

Dec-99	29910	3007	1430	337	97
Jan-00	33298	3046	1493	374	98
Feb-00	38252	3538	1544	415	122
Mar-00	43875	3495	1482	400	112
Apr-00	34573	3062	1408	362	98

Note: System down for 1.5 days in April.

Appendix I: Action Items and Recommendations

1) Logging Manual

The LDEO Logging manual (on CD) is a very positive addition. SCIMP commends ODP-LDEO for the development of this very helpful manual. This development should be mirrored in all the labs.

Copies of the manual have been sent to all ODP co-chiefs from the last ~2 years for evaluation/comments/suggestions, which will be taken into account when development begins later this year on version 2.0. Copies are also being distributed to other target audiences and relevant panels (e.g., SSEP).

2) **SCIMP RECOMMENDATION 99-2-11:**
SciMP recommends that ODP-LDEO and ODP-TAMU investigate the financial and operational aspects of a tuned-gun array for well bore and seismic survey use and report the findings of this investigation to SciMP before purchasing GI guns for seismic use.

SCIMP Recommendation 00-1-7:
SCIMP recommends that the pending purchase or lease of the new seismic gun arrays for the JOIDES RESOLUTION be deferred pending full evaluation of the JOIDES RESOLUTION underway geophysical operations by the SCIMP U/G sub-panel. The evaluation will be completed and presented at the next SCIMP meeting and a full recommendation on U/G operations will follow.

The following are email communications between LDEO/BRG and Schlumberger regarding seismic sources:

X-Sender: brownr@webster.wireline.slb.com
Date: Tue, 30 May 2000 11:38:04 -0500
To: "Gerardo J. Iturrino" <iturrino@ldeo.columbia.edu>
From: "Brown, Richard" <brownr@webster.wireline.slb.com>
Subject: Re: Gun array
Mime-Version: 1.0
Status:

Gerry,

Here is what I have managed to put together.

Tri-Cluster arrays were obsolete in most parts of the world for Schlumberger. It seems that the efficiency decreases as you increase the number of guns and you start to put a strain on your air supply. The 2 gun cluster of 250 cc ea runs at about 85% efficiency in terms of

energy. Three gun clusters have been made locally but are tougher to assemble, cumbersome to manipulate and the frequency of damage to the wires and hoses is significantly higher.

I have not been able to find out anything about the 3 gun cluster for Anadrill. Schlumberger does not assemble any gun array. We outsource the work to either BOLT Technology out of Connecticut or to SSI out of Houston. Neither of these manufacturers makes 3 gun arrays.

My experience has been that the Sodeira-G Guns out perform the BOLT guns in terms of signature, power, frequency content, reliability, ease of maintenance and number of shots between maintenance. As such I prefer to deal with SSI.

In SSI my contact is Jim Hedger. He has informed me that they are not in the business of leasing guns. Cost of a new array of 2 x 250cc with spreader bar is:

$ 16,650 per gun
$ 4,204 for the spreader bar

Total of $37,504

He did mention to me that he was receiving a used cluster back from overseas that he would be re-conditioning and selling as a refurbished product with full warrantee. This would reduce the price and he may even be agreeable to making a lease agreement.

Maintenance of the G-Guns is extremely simple. I don't think you would need a dedicated gun technician. I think that someone on the ship could easily be given the task of maintaining the guns and if deemed absolutely necessary they could stop off in Houston, go to SSI for a quick lesson.

The G-Guns can operate at any pressure between 1000 & 3000 PSI. The bolt equivalent guns are rated to about 2000psi. As such if signal strength becomes an issue the Sodera guns are way ahead.

Pros & Cons of 2 gun clusters vs. 3 guns: Source energy efficiency maximized. See attachment for increase in power vs. chamber volume. Experience has shown that a two gun array tuned and spaced properly is more effective. This is why all of our suppliers only make two gun arrays. Frequency content meets the required needs, power is not an issue given the pressure ratings, the bubble pulse can be effectively reduced / eliminated by correct tuning or by the use of a G-GI type array. The repeatability of the signature is also less likely to drift when only two guns are used.

The only positive aspect of having a three gun cluster is when you fire only two guns at a time and have one backup gun already in place should a problem develop. I suggest you give Jim Hedger a call at SSI to discuss details.

Using a 2 gun cluster to improve resolution can by achieved by lowering the firing pressure of the guns. This will however reduce the penetration of the signal.

Optimal spacing for a 2 gun cluster with 250cc chambers is about 1.0 m between the air chambers. The dimensions of the guns I give are from memory and the days I used to lug them around well sites:

About 0.3m x 0.3m x 0.6m, each guns weighs roughly 100kg. You will need a crane to manipulate the cluster.

The seismic group for the Gulf of Mexico use clusters of 6 and 8 guns. It seems that these configurations are good but probably and over kill for your applications.

You mentioned that you had been in contact with Thomas Distefano at our seismic depot. Should you need any more help with information from him, please feel free to call me.

I have also sent a fax with 9 sheets describing the G Guns and their performance.

I hope this helps.

Regards,
Richard

At 10:44 AM 05/24/2000 -0400, Gerardo J. Iturrino wrote:
>Richard:
>
>As time for my meeting is fast approaching, I was wondering if you can
>answer these questions for me regarding our discussions on the gun cluster
>arrays for VSP and seismic work on board the JOIDES Resolution.
>
> 1) Schlumberger does not have a tri-cluster array available for marine surveys. Is > this still true?
>
> 2) Schlumberger is currently building a tricluster array for
> Anadrill. Is this still true?
>
> 3) If guns are leased, do we need an additional engineer to handle them? We
> discussed this point at Lamont and I was wondering if you have anything else to > add.
>
> 4) What is the operational pressure for the array? The ship operates at 2000 psi. Is > this enough?
>
> 5) Is the tri-cluster array appropriate for high-resolution reflection work? Are we
> going to have problems towing this gun configuration? If so, can it be slimmed > down?
>

> 6) What are the pros and cons of 2 vs. 3 gun arrays? You mentioned that you had > some information suggesting that a 2 two-gun array would fit our needs better.
>
>Additional thoughts:
>
>1) Who should we contact if we decide to pursue these alternatives any
>further?
>
>2) Most likely, this array will be used for VSP experiments and shooting
>short seismic surveys. With this in mind, is there any mechanism in the
>cluster operation to optimize resolution over penetration?
>
>3) What are the dimensions of the cluster? A longer and heavier
>configuration imposes larger workloads on the current equipment handling
>abilities. There are space limitations if changes in the load geometry on
>the deployment winches/pulleys were required.
>
>Thank you very much for your assistance.
>
>Regards,
>
>Gerry
>
>Gerardo J. Iturrino
>Logging Staff Scientist
>Borehole Research Group
>Lamont-Doherty Earth Observatory
> of Columbia University
>Route 9W
>Palisades, New York 10964-8000
>
>Phone: (914) 365-8656
> FAX: (914) 365-3182

2) Status of IESX

SCIMP Recommendation 00-1-9:
SCIMP recommends:

a) That shipboard facilities for Wireline/Seismic/core integration include a separate workstation dedicated to this effort

We have included funds in the budget for one Unix workstation.

b) That the IESX software be able to plot directly to large-scale (36") plotters and printers and that this capability be implemented by June 2000 SciMP meeting.

We have successfully printed IESX files (CGM) to the HP plotter here at LDEO. We have also purchased a plug-in to allow Canvas on the Mac to read all CGM files and output to a postscript printer This will be useful for smaller scale plots and overheads due to the size of postscript files. We have also confirmed with TAMU (Adam Klaus) that the plotters on the ship can handle RTL files. The SDI software that we are using here at LDEO will convert the CGM output from IESX into RTL format.

c) That ODP-LDEO and ODP-TAMU provide a plan for integrating the Unix network on the ship.

Liaisons have been appointed from LDEO (Ted Baker and Mary Reagan) and TAMU (David Becker) to investigate this issue and further details will be provided at the next meeting.

SCIMP Recommendation 00-1-10:
SCIMP recommends that LDEO develop a procedure for creating IESX project files for each ODP drill site that will include the digital seismic profiles so that these data can be visualized interactively with the log and core data during and after the drilling of each site. The project file should be the basis for the seismic/log/core integration and time-depth conversion capabilities defined in SCIMP recommendations 99-1-11 and 99-1-12.

At the last meeting, David Goldberg informed the panel that ODP-LDEO has initiated a review and evaluation of more comprehensive commercial processing packages for ODP. ODP-LDEO plans "… a pilot study to format digital seismic data and to test its use for future cruises. Evaluation of the procedures and level of effort that would be needed for routine digital data access, while enabling some protected release of site survey data, is the long-term objective. The main tasks of this project involve acquiring and converting seismic survey data into IESX-compatible format for use prior to and during a leg. ....."

SCIMP recognizes the need to have digital seismic data available on each ODP Leg and also recognizes the challenges faced by ODP-TAMU and LDEO in getting such data from scientists. Therefore, SCIMP makes the following recommendation regarding site survey data and wireline/seismic/core integration.

The joint IESX pilot project is included in the FY01 program plan, beginning October 1, 2000. The IESX software has been installed and successfully tested at BRG, SSDB and on the JR. Test data for the pilot study is currently being collected by the SSDB.

SCIMP Recommendation 00-1-11:
SCIMP recommends that LDEO also create a tutorial and training project file with seismic /log/core integration for the shipboard "cookbooks" so that technicians and scientists can improve their skills with IESX , GEOFRAME, and the integration process while at sea. This training project and documentation should be available for SCIMP review by June 2000.

The IESX software has been installed and successfully used on the JR during Leg 188. Development of the cookbook for shipboard (as well as pre-cruise) use is ongoing and will continue through the pilot phase of the IESX project. A version of the cookbook will be presented to SCIMP and the January 2001 meeting.

In addition, a demonstration of the IESX software will be made to the Site Survey Panel (similar to the presentation made to SCIMP in Perth) when they meet at Lamont-Doherty in late July.

SCIMP Recommendation 00-1-12:
SCIMP recommends that JOI modify the site-survey data requirements for seismic profiles in the Data Submission Profiles (DSG). The modification will include the following.

(a) For each final processed seismic profile submitted with a proposal, digital seismic data with navigation supplied and with supporting documentation of the processing stream used, must be provided to the data bank manager in industry standard SEG-Y format on 8-mm tape. The data bank manager will advise the appropriate SSEP when these data are received. This data submission requirement should be rigorously enforced and proposals should not be considered for scheduling by OPCOM until this requirement is met.

(b) the data bank manager will maintain the digital seismic data and support documentation and these data will be treated as ODP proprietary information as specified in the current DSG.

The DSG guideline has been modified to allow for password-protected digital data submission to the SSDB and endorsed by the SSP. The new data submission guidelines are shown below:

"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 Data Bank 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 Data Bank 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."

Appendix II: Third Party Tool Support
High Resolution Gamma-Ray Tool

Dear Tom J. and SCIMP members,

This is a update about the development and planning for the 3rd-party GR logging tool deployment on Leg 191. As of this date, the GR tool is completely manufactured and assembled and has been bench tested successfully. In June, we plan land tests for the tool in serial combination with Schlumberger tools (simulating the configuration that will be run on the JR) and for sensor calibration in the API test facility at the Univ. of Houston and with Schlumberger's NGT tool in their test hole in Houston. We will report the result of these tests to SCIMP, as soon as they become available. The tool will be sent in early July to the meet the JR in Yokohama.

Deployment plans are incorporated in the Leg 191 Prospectus document on the ODP web site. Alex Meltser (tool design engineer) will operate the high-resolution gamma ray tool during the leg. *We request SCIMP to give final approval for at-sea tests of this development tool during Leg 191*. Results will be forwarded to the panel at the next meeting.

If the leg 191 tests are successful, subsequent GR tool deployments may include:

- Leg 194. Deployment plans are incorporated in the Leg 194 Prospectus document by co-chief request, following a discussion of leg objectives at the pre-cruise meeting.
- Legs 198 and 201. Planning in preliminary stages only.

Please feel free to contact me if further information is required.

Best wishes for an enjoyable meeting in Amsterdam.

Sincerely yours,

Dave

David Goldberg, LDEO/BRG

Appendix III: Involvement of SciMP at the proposal level

SCIMP and ODP-LDEO representatives discussed several mechanisms that would allow SCIMP to provide timely input to the downhole measurement needs on proposals in the ODP system. Currently, SCIMP sees the recommendations of the ODP-LDEO group only after the legs are scheduled. This timing does not provide SCIMP with enough lead time to assist ODP-LDEO and proponents with planning for technological development, pursuit of funding for specialty tools, or assistance with other options for downhole measurements. With over 70 active proposals it would be a daunting task for SCIMP members to review all proposals. A plan was formulated that would allow SCIMP to provide input far enough in advance (~ 3 years) to assist proponents and ODP-LDEO with the evaluation of technology.

The JOIDES office will group proposals (current and new) by Long Range Plan themes. SCIMP members can than flag groups of proposals early on (rather than numerous individual proposals) that may need new tools/technologies, modification of existing tools, etc. to accomplish the objectives outlined in the Long Range Plan.

In their last meeting, the Science Steering Evaluation Panels (SSEP's) discussed 33 proposals. According to Long Range Plan (LRP) themes:

21 primarily ESSEP
9 primarily ISSEP
3 jointly

As is generally the case ESSEP dealt with a much larger number of proposals.

The following are some specific topical groupings:

General Paleoceanography: 13 proposals
Antarctic/Paleoclimate: 2 proposals
Sea Level: 3 proposals
Gas Hydrates: 3 proposals
Biosphere: 2 proposals
Deformation - Lithosphere: 2 proposals
LIPs: 1 proposal
Hydrothermal: 1 proposal

There are more PROD drilling proposals starting to come into the system. A number of proposals are calling for the MDT tool, hydrate, hydrothermal, and now also paleoclimate, and deep biosphere may also be interested.

Given the large number of paleoclimate proposals that are focused on high-resolution studies, there will be a continuously increasing demand for high resolution logging data. Currently the new gamma tool and FMS are appropriate and perhaps we should consider looking into higher resolution for other measurements as well (e.g. Magnetic Susceptibility).

SciMP's input will be requested for determining potential new technological and scientific directions that will fulfill the mandate of the Long Range Plan and future needs for proposals already within the system.

SCIMP Appendix 00-2-03.1

Science Operator's Report
JOIDES Scientific Measurements Panel
Vrije Universiteit
Amsterdam, Netherlands
June 14 -16, 2000

Science Operator's report to SCIMP, June 2000

EXECUTIVE SUMMARY

Action on recommendations from January 2000 SCIMP meeting:
Many recommendations from the January 2000 SCIMP meeting have resulted in action by ODP/TAMU. This includes a proposed policy change to compensate sea-going only employees during shore-based training, plans to remove the XRF during the Yokohama portcall, and the moving of the thin section and the microbiology labs which will take place during Leg 191. Unfortunately, some other recommendations and action items, although desirable, could not be targeted because of budget problems created by the high price of fuel for the ship. Especially funds to purchase a digital imaging system, which has been a high priority for several years, will unlikely be available in FY00.

Operations Schedule:
A revised operations schedule was released on 9 March, 2000. The major changes to the previous schedule are the switch between Paleogene and Gas Hydrates, three additional days allocated to Ontong Java, five additional days to Hotspots and two days less for Gas Hydrates.

Leg Reports:
Leg 187 Australian Antarctic Discordance
Observations from cores recovered on this leg indicate a discrete mantle boundary comparable to the present-day boundary in the AAD cannot be mapped through the entire 14- to 28-Ma time interval encompassed by Leg 187 sites, although comparable boundaries have existed for relatively short, discrete time intervals. It appears the eastern limit of the Indian mantle province corresponds closely to the eastern edge of the regional depth anomaly. West of this boundary, sporadic occurrences of lavas indicating derivation from transitional Pacific (TP)-type mantle and even Pacific-type mantle are interspersed with the predominant Indian-type mantle. The alternation of Indian-type sites with Pacific and TP-type sites on time scales of a few million years can be interpreted in terms of discrete incursions of one mantle domain mantle into the other in the region of the depth anomaly.

Leg 188 Prydz Bay
The three sites proximal to the East Antarctic Ice Sheet drilled during Leg 188 across the Prydz Bay continental shelf, slope, and rise provide new evidence of long- and short-term variations in paleoenvironments (i.e., depositional, glacial, and inferred climate) extending from Holocene into Mesozoic times. The shelf site (Site 1166) documents the earliest stages of East Antarctic glaciation from inferred temperate climates (i.e., with vegetation) to transitional environments of proximal glaciers to full glacial and interglacial conditions with intermittently grounded glaciers on the shelf. Site 1167 on the slope samples the latest Neogene sediments that attest to the rapid deposition and variability of onshore erosion areas and glaciomarine depositional settings in front of grounded ice sheets during glacial-interglacial periods. On the continental rise, at Site 1165, the drilling record documents the long-term, lower to upper Miocene transition from temperate to cold-climate glaciation, with superimposed short-term glacier fluctuations since early Miocene time.

Leg 189 Southern Gateways
The entire sedimentary sequence cored is marine and contains a wealth of microfossil assemblages that record marine conditions from the Late Cretaceous (Maastrichtian) to the late Quaternary, and terrestrial conditions until the earliest Oligocene. The drill sites are on submerged continental blocks extending up to 600 km south of Tasmania, which were at polar latitudes in the Late Cretaceous when Australia and Antarctica were still united, although rifts had developed as slow separation and northward movement of Australia commenced. The cores indicate that the Tasmanian land bridge, at polar latitudes, completely blocked the eastern end of the widening Australo-Antarctic Gulf (AAG), during both the slow spreading phase and the fast-spreading phase (starting at 43 Ma), until the late Eocene.

Science Services Update:
• Despite the shape things were in after drydock, as of Leg 190 all labs are effectively up and running and many are enhanced.
• Microbiology Lab is outfitted on the upper level, but preparations are underway to move it to F-Deck on Leg 191.
• RFQs for a digital imaging system were issued in March and responses received by May 2000. During the review of responses, a budget review dictated that all work on this project be halted.
• Several improvements to tools and techniques used in the Physical Properties Lab were made during the transit between Legs 189a nd 190.
• Protocols for IW and basalt analyses by ICP have been finalized; Tech Note is in production.
• Five operational APC Temperature tools are now on board.
• Six new thermistors along with calibration data for the WSTP have been received and are being sent to the ship.
• The first run with the new DVTP tool configuration was successful, the pressure casing failed during the second run. Our technicians are attempting to fabricate a replacement at sea.
• Recent discussions of ODP Engineering staff with Charlie Paull and Bill Ussler about the Temperature Pressure and Conductivity Tool have resulted in decision to repackage the MBARI acquisition electronics into the APC piston. ODP Engineers will meet with MBARI in early July. We are targeting Leg 195 (West Pac Ion) for prototype testing and Leg 199 (Gas Hydrates) for operational deployment.
• Joris Gieskes (Scripps) has obtained funds to modify the Fisseler tool. An updated target for testing has not yet been provided to ODP.
• The shore-based Thin Section Lab is outfitted and functional.

Information Services Update:
• JANUS application projects status summarized.
• Specific status of the Age model application is discussed.
• Data migration status summarized.

Drilling Services Update:
• Extensive update on active heave compensation
• Rig instrumentation system functional and can provide data on operational parameters.
• Advanced Diamond Core Barrel to be tested on Leg 193.
• Hard Rock Reentry System to undergo second phase of testing on Leg 191

Publication Services Update:
• First fully electronic SR due this summer
• IR through v. 183 and SR through v. 166 published
• AGI database compilation report is included as an appendix to this report (SOR_APP.pdf)
• New citation format for Preliminary Reports
• Web page development
• Mirror site status
• Leg-related citation compilation

ACTION ON RECOMMENDATIONS FROM JANUARY 2000 SCIMP MEETING

SCIMP Recommendation 00-1-1: SCIMP is keenly aware of, and concerned about, the high risk of significant technical attrition on the JOIDES Resolution as ODP approaches its conclusion in 2003. SCIMP strongly recommends that JOI and IPSC develop a plan that will assure the preservation of all critical technical skills towards the end of ODP. This plan should be in place and communicated to all ODP staff by January 1, 2002.

No specific action as yet by ODP/TAMU, but we are also keenly aware of the potential loss of these valuable resources.

SCIMP Recommendation 00-1-2: SCIMP recommends that ODP-TAMU provide the necessary shore-based training for all ASPP employees in a manner that appropriately compensates them for their time.

A proposed policy change has been submitted to the TAMU system originally in January and was resubmitted in revised versions in April and May. The policy change is currently at the TAMU system general counsel for approval, and expected to be resolved within the next few weeks. The new policy will compensate ASPP employees for shore-based training or special projects at the same rate as sea pay, i.e., 80% above the base salary for the additional time.

SCIMP Recommendation 00-1-3: SCIMP recommends that ODP-TAMU cease further development of Hard-Rock AppleCore and await a recommendation by the Core Description Lab Working Group on development of a new application.

No further development of the Hard-Rock AppleCore version is planned. Development and implementation of a hard rock description application, such as the system developed by the ICDP for the Hawaiian Scientific Drilling Project, hinges on the availability of digital images, which has temporarily been placed on hold. Without the digital imaging system in hand, new discussions need to take place. Our internal evaluation suggests that for description of basalts the MS Access based ICDP software could be implemented with minor alteration to ODP style as a stopgap measure. We also recognize, however, that this software was designed specifically for description of basalt, and adaptation to archive descriptions for any other commonly recovered hard rock lithology (gabbro, peridotite, felsic rocks, ash layers, etc.) is a much more challenging undertaking. During the current schedule (Legs 190-201-current to March 2002) four legs will probably recover significant quantities of basalt; no legs on the schedule are likely to recover gabbro or peridotite, although there are several highly ranked proposals in the review process that target these lithologies. One leg currently on the schedule is targeting felsic rocks and sulfides.

The use of a GIS application, such as ArcInfo, as a hardrock description tool has been discussed, but due to lack of resources, no progress has been made on this front. We look forward to the possibility of discussion being initiated at this meeting.

SCIMP Recommendation 00-1-4: SCIMP applauds ODP-TAMU's decision to purchase a digital imaging system from GEOTEK. Due to the high priority of this measurement on upcoming legs, we reiterate our request that the new GEOTEK system be deployed and operational by June 2000 as specified in SCIMP Recommendation 99-2-12. Appropriate resources should be focused on the integration of the GEOTEK line scan camera into the ODP infrastructure including:
Deployment of required resources
Data storage/archive procedures
JANUS data model

Post-cruise image distribution plan
To alleviate space concerns in the post-drydock core lab, the AMST should be removed to provide space for placement of the GEOTEK track. Sensors from the existing AMST should be retained on board the JOIDES Resolution for use by the shipboard scientific party, if needed. No resources should be spent on further development of the alternatives to the GEOTEK line scan camera system.

Internal review at ODP-TAMU by a digital imaging working group resulted in a detailed list of technical specifications that are needed for a digital imaging system. An RFQ was submitted in early March, 2000, to vendors of digital core imaging systems so that ODP-TAMU could identify which commercially available RGB line scan digital imaging system should be purchased for use on the JOIDES Resolution. ODP-TAMU received responses from three vendors as of the closing date for the RFQ. Review of the responses to the RFQ was ongoing as of early May 2000. However, because of budget problems created by the high price of fuel for the ship it is unlikely that funds will be available to purchase the system in FY00.

CHEMISTRY LABORATORY

***ACTION ITEM**: SCIMP and TAMU Chemistry Laboratory Working group will look into the feasibility of purchasing an auto extraction unit in light of other needs in the chemistry.*

The chemistry LWT recognizes the need for an auto extraction unit and has looked at the feasibility but currently cannot rank it as a high priority item until more research is done. Mitch Malone will survey community re: GC-MS autoextraction equipment, then shorebased personnel need to be assigned to investigate the options, vendors, and potential costs of an autoextraction or other cheaper options. Unit for $50K has been identified.

***ACTION ITEM**: SCIMP and TAMU Chemistry Laboratory Working group will develop a cookbook of extraction techniques and machine settings for the analysis of organic molecules using the GC-MS. Additional considerations will be given to other instruments to aid in these analyses.*

Briefly addressed in the existing draft of Organic Geochemistry cookbook (under review). We should incorporate what has been done on Leg 189 into the evolving cookbook. Outside solicitation is key and will undoubtedly send us back toward the extraction method problem. We need SCIMP to volunteer contact(s) for science participation in this development.

i) During the ship visits, SCIMP members found that the new instrumentation in the chemistry laboratory is taxing the current cooling system. This could be a significant problem when the ship is working in the tropics.

iii) The pump for the GC-MS and the EC detector in the chemistry lab need to be vented.

***ACTION ITEM**: ODP-TAMU should investigate feasibility of adding additional cooling systems into the chemistry laboratory.*

This would require installation of additional systems. One of the issues Brad Julson and Jay Miller considered during the transit is potentially rearranging heat generation sources. Brad and Chemistry Technicians are still discussing options.

ii) Several "workhorse" pieces of equipment in the chemistry laboratory are either aging or becoming out-dated. These instruments include the coulometer, spectrophotometer, and freeze dryer.

Discussions of the chemistry LWT rated the freeze dryer as the highest priority item of these three. The LWT considered that the best coulometer upgrade would be an autosampler, but cost, size, and availability reduce this priority. The LWT also noted that other than the bulb burning out, the spectrophotometer seems to be pretty stable. Given the current climate of funding a replacement of this equipment is not likely unless failure demands it.

ACTION ITEM: *SCIMP and ODP-TAMU Chemistry Laboratory Working group will investigate options to replace/update these systems and make specific recommendations at the next SCIMP meeting.*

ACTION ITEM: *ODP-TAMU to ensure that all instruments and storage cabinets comply with health and safety guidelines.*

Several cabinets replaced and reorganized on Legs 187 and 188. Larger plastic acid storage cabinets have been ordered.

SCIMP Recommendation 00-1-5: SCIMP recommends that ODP-TAMU remove the XRF from the JOIDES Resolution during the Leg 189/190 transit and portcall.

The current schedule calls for the XRF to be removed from the ship during the Yokohama port call at the beginning of Leg 191 and returned to ODP/TAMU in working order. The lab changes will be completed during the second half of Leg 191. Required materials have been ordered and will be shipped to Yokohama. The XRF has been decommissioned and disassembly is underway.

SCIMP Recommendation 00-1-6: SCIMP recommends that TAMU expeditiously (i.e., during Leg 189/190 transit) move the existing thin section, hard-rock sample preparation and XRD laboratories into the new space on the 7th floor of the lab stack. The microbiology laboratory, including the existing apparatus and the expanded apparatus purchased by ODP-TAMU and LExEN should be installed in the F-deck space vacated by this move.

The proposed date posed a potential risks to the Leg 190 science program, which includes a significant microbiology component, should the lab changes not be completed and the labs be restored to full functionality before the beginning of that leg. There were also concerns expressed regarding the feasibility/desirability of relocating the XRD to the top level of the lab stack. The recommendation now is to leave the XRD on the 5th level, and move all XRD and ICP sample preparation to the top level (along with the thin section making facilities). This simplifies and reduces the cost of making the lab changes, and alleviates concerns regarding the sensitivity of the XRD to relocation and ship motion. (If it is subsequently determined that the XRD interferes with microbiology needs, it can be relocated to the top level at a future time.)

ACTION ITEM: *Chemistry and Core Description SCIMP LWG members will document the past usage history of the XRD and examine its utility for the upcoming scheduled legs. They will report their findings to the panel via the SCIMP message boards before the next meeting. SCIMP will make a specific recommendation for removal or replacement no later than June 2000.*

DONE*: compiled by M. Malone-forwarded to R. Murray.*

PHYSICAL PROPERTIES LABORATORY

ACTION ITEM: *Report on status of Physical properties labs since dry dock.*
The Physical Properties laboratory was only partially reconstructed during dry dock and due to lack of technical support was not brought on line until the initial transit on Leg 188. Peter Blum

sailed on the transit after Leg 189 to sort out several instrument and protocol issues (see Physical Properties lab in Science Services Update).

ACTION ITEM: *Several issues arose out of the visit to the ship by the SCIMP physical property LWG. The pncnometer has been moved to a new location and modified during the laboratory renovations. It is not clear how the environmental conditions in this new location and the instrument upgrade will affect the quality of the data.*
A third pycnometer was purchased to make sure at least one unit is operational at all times. It will be delivered to the ship during Leg 190. Being close to the He is an improvement, but being close to the ovens may increase fluctuations in temperature and affect performance. This will need to be monitored over the next few cruises.

•***Natural Gamma*** A current problem with natural gamma data collection on the whole-core MST is that there is often a trade-off between core flow and gamma counts. The faster the core flow through the MST, the shorter the gamma count times and hence, very low counts per seconds are recorded. On high recovery legs it is almost impossible to gather useful natural gamma data. Christian Buecker reported to the panel that higher resolution spectral gamma detectors are now available. These new detectors could possibly be incorporated into the current natural gamma sensor on the MST (thus allowing increased throughput and high gamma count rates).

ACTION ITEM: *Buecker will investigate the cost and availability of these new detectors and report back to the panel via the ODP message boards.*

•***Utility of Measurements*** The physical property laboratory, like many of the labs on the ship, is very crowded. With the potential for new track systems in the laboratory stack (e.g., digital imaging), there is a need to evaluate the utility of some of the current equipment in the labs. In particular, utility of routinely collecting Vane Shear measurements was discussed by the panel. Before advocating the removal of the Vane Shear unit, the panel decided it was necessary to determine how often the data were being accessed and how many post-cruise manuscripts utilized the data.
ACTION ITEM: *SCIMP Physicial Property LWG members will evaluate the level of data access and try to determine how often Vane Shear data is used in ODP post-cruise publications.*

UNDERWAY LABORATORY

SCIMP Recommendation 00-1-7: SCIMP recommends that the pending purchase or lease of the new seismic gun arrays for the JOIDES Resolution be deferred pending full evaluation of the JOIDES Resolution underway geophysical operations by the SCIMP U/G sub-panel. The evaluation will be completed and presented at the next SCIMP meeting and a full recommendation on U/G operations will follow.

SCIMP Recommendation 00-1-8: SCIMP recommends that ODP-TAMU determine the cost to repair both magnetometers and properly maintain and service them for the remainder of ODP. These data will be incorporated into the SCIMP's evaluation of U/G operations. Any repairs or other expenses should be deferred pending the U/G report.

One magnetometer has been repaired, the other is awaiting parts.

COMPUTERS

During the SCIMP laboratory visit, several problem areas were identified for further Computer LWG evaluation/action. (1) The shipboard backup of data has historically been a slow cumbersome process, especially at the end of a leg. This slow (up to two days) backup can cause problems for shipboard scientists and technical staff trying to complete end-of-leg analyses and

reports. (2) The need for more disk space is a constant problem. This problem is only going to increase at a rapid rate with the advent of routine digital imaging aboard the ship. Digital image storage, backup and distribution may overwhelm the current disk space. (3) UNIX/Solaris system archiving support needs improvement. These systems are not always used each leg but when used this archiving support is important. Additional recommendations/action items regarding computer needs that are tied into seismic/log/core integration can be found in Section I (Integration of Wireline, Seismic, and Core measurements shipboard) below.

CURATION

The shipboard curatorial representatives noted that the shorebased sampling data entry application is preferred over the shipboard version and, in fact, is often used at sea. The shipboard curatorial representatives felt that there were some useful aspects of the shipboard system that could be applied to the shorebased system to make it an even better application and one that could be used by all the shipboard and shore-based curators. SCIMP requested that the shipboard curators supply the SCIMP Curatorial LWG with a list of modifications they felt should be made to the current shorebased system to make it a more useful application for both on shorebased and shipboard use.

ACTION ITEM: *SCIMP Curatorial LWG to follow up with shipboard curatorial representatives to obtain a list of modifications needed for JANUS sampling application.*

The JANUS Shipboard Sampling Program has had several problems since its initial deployment on Leg 171B. The shipboard curatorial representatives have repeatedly asked for repairs and modifications. JRS, a shorebased spreadsheet style program created independently for the core repositories, has been used on ship as well, but has some design limitations for use as the primary sample entry program. In Spring/Summer of 1999, the curator collected comments from the shipboard curatorial representatives and the core repository staff who sailed recently, on how to modify and improve JRS so to fit shipboard sampling needs. These comments were forwarded to IS, where a new Java based program was begun in Fall of 1999, to function like JRS but with flexibility of features and displays to make it more optimal for shipboard use. An alpha version of this program is currently on Leg 190 for testing, and it is planned to sail a beta version on Leg 192 together with the developer.

ACTION ITEM: *ODP-TAMU needs to inform co-chiefs at the precruise meeting of the potential conflict between paleontologists and microbiologists over the use of the epifluorescence microscope and work to resolve this issue* ***prior*** *to sailing.*

DONE-and new scope exclusively for microbio is forthcoming.

PALEONTOLOGY/MICROSCOPES

Digital Images A concern is the establishment of a plan for the systematic documentation and storage of digital images of thin sections. Especially on hard rock legs, hundreds of digital images of thin sections are generated for use in the Initial Reports. On Leg 187, the task of maintaining and insuring adequate documentation and consistent storage of these images was assumed by the staff scientist. To insure that data are not lost, the procedure and responsibility should be formalized.

ACTION ITEM*: SCIMP Paleontology LWG is working with the ODP-TAMU Information Services and Science Services to formalize the procedure to archive digital thin sections.*

GENERAL

The state of the manuals ("cookbooks") varies quite substantially between laboratories. SCIMP and TAMU need to address this disparity and work toward bringing the manuals in all labs to a high quality that reflects the current state of technology and procedures.

***ACTION ITEM**: Dave Anderson will post a "cookbook" assessment outline on the SCIMP message board to begin process of upgrading manuals.*

Physical Properties: Update underway as a result of improvements during transit after Leg 189
Paleomagnetism: Manual is completely outdated and is currently being rewritten
Organic Chemistry: Updated and in review
IW Chemistry: Will require update as a result of change from AA to ICP analysis
ICP Chemistry: Draft has been distributed
UW Geophysics: No action, guide available, protocol changes quickly
Paleontology: No action, User manual for the PAL application and the microscopes exist; inventory is available on the web; processing methods and preferences depend on the scientist.
Shipboard Scientists Handbook: Handbook outdated, revision in progress.
Core Description: No action, core description manual still up-to-date, AppleCore manuals exist.
Downhole Tools: No action
Microbiology: No action, wait to hire technicians and establish procedures

***ACTION ITEM**: TAMU/SCIMP LWG members supervise the revision of "cookbooks" to reflect new shipboard configuration and procedures. The revised cookbooks should be available online as PDF files.*

***ACTION ITEM**: ODP-TAMU/SCIMP to create a Microbiology Laboratory Working Group prior to Leg 190.*

In principle, a LWT has been created, but it must still be populated with technicians who have the necessary expertise. Currently, Tom Davies is the only member of the Microbiology LWT. Two microbiology positions will be advertised and hired as soon as possible.

SCIMP Recommendation 00-1-9: SCIMP recommends: 1) That shipboard facilities for Wireline/Seismic/core integration include a separate workstation dedicated to the integration effort 2) That the IESX software be able to plot directly to large-scale (36”) plotters and printers and that this capability be implemented by June 2000 SCIMP meeting. 3) That ODP-LDEO and ODP-TAMU provide a plan for integrating the UNIX network on the ship.

SCIMP Recommendation 00-1-13: SCIMP recommends that ODP-TAMU investigate the capability to measure spatial variations in core temperature on the catwalk. These non-intrusive measurements should lead to integration into JANUS and should be coupled to measurements made in the physical property laboratory. The results of this investigation should be presented to SCIMP before ODP-TAMU purchases or develops any equipment.

No actions taken. Currently, a low priority project with no identified resources.

OPERATIONS SCHEDULE

	Leg	Port (Origin)†	Dates ¤	Total Days (port/sea)	Days at Sea (transit/on site)	TAMU Contact	LDEO Contact
187	Australia-Antarctic	Fremantle	15 November - 12 January '00	58 (5/53)	15/38	J. Miller	F. Einaudi
188	Prydz Bay	Fremantle	12 January - 12 March	60 (5/55)	22/33	C. Richter	T. Williams
189	Southern Gateways	Hobart	12 March - 13 May	62 (4/58)	12/46	M. Malone	U. Ninnemann
Transit (Townsville-Guam)		Townsville	13-24 May	11 (3/8)	8/0	B. Julson	N/A
190	Nankai I	Guam	24 May - 17 July	54 (1/53)	7/46	A. Klaus	S. Saito
191	W. Pacific Ion/HD Engineering	Yokohama	17 July - 13 September	58 (5/53)	12/41	C. Escutia/L. Holloway	V. Louvel/TBN
192	Ontong Java	Guam	13 September - 12 November	60 (5/55)	15/40	P. Wallace	G. Cairns
193	Manus Basin	Guam	12 November - 9 January '01	58 (5/53)	9/44	J. Miller	G. Iturrino
194	Marion Plateau	Townsville	9 January - 5 March	55 (5/50)	13/37	P. Blum	H. Delius
195	West Pacific Ion	Guam	5 March - 11 April	37 (5/32)	7/25	C. Richter	V. Louvel
196	Nankai II *	Kaohsiung	11 April - 10 June	60 (5/55)	9/46	A. Klaus	S. Saito
197	Hotspots	Yokohama	10 June - 10 August	61 (5/56)	21/35	G. Acton	F. Einaudi
198	Paleogene	Honolulu	10 August - 9 October	60 (4/56)	20/36	C. Escutia	P. Fothergill
199	Gas Hydrates	Victoria	9 October - 6 December	58 (5/53)	5/48	M. Malone	D. Goldberg
200	H2O ¥	San Francisco	6 December - 13 January '02	38 (5/33)	18/15	T. Davies	Y. Sun
201	SE Paleoceanography ¥	Panama City	13 January - 10 March‡	56 (5/51)	21/30	P. Wallace	U. Ninnemann

Notes:

¤ Port call dates have been included in the dates which are listed. For example, Leg 189 begins on 12 March with 4 days of scheduled port call. The scheduled sailing date is 16 March.

† Although 5 day port calls are generally scheduled, the ship sails when ready.

* Mid-leg port calls may occur for Legs 196 and 199.

‡ Leg 201 is tentatively scheduled to end in Valparaiso.

¥ Legs 200 and 201 require EXCOM approval.

CO-CHIEF STATUS

191 T. Kanazawa, W. Sager
192 J. Mahoney, G. Fitton
193 R. Binns, F. Barriga
194 F. Anselmetti, A. Isern
195 M. Shinohara, TBN
196 K. Becker, H. Mikada
197 J. Tarduno, R. Duncan
198 M. Lyle, P. Wilson
199 A. Trehu, G. Bohrmann
200 R. Stephen, J. Kasahara
201 A. Mix, R. Tiedemann

LEG REPORTS

Review of Operations:

	Leg 187 Australia-Antarctic 15 Nov - 12 Jan '00 Fremantle - Fremantle	Leg 188 Prydz Bay 12 Jan - 11 Mar '00 Fremantle - Hobart	Leg 189 Southern Gateways 11 Mar - 13 May '00 Hobart -Sydney-Townsville
Transit/Onsite (day)	15 / 38	25 / 31	10 / 49
Sites	13	3	5
Holes	23	7	16
Water Depth (m)	4365 - 5747	480 - 3549	2159-3579
Deepest Penetr. (m)	407.3	999.1	958.8
Cored Interval (m)	616.7	1852.1	5116.8
Tot. Recov. (m, %)	137.3 m (22.6%)	971.1 m (52.4%)	4539.1 (88.7%)
APC Recov. (m, %)	0 (0%)	167.9 (86.8%)	1980.0 (100.3%)
XCB Recov. (m, %)	0 (0%)	462.8 (49.1%)	1508.9 (84.9%)
RCB Recov. (m, %)	137.3 (22.6%)	340.3 (47.5%)	1050.2 (77.0%)

Leg 187 (Australia-Antarctic Discordance)

- Drilled 3789.8 m sediment (an average 290 m per site) without coring
- Cored 616.7 m of basaltic basement in single bit RCB holes
- Commissioning of the Active Heave Compensator
- Commissioning of the Rig Instrumentation System

Leg 187 undertook to trace the boundary between Indian and Pacific, ocean-scale mantle provinces across 10- to 30-m.y.-old seafloor of the southeast Indian Ocean between Australia and Antarctica. The boundary has been located on young seafloor of the Australian Antarctic Discordance (AAD), where it is sharply defined and migrating to the west at ~40 mm/yr.

The leg was built around a responsive drilling strategy in which real time shipboard geochemical analyses from one site were frequently used to guide the selection of subsequent sites from a slate of preapproved targets. This strategy proved highly effective, allowing us to maximize our time on site and to focus on sites that could potentially yield the best definition of the boundary configuration. Using Ba and Zr contents of basalt glasses referenced to our database of younger (0-7 Ma) lavas from the AAD and Zone A (east of the AAD), we assigned each of the 23 holes drilled at 13 sites to an Indian, Pacific, or Transitional-Pacific (TP) mantle domain. Three sites encountered lavas from two of the three domains.

From these shipboard identifications of mantle domain, three fundamental observations can be made:

1. No Indian-type mantle occurs east of the regional residual depth anomaly.
2. Pacific and especially TP-type mantle occurs throughout the depth anomaly in the study area.
3. Between ~25 and 14 Ma, Indian and Pacific mantle types alternated in western Zone A on a time scale of a few million years.

These observations lead to the following tentative conclusions which require careful testing as isotopic data become available. A discrete mantle boundary comparable to the present-day boundary in the AAD cannot be mapped through the entire 14- to 28-Ma time interval encompassed by Leg 187 sites, although comparable boundaries have existed for relatively short, discrete time intervals. We surmise that, for the longer term, the eastern limit of the Indian mantle province corresponds closely to the eastern edge of the depth anomaly. Its locus must lie close to the 500-m residual depth contour that tracks south to connect with the known location of the Indian-Pacific boundary on younger seafloor of the AAD. West of this boundary, sporadic occurrences of lavas indicating derivation from TP-type mantle and even Pacific-type mantle are interspersed with the predominant Indian-type mantle. The western limit of Pacific or TP mantle is not well defined by our data, but it is most likely associated with the western boundary of the depth anomaly. The alternation of Indian-type sites with Pacific and TP-type sites in western Zone A on time scales of a few million years can be interpreted in terms of discrete incursions, either of Indian mantle beneath Zone A or, perhaps more likely, of Pacific mantle into the dominantly Indian region of the depth anomaly.

Leg 188 (Prydz Bay)

- Recovery was highly variable in loose sand, gravel, silt and drop stones (52.4% overall) with 971 m recovered.
- Ice and weather caused 7.1 days of lost time (25% of ops time), due to cold temperatures: static –7.5°C, with wind chill –28.0°C, ice/freezing problems and/or icebergs.
- 2 MWD holes were drilled to 42.5 and 261.8 m, proving viability of real time data transmission of drilling parameters with data recorded on rig instrumentation.
- AHC was not operational due to servo-valve failure during commissioning
- LWD provided logs in holes that could not be logged with wireline tools.
- First high latitude leg completed without an ice picket boat.
- High seas hampered operations.
- Deepest hole in the Antarctic, 999.1 m.

Leg 188 was drilled based on one of five linked proposals to decipher Cenozoic glacial history and paleoenvironments of Antarctica by drilling transects across the continental margin in five different regions. ODP Leg 178 (Antarctic Peninsula) was the first such proposal to be drilled. Three sites were drilled on Leg 188, with one each on the Prydz Bay continental shelf, slope, and rise. These sites provide records of the transition from East Antarctic preglacial to glacial conditions on the shelf (Site 1166); the variability of onshore erosion areas and glaciomarine depositional settings, during latest Neogene glacial-interglacial periods, on the slope (Site 1167); and the long-term, lower to upper Miocene transition from temperate to cold-climate glaciation, with superimposed short-term glacier fluctuations since early Miocene time (Site 1165). These sites document the paleoenvironments for select periods during Cenozoic and older times as Antarctica transformed from a temperate to polar setting.

The three sites proximal to the East Antarctic Ice Sheet drilled during Leg 188 across the Prydz Bay continental shelf, slope, and rise provide new evidence of long- and short-term variations in paleoenvironments (i.e., depositional, glacial, and inferred climate) extending from Holocene into Mesozoic times. The shelf site (Site 1166) documents the earliest stages of East Antarctic glaciation from inferred temperate climates (i.e., with vegetation) to transitional environments of proximal glaciers to full glacial and interglacial conditions with intermittently grounded glaciers on the shelf. Site 1167 on the slope samples the latest Neogene sediments that attest to the rapid deposition and variability of onshore erosion areas and glaciomarine depositional settings in front of grounded ice sheets during glacial-interglacial periods. On the continental rise, at Site 1165, the drilling record documents the long-term, lower to upper Miocene transition from temperate to cold-climate glaciation, with superimposed short-term glacier fluctuations since early Miocene time.

Leg 189 (Southern Gateways)

- Triple APC to 200 m and XCB 1 hole to 500 m
- Drill to 500 m and RCB to 640-940 m, Log.
- High seas with ship heave in excess of 15 ft.
- On inbound transit ending Leg 189, stopped 1 day in Sydney to discharge science party and take on fuel. Then finished transit to Townsville, arriving 11 May 2000.
- Commissioning and acceptance of AHC
- AHC training for drill crew

The Cenozoic Era is unusual in its development of major ice sheets. Progressive cooling at high latitudes during the Cenozoic eventually formed major ice sheets, initially on Antarctica and later in the Northern Hemisphere. In the early 1970s, an hypothesis was proposed that climatic cooling and an Antarctic cryosphere developed as the Circum-Antarctic Current progressively thermally isolated the Antarctic continent. This current resulted from the opening of the Tasmanian Gateway south of Tasmania in the Paleogene, and the Drake Passage in the earliest Neogene.

Leg 189 drill sites, five in all in 2475 to 3579 m water depths, tested the above hypothesis and refined and extended it, greatly improving understanding of Southern Ocean evolution and its relation with Antarctic climatic development. The relatively shallow region off Tasmania is one of the few places where well-preserved and almost complete marine Cenozoic carbonate-rich sequences can be drilled in present-day latitudes of 40-50ºS, and paleolatitudes of up to 70ºS. The broad geological history of all the sites was comparable, although there are important differences among the three sites in the Indian Ocean and the two sites in the Pacific Ocean, as well as from north to south.

In all, 4539 m of core were recovered with an excellent overall recovery of 92%, with the deepest core hole penetrating 960 m beneath the seafloor. The entire sedimentary sequence cored is marine and contains a wealth of microfossil assemblages that record marine conditions from the Late Cretaceous (Maastrichtian) to the late Quaternary, and terrestrial conditions until the earliest Oligocene. The drill sites are on submerged continental blocks extending up to 600 km south of Tasmania, which were at polar latitudes in the Late Cretaceous when Australia and Antarctica were still united, although rifts had developed as slow separation and northward movement of Australia commenced. The cores indicate that the Tasmanian land bridge, at polar latitudes, completely blocked the eastern end of the widening Australo-Antarctic Gulf (AAG), during both the slow spreading phase and the fast-spreading phase (starting at 43 Ma), until the late Eocene.

SCIENCE SERVICES UPDATE

Post dry dock

The two major labstack projects carried out during dry dock were (1) the addition of a new level to the top of the labstack, and (2) the core lab was remodeled to improve core flow and better control of processing of gassy cores. Activities associated with installation of the new level precluded any work in the core lab until late in the yard period. As a result much of the transit from Singapore to Fremantle, and much of Leg 187 was devoted to completing the lab modifications and reinstalling and testing equipment. The labstack is now once again fully functional, and comments from the science parties on Legs 187-189 indicate that the lab modifications represent significant improvements.

Microbiology

At its January meeting in Fremantle, SCIMP recommended that the XRF be removed from JOIDES Resolution, and the XRD and thin section making facilities be moved to space on the new 7th level of the lab stack. The space on the F-deck level vacated by these changes could then be replaced by the microbiology lab, which presently occupies space on the 7th level. These changes will put microbiology, geochemistry and micropaleontology labs in proximity, thus fostering synergy between the different groups of scientists, and from a practical point of view will allow for more efficient arrangement of utilities such as gas distribution and exhaust lines.

SCIMP further recommended that these changes be made during the transit between Legs 189 and 190, however further review by ODP/TAMU revealed potential risks to the Leg 190 science program, which includes a significant microbiology component, should the lab changes not be completed and the labs be restored to full functionality before the beginning of that leg. There were also concerns expressed regarding the feasibility/desirability of relocating the XRD to the top level of the lab stack. Our plan is to leave the XRD on the 5th level, and move all XRD and ICP sample preparation to the top level (along with the thin section making facilities). This simplifies and reduces the cost of making the lab changes, and alleviates concerns regarding the sensitivity of the XRD to relocation and ship motion. (If it is subsequently determined that the XRD interferes with microbiology needs, it can be relocated to the top level at a future time.)

The current schedule calls for the XRF to be removed from the ship during the Yokohama port call at the beginning of Leg 191 and returned to ODP/TAMU in working order. The lab changes will be completed during the second half of Leg 191. Required materials have been ordered and will be shipped to Yokohama. A substantial amount of equipment for microbiology studies has been purchased by WHOI under a separate grant from the NSF LexEn Program. This equipment was placed on the ship at the Townsville port call and temporarily installed in lab space in the new 7th level. This equipment will be relocated during Leg 191.

Digital Imaging

A digital imaging system that can be used routinely to collect images of cores on the JOIDES Resolution has been a high priority issue for JOI, SCIMP, and ODP-TAMU for several years. At the June 1999 SCIMP meeting, a recommendation was passed that ODP-TAMU immediately purchase a complete commercially available RGB line scan digital imaging system and that the new system should be fully functional by July 2000.

Internal review at ODP-TAMU by a digital imaging working group resulted in a detailed list of technical specifications that are needed for such a system. An RFQ was submitted in early March, 2000, to vendors of digital core imaging systems so that ODP-TAMU could identify which commercially available RGB line scan digital imaging system should be purchased for use on the JOIDES Resolution. In the RFQ, we specifically requested prices and descriptions of two different types (configurations) of systems that we were considering. The first type is one in which only one section of core can be imaged at a time. The second type is one in which all sections of core are laid out side by side and the camera and illumination move along an x-y track to scan the sections sequentially without an operator having to intervene after each section. The ODP-TAMU working group felt that for reasons of efficiency of core flow, the second type of system was preferable;

however, only one of four vendors of imaging systems actually makes a system like this, so this type of system would represent a new development for most vendors. In addition, the cost of such a system was unknown at the time we formulated the RFQ.

ODP-TAMU received responses from three vendors as of the closing date for the RFQ. Review of the responses to the RFQ was ongoing as of early May 2000. However, because of budget problems created by the
öö
öö
öö
öö
öööööööööööööööööööööööööööööööö
ööö

öööööööööööööööööööööööööööö

öö
ööopment of a new application. Given that a number of legs before the end of the program will be coring basaltic rocks, we should consider whether we should try to modify and use the ICDP - Hawaiian drilling project core description software. This program runs in Microsoft Access and could be configured to read and write information to an Oracle database. It is only designed for archive descriptions of basalts, and does not adequately meet the requirements for all other types of hard rock descriptions.

Physical Properties Lab Update

An extensive review of measurement systems in the Physical Properties Lab was performed during the transit between Legs 189 and 190. The complete report of these activities is available on the WWW at http://www-odp.tamu.edu/sciops/labs/physprops/ and only a summary is reported here. A third pycnometer has been purchased to ensure at least one performing system is on the ship at all times. The LWT is waiting on a SCIMP recommendation on whether or not we continue to make vane shear measurements available. If we do not, a complete reconfiguration of track space is possible to optimize other measurements. If we are to continue offering this facility, it is the opinion of the LWT to keep systems set up just as they are. A protocol was outlined for calibration of the loop magnetic susceptibility instrument and problems with drift correction were investigated. Several natural gamma issues were investigated, including tuning, calibration, background and interference from the GRA source. Future upgrades include a multisensor working half core logger (see April PPLWT notes), migrating color reflectance to a dedicated station, optimizing thermal conductivity measurements, and improvements to the MST user interface. The PP handbook is being reorganized and updated for publication this fall.

ICP Update

As a result of work on the transit after Leg 189, and building on the contributions of scientists and technicians during Legs 187, 188, and 189, we have now completed sample preparation and analytical protocols for routine analysis of both interstitial waters and basalts by ICP. Data reduction software for both types of analysis has been written and tested, and our technical staff has been trained in data transfer and manipulation. JANUS upload software for interstitial waters is complete, and we have outlined the data model for uploading and downloading major and trace element data from bulk rock analysis. A new technical note for ICP analysis on board the *Resolution* has been written and is in final review before publication on the WWW.

Color reflectance

Automated Color Reflectance measurements were implemented on Leg 188. A color reflectance measurement parameter protocol was implemented at the Leg 189 port call. Observer and illumination standards should always be set to 10° and 65D. These settings should be recorded in the database for each run (section). Old color data will be recalculated using these parameters.

Color parameters (X, Y, Z, L*, a*, b*) are not calculated by the AMST program anymore. They are recorded directly from the Minolta CM2002 by the AMST program and are available for upload. It was decided that the database group upload data and calculations (performed by the CM2002) directly into the database starting with Leg 189, and recalculate color parameter values for all previous legs (except the "bad data legs"). In addition, the database group will calculate color parameters for Leg 189 for comparison with the uploaded Minolta calculations.

APC Temperature tool

Three tools have been repaired by Blue Mountain Instruments (Glenn Jolly) and two returned to the JOIDES Resolution. Five operation tools are now on board. One is being retained by BMI for software testing. Following receipt of APC Temperature tool and WSTP data logger documentation (which is expected very soon) 3 additional APC temperature tools will be returned to Jolly for repair.

Water Sampling and Temperature Probe (WSTP)

Six new thermistors along with calibration data have been received and are being sent to the ship. A single thermistor will now cover the full WSTP temperature range with two sets of calibration coefficients supplied to meet accuracy requirements.

Davis Villinger Temperature Probe (DVTP)

DVTP with prototype pressure capability has been built Tool training for technical and engineering support staff was conducted at ODP-TAMU 17-19 April with Bob MacDonald from PGC. Tool has been delivered to Leg 190 for testing in downhole deployment. The first run was successful, the pressure casing failed during the second run. Our technicians are attempting to fabricate a replacement at sea. Other activities include (1) completed redesign and fabrication of new electronics chassis, (2) completed beta version of Visual Basic communications program (DVTPComm), trained Leg 189 electronic technicians on software operations with good response. DVTPComm replaces the first of four steps in the program to recover tool data; ultimate goal is to generate a labview program for all four steps.

Temperature Pressure and Conductivity Tool (TPC, a.k.a. APC Methane tool)

This is a joint development including ODP-TAMU and MBARI (Monterey Bay Aquarium Research Institute; Charles Paull and Bill Usseler). The object is to develop a sensor package and data logger that will fit in the APC piston head that will monitor conditions the core experiences during recovery. Recent discussions of ODP Engineering staff with Charlie Paull and Bill Ussler have resulted in decision to repackage the MBARI acquisition electronics into the APC piston. The MBARI electronics are packaged in a 4-in pressure case for ROV tests. The electronics will have to be modified to fit in a 1-1/4-in hole in the APC piston. ODP Engineers will meet with MBARI in early July. We are targeting Leg 195 (West Pac Ion) for prototype testing and Leg 199 (Gas Hydrates) for operational deployment.

Fisseler Water Sampler (FWS)

Joris Gieskes (Scripps) has obtained funds to modify the tool. He will drive the piston and draw the sample from the formation by utilizing a small motor with a feedback loop to minimize pressure changes. Tom Pettigrew has met with Gieskes and the tool is now at Scripps undergoing modifications. Scripps has funds and engineering time allocated to this project. The original aim was to have the tool ready for testing on Leg 190. However, Joris' engineer does not have time to complete modifications in time for Leg 190. New target time for testing has not yet been provided to ODP.

Shore-based Thin Section Laboratory

Set up of a shore-based thin section lab is completed. The shore-based thin section lab opens the door for sample requests of thin sections to curation, and for making thin sections during sampling parties.

INFORMATION SERVICES UPDATE

Personnel

The data migration FTE position vacated in August 1999 has been filled. Dr. Golam Sarker joined ODP in April 2000.

JANUS Applications Status

During December 1999 a JANUS review committee met to identify and prioritize tasks which were to be completed. This was to make the JANUS data storage/retrieval applications more usable and responsive to the needs of the scientific community in accomplishing the goals of the Ocean Drilling Program.

The information in the tables below indicate the work underway as of May 2000 and tasks which have already been completed since the results of the committee were published in January 2000. It should be noted that the items below marked with an '*****' are taken from the list produced by the committee and were indicated as the ones which should be worked on first. As each item in the 'Tasks in Progress' table are completed, the next higher priority task(s) will be assigned based on available resources.

Tasks in Progress	Area	Phase	Target Leg
* ICP Data Model; Upload; Data Retrieval	Chemistry	Analysis	TBD
* Down Hole Temperature Collection	Downhole	Analysis	TBD
* Scope of work for Bar Code implementation	All	Analysis	190
* AppleCore Sedimentary Data Uploader	Core Desc.	User Testing	190
* Fix AppleCore Batch Export	Core Desc.	User Testing	190
* Age-Depth Control Points	Misc. Labs	Development	TBD
* Implement JRS (JAVA version) on ship	Curation	User Testing	192
* Fix Slider Entry and Bugs	Core Desc.	Development	TBD
* Create Net Query for Zplot	Pmag	User Testing	190
* MAD Control Measurements	Phys. Props.	User Testing	190
* Correct Gas Upload	Chemistry	User Testing	190
Generic Editor for all of JANUS data	All	Analysis	TBD

Tasks Completed	Area
* Reformat Gas Element Table	Chemistry
* Reformat Gas Element Graphs	Chemistry
* Section Breaks in Net Query	PMag
* IW Data Upload on PC	Chemistry
* Carbonate Data Upload on PC	Chemistry
* Fix/Create Splice Reports	Misc. Labs
* Implement updated MAD application	Phys. Props.
* Fix Slider Entry and Bugs	Core Desc.
Generic Data Uploader	All
BOL/EOL Synchronizer	IS

Data Migration

The MST data for Legs 155 through 161 were migrated since the last update. The cumulative effort is now migration of MST data from Legs 155 through 170. The continued progress in data migration is expected to accelerate in the coming time period.

Start Date: September 1998
Current: May 2000 Target
Completion Date: August 2001

x = migration completed, o = data not acquired
1 = NGR acquisition start Leg 150
2 = Reflectance acquisition start Leg 154

Leg / Data	170	169	168	167	166	165	164	163	162	161	160	159	158	157	156
GRAPE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
P-Wave	x	x	x	x	x	x	x	o	x	x	x	x	x	x	x
MagSus	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
NGR	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Color Reflectance	x	x	x	o	x	x	x	o	o	x	x	x	o	x	x

Leg / Data	155	154	153	152	151	150	149	148	147	146	145
GRAPE	x	x						o			
P-Wave	x		o					o			
MagSus	x	x						o			
NGR	x	x	o				1				
Color Reflectance	o	x	2								

Leg / Data	144	143	142	141	140	139	138	137	136	135	134	133	132
GRAPE			o		o							x	
P-Wave			o		o							x	
MagSus			o		o							x	
NGR													
Color Reflectance													

Leg / Data	131	130	129	128	127	126	125	124	123	122	121	120	119
GRAPE													
P-Wave													
MagSus													
NGR													
Color Reflectance													

Leg / Data	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	102	101
GRAPE	o									o			o				o	
P-Wave	o								o	o		o	o	o	o	o	o	o
MagSus						o				o	o					o	o	o
NGR																		1
Color Reflectance																		2

DRILLING SERVICES UPDATE

The last six months have been very active for engineering development. Two major projects that were initiated at dry dock, Active Heave Compensation (AHC) and Rig Instrumentation, were successfully installed and are now operational. Two other developments, Hard Rock Reentry System (HRRS) and Advanced Diamond Core Barrel, have undergone quarry tests and are being prepared for testing on board the *JOIDES Resolution* later in FY00. Moreover, work continued on a long term project to improve the Program's downhole measurement tools.

Active Heave Compensator (AHC)

The largest of the projects that ODP carried out at dry dock was the conversion of the ship's passive heave compensator to an activated hydraulic system called AHC. The objective of the AHC project was to reduce the ship's heave being transmitted to the drill string to low, managed values to reduce large weight on bit fluctuations. The vertical motion transmitted to the drill string by ship heave produces cyclic disturbance and wide weight-on-bit fluctuations. Although this project had been recommended by TEDCOM in December of 1996 and approved by SCICOM in the Spring of 1997, the implementation of the project had been delayed first by budgetary constraints in FY98 and then further delayed because the vendor originally chosen to provide the system failed to adequately address both technical and contractual concerns. The project was re-bid in the fall of 1998 and a contract was signed with Maritime Hydraulics (MH) April 1, 1999. Although AHC systems are now standard technical equipment on deep water platforms and ships in the oil industry, each installation is unique and has to be specially designed to fit the requirements of each platform or vessel. With the contract being signed on April 1, 1999, MH and ODP were faced with a very compressed schedule to design, review, approve and develop technical specifications for the AHC. Indeed, although MH engineers visited the ship on several occasions prior to the installation to take measurements and to determine design and installation details, they failed to adequately account for conflicts in the derrick with hydraulic hoses, hydraulic cylinders and the optimal positioning of hydraulic pipes. These problems were all ultimately resolved, but they did result in delays in project development and increased costs. Because problems with the hydraulic hoses and piping were not fully understood until the end of dry dock, the AHC was not functional when the ship left Singapore. The necessary modifications were made while the JR was in transit to Fremantle and the re-configured hydraulic hoses and piping were installed at the Fremantle port call prior to Leg 187. The AHC was tested at the start of Leg 187 in shallow water and initial tests verified that the AHC provided significant improvement in reducing bit motion over the passive mode. (The tests showed that the AHC was holding the hook load variation to 2K with vessel heave of 8-10 ft. peak to peak. In comparison, the passive mode hook load variation was 10K). During Leg 187, it was established that the Motion Reference Unit (MRU) for the AHC had not been properly calibrated by the manufacturer, causing faulty heave feedback. This was a manufacturing problem, and could not be rectified at sea. The AHC was turned off for the remainder of Leg 187. At the Leg 188 port call, the MRU was replaced and modifications were made to the AHC to streamline operations by further reducing hydraulic conflicts. During testing of the AHC prior to sailing, the servo valve, which controls hydraulic flow to the active heave cylinders, failed to control flow of hydraulic fluid rendering the AHC inoperable. The problem could only be fixed by the manufacturer and the AHC did not operate during Leg 188. At the Leg 189 port call, a new servo valve was installed and dockside tests established the AHC was functional.

On Leg 189 the AHC was operational during the leg at all sites and data was collected by the new rig instrumentation system on ship and drill string dynamics. These digital data allow analysis of AHC performance and a preliminary review of these data document the performance of the AHC system (i.e., the system's ability to decouple ship's heave from the drill string). An example of these data from Hole 1168A shows the following results when the Passive Heave Compensator (PHC) performance is compared with the performance of the AHC under similar conditions.

	Ship's Vertical Velocity (ft/sec)	Ship's Heave Extreme (ft)	Ship's Heave Average (ft)	Drill String Motion Extreme (ft)	Drill String Motion Average (ft)	Drill String Torque (ft-lbf)	Efficiency Percentage
PHC	1-3	10	4-6	8.0	2 to 4	2000-5000	40-85
AHC	1-4	8-10	4-6	0.67	0.33	2500-3500	98-104

Based on these data, the AHC is performing above 90% efficiency as designed. The PHC data also demonstrates that the drill string dynamics vary significantly suggesting that the bit may be lifted off-bottom and then dropped onto the bottom of the borehole. Such large variations in pipe dynamics should impact core quality and recovery depending on the material being cored. On Leg 189, however, there was no demonstratable difference in the quality of core recovered when the AHC was used vs. when the PHC was in operation. There are at least two reasons why no significant differences in core quality were observed. First, except for a limestone horizon cored at the last site, the lithology of the material cored was cohesive, but not well consolidated and rates of penetration were relatively high and cores were cut quickly with both the XCB and RCB. Under these conditions, the benefits of the AHC may not be clearly defined. Second, the AHC could not be operated continuously at any of the sites because the seas were large enough that the heave of the ship exceeded the stroke of the compensator pistons. Now that the ship is leaving the Southern Ocean, we will be able to use the AHC under more favorable environmental conditions allowing AHC usage for the duration of XCB and RCB operations. Moreover, during the next year we will be operating under a wide range of geologic conditions.

It is important to note that the more consistent torque exhibited during AHC operations on Leg 189 can be directly related to more constant weight imposed on the bit and is the result of reduced motion of the drill string at the surface. There is an intent to actually measure weight on bit variations with a Measurement While Coring system that could be used in conjunction with the use of Logging While Drilling on an upcoming leg. Leg 193 (Manus Basin) is being targeted and this option will be explored with JOI, JOIDES and LDEO. All these data can be fed into, and recorded by, the new Ryan Rig Instrumentation System (RIS) that was installed at dry dock.

The AHC system has two criteria that limit operations:

- The ship's vertical velocity in response to heave does not exceed 4 ft/sec; and
- The PHC stroke for safe operations is limited to ± 2.5 meters (±8 ft).

Unfortunately, on Leg 189 the weather associated with the Fall season in the Southern Ocean resulted in long periods of time when the AHC was turned off because operational limits were exceeded. Initial testing of the AHC for commissioning was carried out at the first site during Leg 189 when the MH engineer was on board and final commissioning tests will be run during the first portion of Leg 190. We anticipate that the system will be accepted at that time and we look forward to using the AHC under more favorable sea state conditions.

The performance data obtained during Leg 189 indicate that the AHC is performing up to specifications (i.e., the drill pipe motion is less than 10% of the measured ship's vertical motion or heave). In fact, analysis of data from Leg 189 (see table) indicates reduction of drill pipe motion exceeds 95% of the ship's vertical motion. Please note that the AHC sometimes over compensates (100-104% compensation), but this is viewed as a tuning problem that should be solved on Leg 190. There are, however, two operational problems that have been identified that will be dealt with during the next several months. First, the bundle of hydraulic lines in the derrick, that ride up and down as the drill string is compensated, is not as well contained as we would like given the harsh conditions that we sometimes experience. The drill crews are presently considering options that will minimize the motion of the hydraulic lines when the ship is experiencing heavy seas. Second, operation of the AHC has shown that the Martin-Decker gauge that measures hook load, a surface

parameter that is a proxy for weight on bit, exhibits very large variations when the AHC is activated. This condition makes it difficult for the driller to control the weight applied to the drill string. The pneumatic properties of the PHC has a very soft spring constant that is approximately 10% of the spring constant of the drill string. As a consequence, the PHC attenuates the variations in hook load that the hydraulic load cells presently measure and that are displayed on the Martin-Decker gauge. The AHC system overrides the dampening effect of the PHC system and directly exposes the Martin-Decker gauge to the spring factor of the drill string resulting in large fluctuations as the AHC system compensates for the ship's heave. Moreover, the rapid (20m/sec) response of the AHC is another factor that contributes to excessive needle bounce. The problem will be minimized with the installation of electronic load pins on Leg 190. The load pins will sense the drill string weight below the PHC and above the Top Drive. Moreover, the load pin data is digital and the variations imposed by the fast response of the AHC can be filtered out creating a smoothed data stream. This problem should be resolved in the next several months.

Finally, the new AHC system requires the driller to operate the rig in a conventional land-rig drilling mode. The driller initiates drilling with the AHC after centering the PHC at mid-stroke. The driller will have to lower the blocks with the draw works to maintain weight on bit instead of bleeding air from the PHC system. This will require training and practice by the driller. This transition to a new way of drilling should be relatively easy once the new load pins are installed and the driller has a measurement of hook load that does not fluctuate wildly.

Rig Instrumentation System

During dry dock a Rig Instrumentation System (RIS) was installed on the *JOIDES Resolution*. This system represented a conversion of the 25 year old analogue instruments that displayed salient drilling parameters (e.g., hook load, rate of penetration, torque, revolutions per minute, depth, depth below seafloor) on charts and/or dials in the operations shack to a digital system that permitted more accurate readings and a continuous data stream that could be displayed at key locations throughout the ship and recorded for later analysis and integration into drilling results. The ability to present RIS data in formats that graphically display the drilling conditions bolsters interpretation and decision making. The data export feature allows scientists to merge and correlate drilling data with the physical properties data of recovered core. This type of analysis enables investigators to assess formation properties over cored segments where recovery is poor. These data recording and post processing features of RIS also provide operations and development engineers with the tools to analyze bit and bottom hole assembly performance, as well as downhole tool operation. This wealth of information coupled with the analytical abilities of the RIS will shorten design cycles, which will accelerate the deployment of new and improved drilling systems. Commissioning of the RIS was carried out during Legs 187 and 188. All hardware, electronic systems and software are functioning as specified. Procedures and methods for data archiving, distribution to the science community, and engineering analysis are being prepared.

The installation of a data acquisition and recording system is the foundation of a plan for achieving more science, smarter drilling and quicker development of new coring tools. The openness of the RIS architecture will allow ODP to move forward on Measurement while Drilling (MWD) type tools as was demonstrated on Leg 188. The ability to acquire, record and merge data from practically any measurement device (downhole or surface or laboratory) significantly augments scientific and engineering analysis. The recent installation of instrumented load pins to measure hook load is an example of the operational improvements, which can be added to the RIS system. Other such incremental enhancements will become evident as familiarization of the system progresses.

Advanced Diamond Core Barrel (ADCB) Project

The scientific goal of the ADCB is to improve core recovery in fractured hard rock. The ADCB project enhances the existing diamond core barrel (DCB) by cutting a larger core while maintaining the use of a smaller (6 _-in) bottom hole assembly (BHA). The project's operational strategy is to adapt existing mining technology's thin kerf concept and to utilize as much "off the

shelf" hardware as possible. The thinner kerf bits result in less rock being removed and, in turn, reduce the amount of potential disturbance that the formation sees while coring.

To date, the ADCB has been built and land tested once in May 1999. The results were very encouraging with 96% of hard and fractured rock recovered from 150 ft of coring. Another land test is planned in early June 2000 to further enhance the operating characteristics of all the additional hardware and components that have been designed to be run with the ADCB. This "stack- up" test will allow the shock sub, circulation, new positive indicator latch, as well as the triple tube coring system (i.e. split steel liners) all to be operated as one integrated system. Upon the successful completion of this "stack-up" test the hardware will be prepared and shipped for its initial use during Leg 193. The ADCB project has been a collaborative project with JAMSTEC and the Japanese Drilling Company (JDC).

Hard Rock Reentry System (HRRS) Project

The scientific goal of the HRRS is the development of a reentry system for unstable surface formations of fractured hard rock and pillow basalt. The objective is to develop a system that permits the emplacement of a reentry funnel and surface casing on the seafloor where conventional casing, hard rock guide bases, or reentry cones could not be used or are not applicable. The HRRS project has developed a drill in casing system using new fluid hammer technology in place of the conventional percussion air hammers that are used in land-based operations.

Plans and hardware are in place to deploy the HRRS during Leg 191 at Shatsky Rise. Four new types of bits have been developed over the last two years that are more robust than the bits used on Leg 179. The bits have been redesigned for improved spudding on bare rock. Ring bits have also been developed and land tested for the drilling in of 13 3/8-in casing with the hydraulic hammer, in addition to the improved under-reamer style.

The future of the HRRS project is dependent upon the level of funding that is available through the end of the program. Science has expressed a need for such hardware and a successful test on Leg 191 will call for its continued use on challenging hard rock legs. Casing equipment, bits and hammer rental would have to be covered via leg special operating expenses for future ODP legs.

Downhole Measurement Technology

The scientific and engineering objective of the Downhole Measurement Technology project is to provide centralized support for ODP/TAMU downhole measurement tools, as well as to develop and acquire new measurement tools for improved science. A major part of this effort is to create a commonality in data acquisition and support software for all downhole measurement tools. This will be applied to current operational tools, third party tools and future tools. A service center has been set up to provide centralized documentation control, inventory control, technical support, and orderly implementation of upgrades and changes. Initially, the five tools being included in this project are the APC Temperature tool, the WSTP, the DVTP, a new APC Methane tool developed in collaboration with scientists at the Monteray Bay Aquarium Research Institute and the Memory Drilling Sensor Sub.

The Service Center is well established and the task of standardizing hardware, software and calibration procedures for current downhole measurement tools is underway. The DOS based communication and analysis software for the DVTP tool has been rewritten in LabView for Windows. This will be duplicated for the APC Temperature tool and WSTP. A pore pressure measurement was added to the standard DVTP tool, and after successful sea trials the remaining tools will be upgraded. Downhole Data Acquisition System (DAS) electronics is being developed for the APC Methane tool and will be adapted to the APC Temperature tool, WSTP and DVTP. Vendor discussions are underway for procurement of a downhole Drilling Sensor Sub (DSS).

PUBLICATION SERVICES UPDATE

New *Scientific Results* Volume Format Development

The year 2000 marks the beginning of a new level of electronic publishing for ODP. As reported in the last Publication Services report (December 1999), beginning with *Scientific Results* (SR) Volume 169, all *Proceedings* volumes will be published on the World Wide Web chapter by chapter in the order of acceptance in both HTML and PDF formats. On 15 April 2000, the first SR paper for Leg 169 was published on the World Wide Web and two more papers were published on 12 May 2000 and 15 May 2000 (see list below for titles). Seven additional Leg 169 titles are now in press.

Leg 169 *Scientific Results* papers that have published on the Web as of 20 May 2000:
<http://www-odp.tamu.edu/publications/169_SR/169TOC.HTM>
1. Data Report: Trace Element Geochemistry of I–, Br–, F–, HPO42–, Ba2+, and Mn2+ in Pore Waters of Escanaba Trough, Sites 1037 and 1038
   Joris M. Gieskes, Chris Mahn, and Barni Schnetzger
2. Bacterial Profiles in a Sulfide Mound (Site 1035) and an Area of Active Fluid Venting (Site 1036) in Hot Hydrothermal Sediments from Middle Valley (Northeast Pacific)
   B.A. Cragg, M. Summit, and R.J. Parkes
3. Phospholipid Fatty Acid–Derived Microbial Biomass and Community Dynamics in Hot, Hydrothermally Influenced Sediments from Middle Valley, Juan De Fuca Ridge
   Melanie Summit, Aaron Peacock, David Ringelberg, David C. White, and John A. Baross

A Leg 169 Co-chief wrote a postcruise synthesis paper that will be printed in the first SR booklet. All of the Leg 169 papers that have been published on the Web by August 2000 will be reprinted in PDF on the volume CD, which will accompany the SR booklet. Publication of *Scientific Results* volumes will follow this format for Legs 170 and beyond. A total of 21 papers are currently in press for volumes 169–172 (169: 7; 170: 2; 171A: 2; 171B: 6; 172: 4).

ODP is also maintaining a Web-based list of leg-related citations that will include papers from *Initial Reports* and *Scientific Results* volumes, as well as meeting abstracts and citations from books or journal publications. For more information, see the "Web Development: Leg-related Citations" section below.

Volume Production

From January through June 2000, the following *ODP Proceedings* volumes were produced and distributed:

Initial Reports

Booklet/CD-ROM: 182 (Feb 2000), 183 (Mar 2000), 184 (Apr 2000)
Web (PDF and HTML): 180 (4 Feb 2000), 181 (12 May 2000), 182* (anticipated 26 May 2000), 183* (anticipated 29 May 2000)

Scientific Results

Booklet/CD-ROM: 164 (Jan 2000), 165 (Feb 2000), 166 (May 2000)
Web (PDF and HTML): 164* (19 May 2000), 165* (26 May 2000), 166* (29 May 2000), 169 (first chapter on-line 15 April 2000)

*PDF and/or ASCII versions of all materials published in printed volumes and on the volume CD-ROMs are currently available on the Web; HTML versions of chapters will be available as soon as the material is formatted.

From July through December 2000, the following *ODP Proceedings* volumes are expected to be produced and distributed:

Initial Reports

Booklet and CD-ROM (PDF version): 185, 186
WWW (PDF and HTML versions): 184, 185, 186

Scientific Results

Book and CD-ROM (PDF version): 167, 168
Booklet and CD-ROM (PDF version): 169, 170
WWW (PDF and HTML versions): 167, 168, and individual papers for Volumes 169 and beyond

ODP Proceedings Distribution

The Department has sold DSDP and ODP volumes for a cumulative revenue of $17,560 between December 1999 and April 2000. This revenue is budgeted annually and supports a portion of the cost of publishing new volumes. The Department has continued to distribute free sets of volumes to academic institutions that do not already have accessible sets of DSDP and ODP volumes (institutions pay shipping costs). Between December 1999 and May 2000, 3 institutions (Brunel University, UK; Florida State University, USA; University of Maine, USA) were sent 296 ODP and 91 DSDP volumes (UK = 140 ODP volumes and 74 DSDP volumes; USA = 156 ODP volumes, 17 DSDP volumes). Total value for the books in these shipments equals $20,567.

SCIMP Recommendations

AGI Database (Rec. 99-2-1)

On 20 December 1999, the American Geological Institute delivered a CD-ROM containing a compiled database of citations to papers published on DSDP/ODP-related research. The database (drawn from the full American Geological Institute GeoRef database) contains 16,396 citations related to research tied to the Ocean Drilling Program and the Deep Sea Drilling Project since 1969. The Publication Services Department has prepared a preliminary review of the data, primarily focusing on the "nonproceedings" citations (see Appendix). An in-depth analysis of the data will be prepared by the end of 2000.

Citation of Preliminary Report (Rec. 99-2-2)

Beginning with Leg 187, all Preliminary Reports contain the following note.

"This report was prepared from shipboard files by scientists who participated in the cruise. The report was assembled under time constraints and does not contain all works and findings that will appear in the *Initial Reports* of the *ODP Proceedings.* Reference to this report should be made as follows:

Shipboard Scientific Party, 2000. Leg 187 Preliminary Report: Mantle Reservoirs and Migration Associated with Australian Antarctic Rifting. *ODP Prelim. Rpt.*, 87 [Online]. Available from World Wide Web: <http://wwwodp.tamu.edu/publications/prelim/187_prel/187prel.pdf>. [Cited YYYY-MM-DD]."

WWW Development

ODP/TAMU Web Pages

The State of Texas has adopted a new rule that affects state web sites, including web sites at state universities. The new rule applies primarily to "key public entry points" and requires implementation of certain standards pertaining to the accessibility of state web sites, indexing of web pages, information security, and protection of citizens' privacy. The deadline for compliance is 1 July 2000.

Texas A&M University has interpreted "key public entry points" to mean the main university web page and departmental web pages such as the ODP/TAMU homepage. In most cases, the rule goes into effect when new web sites are developed or existing sites are changed. To comply with this rule ODP/TAMU has made its homepage compliant with the accessibility, indexing, and

privacy standards. As time allows, given our existing personnel and budgetary constraints, we plan to apply these standards to lower level pages that provide important information to the scientific and public community. For example, we plan to use encrytpion on electronic forms that solicit private information such as passport or Social Security numbers.

Mirror Sites

The Publication Services and Information Services Departments continued to work on the establishment of Web mirror sites in Australia, the United Kingdom, and Germany. Current status of these mirror sites is as follows:

Australian Geological Survey Organisation (Canberra , Australia; http://www.agso.gov.au/odp): this mirror site is functional; the site is updated regularly; does not mirror Janus database.

Natural History Museum (London, UK): ODP/TAMU staff are working with museum staff on completing the site configuration now; this mirror site should be fully functional in early summer 2000.

Universität Bremen (Bremen, Germany): purchased a larger system capable of mirroring the entire ODP/TAMU web site (including ODP Publications and the Janus database); this mirror site should be fully functional in early summer 2000; ODP/TAMU has shipped a set of tapes for installation of the Publication files and when those are on-line, Bremen will install the mirroring software to pick up all further updates and new files; the site should be on-line this summer; however, at this time ODP/TAMU does not know the schedule for the mirroring the Janus database.

ODP/TAMU Web User Statistics

ODP/TAMU Main Entry Points

	May 99	June 99	July 99	Aug 99	Sept 99	Oct 99	Nov 99	Dec 99	Jan 00	Feb 00	Mar 00	Apr 00
ODP/TAMU site* (www-odp.tamu.edu)	19,328	20,188	20,372	18,993	24,354	25,714	24,069	24,309	26,021	33,162	40,643	29,790
ODP/TAMU main page	5,696	4,921	4,173	4,114	5,144	5,473	5,622	4,651	5,900	6,492	6,649	5,271
Publications main page	836	938	838	953	1,057	1,157	1,211	973	1,166	1,311	1,380	1,133
Janus database* (janusaxp.tamu.edu)	510	632	611	572	637	876	948	866	982	1,186	1,180	891

Notes: Numbers represent single-user sessions that originate outside ODP. Each user session results in multiple page views and/or database requests. * = Janus database sessions are in addition to those given for the “ODP/TAMU site.”

Initial Reports **Volumes***

Volume	May 99	June 99	July 99	Aug 99	Sept 99	Oct 99	Nov 99	Dec 99	Jan 00	Feb 00	Mar 00	Apr 00	Web Publication Date
166†	15	21	30	22	20	31	32	41	34	27	44	44	1 Oct 1997
167†	16	24	25	24	–	27	27	20	37	37	36	29	13 Feb 1998
168†	11	12	23	21	24	29	23	19	33	22	26	19	23 Feb 1998
169†	10	15	19	14	21	66	39	33	37	41	39	29	17 Apr 1998
169S†	12	6	18	17	19	19	14	19	25	32	18	16	10 Apr 1998
170†	13	15	17	17	17	18	20	25	27	25	21	23	24 Apr 1998
171A†	9	19	14	18	19	20	22	18	23	23	20	16	26 June 1998
171B†	8	19	19	27	22	15	31	20	31	31	31	24	26 June 1998
172†	12	15	22	18	13	25	18	19	36	29	26	26	31 July 1998
173†	–	14	21	17	18	23	22	19	29	16	18	22	4 Sept 1998
174A†	11	20	16	19	14	18	36	14	21	22	17	25	31 Dec 1998
174B†	5	10	12	14	10	14	17	20	16	16	12	13	31 Dec 1998
174AX†	9	8	11	15	9	12	20	11	25	16	12	14	31 Dec 1998
174AXS**							8	21	32	27	18	17	28 Dec 1999
175†	22	42	31	39	14	27	22	27	29	28	35	25	9 Feb 1999
176**		4	37	18	15	26	25	20	18	13	19	25	30 June 1999
177**		45	59	51	28	29	50	26	33	40	30	24	28 May 1999
178**				42	46	43	29	31	37	39	37	26	31 Aug 1999
179**			33	13	9	28	36	44	37	36	18	30	23 July 1999
180**										38	63	44	4 Feb 2000

Notes: Numbers represent single-user sessions that originate outside ODP. Each user session results in multiple page views and/or database requests. * = numbers indicate hits to the entry page of each volume. † = volumes are only in PDF format. ** = volumes posted initially in PDF format and subsequently in HTML format.

Scientific Results **Volumes***

Volume	May 99	June 99	July 99	Aug 99	Sept 99	Oct 99	Nov 99	Dec 99	Jan 00	Feb 00	Mar 00	Apr 00	Web Publication Date
150X†	22	20	31	30	24	34	58	42	63	61	63	57	7 Aug 1998
152†	34	31	34	46	31	65	98	65	75	87	76	64	8 July 1998
154†	34	55	39	62	54	63	93	65	82	78	78	80	1 Oct 1997
155†	41	50	32	43	60	65	86	72	101	80	103	66	15 May 1998
156†	28	34	37	36	33	51	59	46	64	55	70	53	21 Aug 1998
157†	27	31	36	32	37	51	98	70	80	79	75	64	14 Aug 1998
158†	27	50	26	34	35	59	66	65	68	65	77	52	15 May 1998
159†	24	24	35	21	22	39	96	73	82	65	62	46	31 Dec 1998
159T†	13	25	13	22	11	24	30	15	26	19	22	20	31 Dec 1998
160†	9	54	56	66	86	79	144	124	118	131	145	97	9 Nov 1998
161†	54	71	39	58	59	79	86	88	88	98	80	68	19 Mar 1999
162**				78	53	52	50	44	47	46	58	37	20 Aug 1999
163**					60	48	62	38	68	63	60	51	19 Sept 1999
169††												25	15 April 2000

Notes: Numbers represent single-user sessions that originate outside ODP. Each user session results in multiple page views and/or database requests. * = numbers indicate hits to the entry page of each volume. † = volumes are only in PDF format. ** = volumes posted initially in PDF format and subsequently in HTML format. †† = volume will be published chapter by chapter in the order of acceptance in both PDF and HTML formats; date indicates when first paper was published.

Leg-related Citations

During Legs 160 through 175, authors were permitted to fulfill their ODP publication obligation by either submitting a manuscript to a peer-reviewed journal that is published in English, or by submitting a paper or data report to the *Scientific Results* (SR) volume. Beginning with Leg 176, authors are required to publish a paper in a journal or book, or a paper or data report in the SR volume. In addition, authors from Legs 160 and beyond are supposed to provide ODP/TAMU with copies of all citations from papers published in books or journals during the first 48 months postcruise. ODP/TAMU posts these citations on the Publications Web site (<http://www-odp.tamu.edu/publications/, click on "Leg-related Publications"; click on "Leg ###"; click on "Citations").

To date, the Publication Services Department has only received notification of 65 papers from 14 legs (see Appendix below). We do not believe this list is complete despite our efforts and those of the Staff Scientists to remind scientific party members to submit their citations after their papers have been accepted. Publication Services has cross checked the citations they have received with the reprints received by Curation. It has also sent reminders to Co-chiefs and correspondence authors to remind them to submit this important information. The success of the leg-related citation lists is dependent upon authors remembering to fulfill their final obligation requirement and submitting all published citations to the ODP Publications Coordinator.

The Publication Services Department is tracking the number of papers that are projected and published based on ODP postcruise research. The following table summarizes recent tabulations.

Leg	SR Volume			Journal or Book			
	Projected*	Submitted	Published	Projected*	Submitted†	Published†	Citations on Web
160	62	54	54	0	2	2	2
161	47	46	44	6	6	6	5
162	24	23	20	32	10	10	22
163	22	16	15	4	8	5	1
164	35	41	43	18	17	5	5
165	26	24	20	2	11	6	5
166	28	18	17	7	10	9	4
167	40	33	32	11	12	8	2
168	17	13	14	47	21	9	4
169S	0	1	1	28	25	7	None received
169	14	9	10	29	28	7	4
170	6	4	June 00	15	17	1	1
171A	1	3	June 00	16	16	3	3
171B	15	9	19 June 00	43	28	5	5
172	8	15	14 Aug 00	36	9	—	None received
173	8	12		19	6	—	None received
174A, 174AX	8	8	20 Nov 00	17	5	—	None received
174B	1	2	11 Dec 00	5	1	—	None received
175	14	21	12 Feb 01	24	8	1	1
176	17	11	9 Apr 01	20	2	—	None received
177	7	12 June 00	11 June 01	34/10‡	12 June 00	—	None received
178	8	11 Aug 00	6 Aug 01	17/27‡	11 Aug 00	—	None received
179	21	9 Oct 00	8 Oct 01	15	9 Oct 00	—	None received
180	6	11 Dec 00	10 Dec 01	23/2‡	11 Dec 00	—	None received
181	—	12 Feb 01	11 Feb 02	NA	12 Feb 01	—	None received
182	June 00	9 Apr 01	8 Apr 02	June 00	9 Apr 01	—	None received
183	July 00	11 June 01	10 June 02	July 00	11 June 01	—	None received

Notes: Data updated in April 2000. * = count from table of contents prepared at second postcruise meeting. † = "published" and "submitted" counts reflect the number of papers authors have notified the ODP Publications Coordinator about. ‡ = numbers indicate papers proposed without a specific venue. — = no information.

Leg-Related Citations Posted on ODP Web Site, January 4 1999 to 17 May 2000

Leg 160

Roberts, A.P., Stoner, J.S., and Richter, C., 1999. Diagenetic magnetic enhancement of sapropels from the eastern Mediterranean Sea. *Mar. Geol.*, 153:103-116.

Schulz, H.-M., Emeis, K.-C., Volkmann, N., 1997. Organic carbon provenance and maturity in the mud breccia from the Napoli mud volcano: indicators of origin and burial depth. *Earth Planet. Sci. Lett.*, 147:141-151.

Leg 161

Bernasconi, S., Meyers, P.A., and O'Sullivan, G., 1999. Early diagenesis in rapidly accumulating sediments on the Alboran slope, ODP Site 976. *Geo-Marine Letters*, 18:209-214.

Platt, J.P., Soto, J.-I., Whitehouse, M.J., Hurford, A.J., and Kelley, S.P., 1998. Thermal evolution, rate of exhumation, and tectonic significance of metamorphic rocks from the floor of the Alboran extensional basin, western Mediterranean. *Tectonics*, 17:671-689.

Soto, J.I., and Platt, J.P., 1999. Petrological and structural evolution of high-grade metamorphic rocks from the floor of the Alboran Sea Basin, Western Mediterranean. *J. Petrol.*, 40:21-60.

Tandon, K., Lorenzo, J.M., and de La Linde Rubio, J., 1998. Timing of Rifting in the Alboran Sea Basin — correlation of borehole (ODP Leg 161 and Andalucia A-1) to seismic reflection data: implications for basin formation. *Mar. Geol.*, 144:275-294.

Torii, M., 1997. Low-temperature oxidation and subsequent downcore dissolution of magnetite in deep-sea sediments, ODP Leg 161 (Western Mediterranean). *J. Geomagn. Geoelectr.*, 49:1233-1245.

Leg 162

Andersen, E.S., Dokken, T.M., Elverhøi, A., Solheim, A., and Fossen, I., 1996. Late Quaternary sedimentation and glacial history of the western Svalbard continental margin. *Mar. Geol.*, 133:123-156.

Channell, J.E.T., Hodell, D.A., and Lehman, B., 1997. Relative geomagnetic paleointnesity and d18O at ODP Site 983 (Gardar Drift, North Atlantic) since 350 ka. *Earth Planet. Sci. Lett.*, 153:103-118.

Channell, J.E.T., Hodell, D.A., McManus, J., and Lehman, B., 1998. Orbital modulation of the Earth's magnetic field intensity. *Nature*, 394:464-468.

Channell, J.E.T., and Lehman, B., 1997. The last two geomagnetic polarity reversals recorded in high-deposition-rate sediment drifts. *Nature*, 389:712-715.

Crane, K., and Solheim, A. (Eds.), 1995. *Seafloor Atlas of the Northern Norwegian Greenland Sea*, 137: Oslo (Nor. Polarinst. Medd.).

Elverhøi, A., Hooke, R.LeB., and Solheim, A., 1998. Late Cenozoic erosion and sediment yield from the Svalbard-Barents Sea region: implications for understanding erosion of glacierized basins. *Quat. Sci. Rev.*, 17:209-241.

Elverhøi, A., Norem, H., Andersen, E.S., Dowdeswell, J.A., Fossen, I., Haflidason, H., Kenyon, N.H., Laberg, J.S., King, E.L., Sejrup, H.P., Solheim, A., and Vorren, T.O., 1997. On the origin and flow behaviour of submarine slides on deep sea fans along the Norwegian-Barents Sea continental margin. *Geo-Mar. Lett.*, 17:119-125.

Elverhøi, A., Svendsen, J.I., Solheim, A., Andersen, E.S., Milliman, J., Mangerud, J., and Hooke, R.LeB., 1995. Late Quaternary sediment yield from the high Arctic Svalbard area. *J. Geol.*, 103:1-17.

Faleide, J.I., Solheim, A., Fiedler, A., Hjelstuen, B.O., Andersen, E.S., and Vanneste, K., 1996. Late Cenozoic evolution of the western Barents Sea-Svalbard continental margin. *Global Planet. Change*, 12:53-74.

Mazaud, A., and Channell, J.E.T., 1999. The top Olduvai polarity transition at ODP Site 983 (Iceland Basin). *Earth Planet. Sci. Lett.*, 166:1-13.

McManus, J.F., Oppo, D.W., and Cullen, J.L., 1999. A 0.5 million year record of millennial-scale climate variability in the North Atlantic. *Science*, 283:971-975.

Oppo, D.W., McManus, J.F., and Cullen, J.L., 1998. Abrupt climate events 500,000 to 340,000 years ago: evidence from subpolar North Atlantic sediments. *Science*, 279:1335 1338.

Ortiz, J., Mix, A.C., Harris, S., and O'Connell, S., 1999. Diffuse spectral reflectance as a proxy for percent carbonate content in North Atlantic sediments. *Paleoceanography*, 14:171-186.

Raymo, M.E., Ganley, K., Carter, S., Oppo, D.W., and McManus, J., 1998. Millenial scale climate instability during the early Pleistocene epoch. *Nature*, 392:699-702.

Solheim, A., 1994. Glacial deposits on the western Svalbard margin. In Eiken, O. (Ed.*), Seismic Atlas of Western Svalbard*, 130: Oslo (Nor. Polarinst. Medd.), 52-57.
Solheim, A., and Andersen, E.S., 1995. Late Cenozoic seismic stratigraphy and character of the Svalbard-Barents Sea margin. *In* Crane, K., and Solheim, A. (Eds.*), Seafloor Atlas of the Northern Norwegian-Greenland Sea*, 137: Oslo (Nor. Polarinst. Medd.), 155-164.
Solheim, A., and Andersen, E.S., 1997. Seismic character of the western Svalbard continental margin. *In* Davies, T.A., Josenhans, H.,Polyak, L., Solheim, A., Cooper, A., Bell, T., Stoker, M., and Stravers, J. (Eds.), *Seismic Atlas of Glacimarine Features*: London (Chapman and Hall), 256-259.
Solheim, A., Andersen, E.S., Elverhøi, A., and Fiedler, A., 1996. Late Cenozoic depositional history of the western Svalbard continental shelf, controlled by subsidence and climate. *Global Planet. Change*, 12:135-148.
Solheim, A., Faleide, J.I., Andersen, E.S., Elverhøi, A., Forsberg, C.F., Vanneste, K., Uenzelmann-Neben, G., Channell, J.E.T., 1998. Late Cenozoic seismic stratigraphy and glacial geological development of the East Greenland and Svalbard-Barents Sea continental margins. *In* Elverhøi, A. (Ed.), *Glacial and Oceanic History of the polar North Atlantic margins*. Quat. Sci. Rev., 17:155-184.
Solheim, A., and Forsberg, C.F. (Eds.), 1996. Norwegian Polar Institute's cruise to the northern margin of Svalbard and the Barents Sea 25/7-2/9, 1994. *Marine Geology/Geophysics and Physical Oceanography*, 92: Oslo (Nor. Polarinst. Rapport.).
Solheim, A., Riis, F., Elverhøi, A., Faleide, J.I., Jensen, L.N., and Cloetingh, S., 1996. Impact of glaciations on basin evolution: data and models from the Norwegian margin and adjacent areas; introduction and summary. *In* Solheim, A., Riis, F., Elverhøi, A., Faleide, J.I., Jensen, L.M., and Cloetingh, S. (Eds.), *Impact of glaciations on basin evolution; data and models from the Norwegian margin and adjacent areas*. Global Planet. Change, 12:1 9.
Venz, K.A., Hodell, D.A., Stanton, C., and Warnke, D.A., 1999. A 1.0 Myr record of glacial North Atlantic intermediate water variability from ODP Site 982 in the Northeast Atlantic. *Paleoceanography*, 14:42-52.

Leg 163

Clift, P.D., Carter, A., and Hurford, A.J., 1998. The erosional and uplift history of northeast Atlantic passive margins: constraints on a passing plume. *J. Geol. Soc.*, 155:787-800.

Leg 164

Dickens, G.R., Paull, C.K., Wallace, P., and the ODP Leg 164 Scientific Party, 1997. Direct measurement of in situ methane quantities in a large gas hydrate reservoir. *Nature*, 385:426-428.
Egeberg, P.K., and Barth, T., 1998. Contribution of dissolved organic species to the carbon and energy budgets of hydrate bearing deep sea sediments, ODP Site 997 Blake Ridge. Chem. Geol., 149:25-35.
Egeberg, P.K., and Dickens, G.R., 1999. Thermodynamic and pore water halogen constraints on gas hydrate distribution at ODP Site 997 (Blake Ridge). Chem. Geol., 153:53-79.
Holbrook, W.S., Hoskins, H., Wood, W.T., Stephen, R.A., Lizarralde, D. and the Leg 164 Science Party, 1996. Methane hydrate and free gas on the Blake Ridge from vertical seismic profiling. *Science*, 273:1840-1843.
Ruppel, C., 1997. Anomalously cold temperatures observed at the base of the gas hydrate stability zone on the U.S. Atlantic passive margin. *Geology*, 25:699-702.

Leg 165

Bralower, T.J., Thomas, D.J., Zachos, J.C., Hirschmann, M.M., Röhl, U., Sigurdsson, H., Thomas, E., and Whitney, D.L., 1997. High-resolution records of the late Paleocene thermal maximum and circum-Caribbean volcanism: is there a causal link? *Geology*, 25:963-967.
Driscoll., N.W., and Haug, G.H., 1998. A short circuit in the ocean's thermohaline circulation: A cause for northern hemisphere glaciation? *Science*, 282:436-438.
Haug, G.H., Pedersen, T.F., Sigman, D.M., Calvert, S.E., Nielsen, B., and Peterson, L., 1998. Glacial/interglacial variations in production and nitrogen fixation in the Cariaco Basin during the last 580 ka. *Paleoceanography*, 13:427-432.
Haug, G.H., and Tiedemann, R., 1998. Effect of the formation of the Isthmus of Panama on Atlantic Ocean thermohaline circulation. *Nature*, 393:673-676.

Lind, I., 1997. A modified Wyllie equation for the relationship between porosity and sonic velocity of mixed sediments and carbonates from the Caribbean Sea. *In* Middleton, M. (Ed.), *Nordic Petroleum Series III, Research in Petroleum Technology*: Aas (Nor. Ener. Forsk.), 123-137.

Leg 166

Betzler, C., Reijmer, J.J.G., Bernet, K., Eberli, G.P., and Anselmetti, F.S., 1999. Sedimentary patterns and geometries of the Bahamian outer carbonate ramp (Miocene and Lower Pliocene, Great Bahama Bank). *Sedimentology*, 46:1127-1144.

Henderson, G.M., Slowey, N.C., and Haddad, G.A., 1999. Fluid flow through carbonate platforms: constraints from 234U/238U and Cl- in Bahamas pore-waters. Earth Planet. Sci. Lett., 169:99-111.

McKenzie, J.A., Spezzaferri, S., and Isern, A., 1999. The Miocene/Pliocene boundary in the Mediterranean Sea and Bahamas: Implications for a global flooding event in the earliest Pliocene. *Mem. Soc. Geol. Ital*., 54:93-108.

Major, C.O., Pirmez, C., Goldberg, D., and the Leg 166 Scientific Party, 1998. High-resolution core-log integration techniques: examples from the Ocean Drilling Program. *In* Harvey, P.K., and Lovell, M.A. (Eds), *Core-Log Integration*, Geol. Soc. Spec. Publ. London, 136:285-295.

Leg 167

Guyodo, Y., Richter, C., and Valet, J.-P., 1999. Paleointensity record from Pleistocene sediments (1.4-0 Ma) off the California Margin. *J. Geophys. Res.*, 104:22,953-22,964.

Richter, C., Hayashida, A., Guyodo, Y., Valet, J.-P., and Verosub, K.L., 1999. Magnetic intensity loss and core diagenesis in long-core samples from the East Cortez Basin and the San Nicolas Basin (California Borderland). *Earth, Planets Space*, 51:329-336.

Leg 168

Davis, E., and Becker, K., 1998. Borehole observatories record driving forces for hydrothermal circulation in young oceanic crust. *Eos, Transactions*, 79:369,377-378.

Hunter A.G., and ODP Leg 168 Scientific Party, 1998. Petrological investigations of low temperature hydrothermal alteration of the upper crust, Juan de Fuca Ridge, ODP Leg 168. *In* Mill, R.A., and Harrison, K. (Eds), *Modern Ocean Floor Processes and the Geological Record*, Spec. Publ. Geol. Soc. London, 148:99-125.

Hunter, A.G., Kempton, P.D., Greenwood, P., 1999. Low-temperature fluid-rock interaction-an isotopic and mineralogical perspective of upper crustal evolution, eastern flank of the Juan de Fuca Ridge, ODP Leg 168. *Chem. Geol.*, 155:3-28.

Meldrum, R.D. Davis, E.E., Jones, G., and Macdonald, R.D., 1998. A Two-Way Acoustic Communication Link for Deep-Ocean Observatories, *MTS Journal*, 32:24-31.

Leg 169

Brunner, C.A., Normark, W.R., Zuffa, G.G., and Serra, F., 1999. Deep-sea sedimentary record of the late Wisconsin cataclysmic floods from the Columbia River. *Geology*, 27:463-466.

Gieskes, J.M., Mahn, C., James, R., and Ishibashi, J., 1998. Halide systematics in sedimentary hydrothermal systems, Escanaba Trough -- ODP Leg 169. *In* Arehart, G.B., and Hulston, J.R., (Eds.), *Water-Rock Interaction*: Rotterdam (Balkema), 723-726.

James, R.H., Duckworth, R.C., Palmer, M.R., and the ODP Leg 169 Shipboard Scientific Party, 1998. Drilling of sediment-hosted massive sulphide deposits at the Middle Valley and Escanaba Trough spreading centres: ODP Leg 169. *In* Mills, R.A., and Harrison, K. (Eds*.), Modern Ocean Floor Processes and the Geological Record*, Spec. Publ. Geol. Soc. London, 148:177-199.

James, R.H., Rudnicki, M.D., and Palmer, M.R., 1999. The alkali element and boron geochemistry of the Escanaba Trough sediment-hosted hydrothermal system. *Earth Planet. Sci. Lett.*, 171:157-169.

Leg 170

Meschede, M., Barckhausen, U., and Worm, H.-U., 1998. Extinct spreading on the Cocos Ridge. Terra Nova, 10:211-216.

Leg 171A

Erickson, S.N., and Jarrard, R.D., 1999. Porosity-formation factor and porosity-velocity relationships in Barbados Prism. *J. Geophys. Res.*, 104:15391-15407.

Moore, J.C., Klaus, A., Bangs, N.L., Bekins, B., Bücker, C.J., Brückmann, W., Erickson, S.N., Hansen, O., Horton, T., Ireland, P., Major, C.O., Moore, G.F., Peacock, S., Saito, S., Screaton, E.J., Shimeld, J.W., Stauffer, P.H., Taymaz, T., Teas, P.A., and Tokunaga, T., 1998. Consolidation patterns during initiation and evolution of a plate-boundary decollement zone: Northern Barbados accretionary prism, *Geology*, 26:811-814.

Zhao, Z., Moore, G.F., and Shipley, T.H., 1998. Deformation and dewatering of the subducting plate beneath the lower slope of the northern Barbados accretionary prism. *J. Geophys. Res.*, 103:30431-30449.

Leg 171B

Huber, B.T., Leckie, R.M., Norris, R.D., Bralower, T.J., and CoBabe, E., 1999. Foraminiferal assemblage and stable isotopic change across the Cenomanian-Turonian boundary in the subtropical North Atlantic. *J. Foram. Res.*, 29: 392-417.

Kroon, D., Norris, R.D., Klaus, A., and the ODP Leg 171B Shipboard Scientific Party, 1998. Drilling Blake Nose: the search for evidence of extreme Paleogene-Cretaceous climates and extraterrestrial events. *Geology Today*, November-December:222-226.

Norris, R.D., Huber, B.T., and Self Trail, J., 1999. Synchroneity of the K-T oceanic mass extinction and meteorite impact: Blake Nose,western North Atlantic. *Geology*, 27:419-422.

Norris, R.D., and Wilson, P.A., 1998. Low-latitude sea-surface temperatures for the mid-Cretaceous and the evolution of planktic foraminifera. *Geology*, 26:823-826.

Smit, J., 1999. The global stratigraphy of the Cretaceous-Tertiary boundary impact ejecta. *Ann. Rev. Earth Planet. Sci.*, 27:75-113.

Leg 175

Ravelo, A. C. and D. H. Andreasen, in press. Enhanced circulation during a warm period. *J. Geophys. Res.*

SCIMP Appendix 00-2-3.2

ODP and DSDP Citations Report: Citations from Deep Sea Drilling Project and Ocean Drilling Program Research, 1969–1999

Ann Klaus and Kathy Phillips, May 2000

On 20 December 1999, ODP/TAMU received the American Geological Institute (AGI) database of "Citations from Deep Sea Drilling Project and Ocean Drilling Program Research, 1969–1999." The contents of this database were extracted from GeoRef and slightly modified for use by the ODP (see below for details). Kathy Phillips, Publications Specialist, analyzed the database and prepared the information contained in this report.

An in-depth analysis of the data will be prepared by the end of 2000. For more information on specific details not reported in this summary, please contact Ann Klaus, Publication Services Manager (annklaus@odpemail.tamu.edu), or Kathy Phillips (phillips@odpemail.tamu.edu).

Overview of the Database

AGI indexes and records citations from approximately 3000 foreign and domestic publications, as well as citations from books, other citation databases, and publications arising from meetings. To create the "Citations from Deep Sea Drilling Project and Ocean Drilling Program Research, 1969–1999" database (or DSDP/ODP citation database), AGI used a series of key words to extract a subset of citations related to DSDP and ODP research from the AGI GeoRef database (see Table 1).

Table 1. Key words used by AGI to extract the ODP/DSDP citation database from GeoRef.

All DSDP leg numbers	Initial Reports (serial)
All ODP leg numbers	Scientific Results (serial)
All DSDP site numbers	Technical Note (serial)
All ODP site numbers	Preliminary Report (serial)
ODP	Scientific Prospectus
Ocean Drilling Program	JOIDES Resolution
Ocean Drilling Project	Glomar Challenger
DSDP	JOI
Deep Sea Drilling Project	Joint Oceanographic Institutions
Deep Sea Drilling Program	JOIDES

AGI standardized the citation information in the data set and inserted missing information that had not been previously contained in the standard GeoRef database. For example, they attached first-author affiliation data to approximately 800 Program records. This was important because first-author affiliation data is needed to determine the first author's country of origin, which in turn is needed to analyze the number of publications produced by authors from each country.

One CD-ROM was produced with the specialized database that contains 16,396 citations relating to DSDP and ODP research from 1969 to 1999. The CD was sent to ODP/TAMU Publication Services for exclusive use by staff to generate citation reports for the Program.

The citations database can be divided into "program proceedings" and "nonproceedings" citations (7325 and 9071 citations, respectively). See "Database Parameters" for the definition of "program proceedings." The bulk of this summary focuses on the "nonproceedings" citations in the database.

Database Parameters

- AGI indexes and records citations from approximately 3000 foreign and domestic publications, in addition to books and publications arising from meetings. AGI also obtains citation information from international data-exchange partners in Canada, China, the Czech Republic, Finland, France, Germany, Hungary, Italy, the Netherlands, New Zealand, Poland, Russia, and Spain. There is no guarantee that this covers all publication venues for ODP or DSDP research, but scientific publications throughout the world are represented.

- There is often a time lag between the date new papers are published and the date they are input into the GeoRef database. The length of the time lag varies depending on the source from which AGI gets its information. As a result, the DSDP/ODP citations database does not contain a complete listing of citations from 1999. It is possible that some citations are still pending from 1998 as well.

- The "program proceedings" citations include publications produced and published directly by DSDP or ODP. This includes *ODP Proceedings* and *DSDP Initial Reports* series publications, as well as Scientific Prospectus, Preliminary Report, and Technical Note publications. It does not include other Program publications, such as the *JOIDES Journal*.

- We must assume that some publications that are based on DSDP or ODP data are not identified in this database. If the key words searched in the creation of the DSDP/ODP citations database were not specifically included in the title, abstract, keywords, or body of a paper, that paper would not be included. For example, we know the staff at the JOIDES Office and JOI have identified publications based on DSDP or ODP science that never directly mentioned the Program by name, or Program leg numbers or sample numbers.

- Most of the initial analysis of the database has been based on author affiliation. Author affiliation data include the institution and country of contributing authors. AGI did not begin recording author affiliation information until 1975, so this information is absent from many records. Affiliation is also absent from some records simply because there are many publication venues that do not require an author to supply such information. In addition, some authorships, such as "Shipboard Scientific Party," cannot be given author affiliations because the "author" is a group of individuals from a variety of countries.

Approximately 1800 citations in this database (~11%) do not have "author affiliation" data. 97% of these records are "nonproceedings" citations. AGI has no plans to update these records in their master database except when ODP/TAMU supplies AGI with the information to complete those data fields. Although just over 10% of the citations in the ODP/DSDP citation database do not contain country affiliation information, this database represents the best and most accurate record available of the science produced in the scientific literature.

By the end of 2000, ODP/TAMU will evaluate the workload requirements needed to add author affiliation data to the incomplete records and determine if resources are available to carry out the task. It should be noted that adding author affiliation information must be done very carefully because we know there are many authors who have moved from one country to another during the life of the Program. For example, if we are familiar with an author who is listed on a paper with no affiliation information, we may be able to assign a country affiliation if we know the whereabouts of this person. But before we assign a country affiliation, we must know if the journal in question lists addresses at time of submission, at time of acceptance, or at time of publication. And we may need to know the exact date when the author moved from one country to another. Tracking this information will be possible for some but not all records and will take time.

- Since this database contains citations for meeting abstracts and proceedings, a single citation may indicate where a paper/abstract was presented as well as where it was published after the meeting. So, a single record may represent "double" dissemination into the scientific community.

- AGI has agreed to add records from any publication not in the DSDP/ODP citations database for which we supply information, regardless of whether it is a publication they index. For example, before they prepare the updated database at the end of 2000, we can send them the ODP leg-related citation lists we post on the Web, and they will add any new citations they do not have.

Author Information

The author information from the "nonproceedings" citations was analyzed in two ways: (1) by the countries of origin of all authors on each paper and (2) by the country of origin of the first author on each paper.

Countries of origin of all authors

Authors from 78 countries have contributed to 9071 DSDP and ODP "nonproceedings" publications (see Table 2 for the number of times authors from each country have contributed to these papers).

Country of origin of first authors

Scientists from 58 countries have been first authors on over 7200 "nonproceedings" publications. Scientists from countries that have been members of either DSDP or ODP wrote approximately 97% of these publications. Furthermore, 96% of all the publications with first authors from DSDP or ODP member countries are from countries that hold current ODP membership. Most of these "nonproceedings" publications were published by first authors from the United States (4,378 papers, or 60.5% of the citation records that contained author affiliation data). Table 3 shows the number of publications per country (based on the country affiliation of the first author) for all the countries that are currently members of ODP. See "Publication Categories" for breakdown by publication type.

Table 2. Number of contributions to "nonproceedings" publications by authors from each country.

Country	Number of authors	Country	Number of authors	Country	Number of authors
Argentina	26	Greece	8	Peru	2
Australia	189	Hungary	4	Philippines	4
Austria	16	Iceland	3	Poland	6
Barbados	2	India	72	Portugal	2
Belgium	30	Indonesia	1	Puerto Rico	5
Botswana	1	Ireland	2	Romania	1
Brazil	15	Israel	14	Saudi Arabia	1
Bulgaria	1	Italy	170	Senegal	1
Canada	563	Jamaica	6	Seychelles	1
Chile	5	Japan	490	Slovak Rep.	1
Chinese Taipei	9	Korea	12	Solomon Is.	2
Colombia	5	Lebanon	1	So. Africa	18
Costa Rica	4	Malaysia	1	Spain	39
Cuba	1	Malta	2	Sri Lanka	1
Cyprus	5	Mexico	21	Sweden	97
Czech Republic	3	Morocco	2	Switzerland	130
Denmark	59	Namibia	1	Tanzania	2
Dominican Rep.	1	Netherlands	121	Tonga	2
Ecuador	1	N. Caledonia	3	Trinidad/Tobago	2
Egypt	1	New Zealand	87	Tunisia	4
Estonia	1	Nigeria	4	Turkey	4
Fiji	1	Norway	136	Venezuela	2
Finland	5	Oman	1	UK	835
France	789	Pakistan	1	Un. Arab Em.	1
Fr. Polynesia	2	P. New Guinea	2	USA	4869
Germany	627	PR China	62	USSR	176

Note: These figures only account for citations with author affiliation data (see "Database Parameters"). Numbers include serial publications, meetings, and miscellaneous publications (see "Publication Categories").

Table 3. Number of publications for current ODP member countries.

Country of first author	Number of publications	Country of first author	Number of publications
US	4,378	Netherlands	58
UK	487	People's Republic of China	26
France	468	Denmark	22
Germany	374	Spain	21

Canada	326	Korea	12
Japan	323	Belgium	6
Australia	104	Chinese Taipei	5
Switzerland	75	Finland	3
Norway	73	Ireland	2
Italy	72	Portugal	2
Sweden	64		

Notes: These figures only account for citations with author affiliation data (see "Database Parameters"). Numbers include serial publications, meetings, and miscellaneous publications (see "Publication Categories").

Publication Categories

All "nonproceedings" publications were sorted into three major categories: serial publications, professional meeting publications, and miscellaneous publications. Serial publications include periodic journals, special publications produced as part of a series, and serial publications produced by governments, organizations, and/or institutions. Professional meeting publications include the initial publications of abstracts and/or proceedings for these meetings. This does not include papers, abstracts, and/or proceedings subsequently published in journals or other special publications. Miscellaneous publications include books, maps, etc.

Figure 1 shows the number of citations in each category for the United States vs. all other current ODP member countries or consortiums, based on the first author's country of origin. Figure 2 depicts the breakdown of the number of citations per category for each of the non-U.S. countries or consortiums based on the first author's country of origin.

Figure 1. Citations sorted by category for U.S. and other ODP members, based on first author's country of origin.

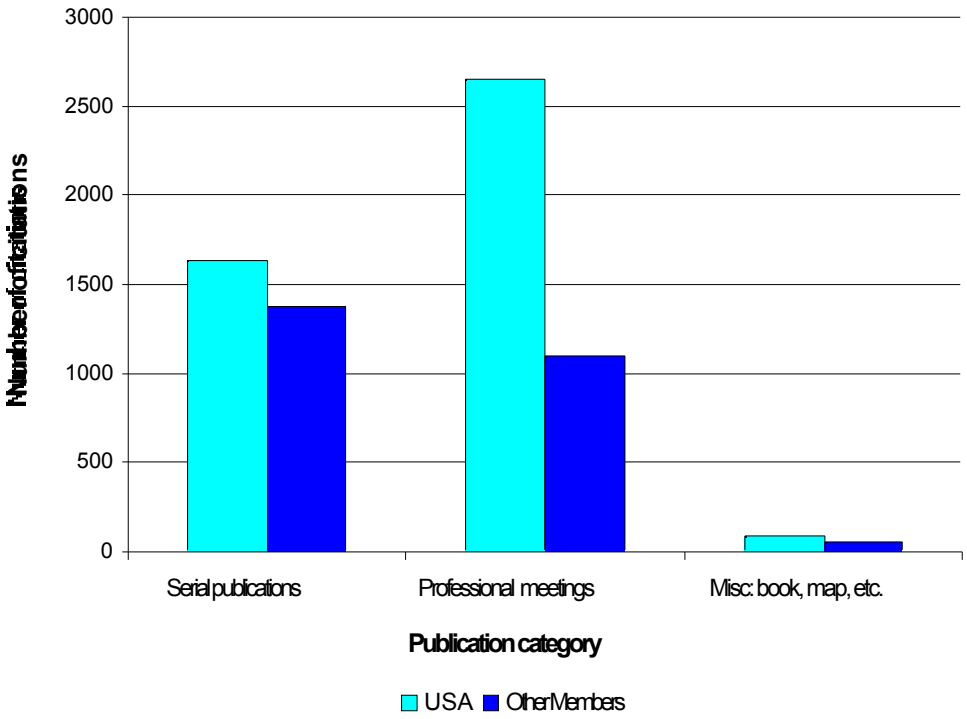
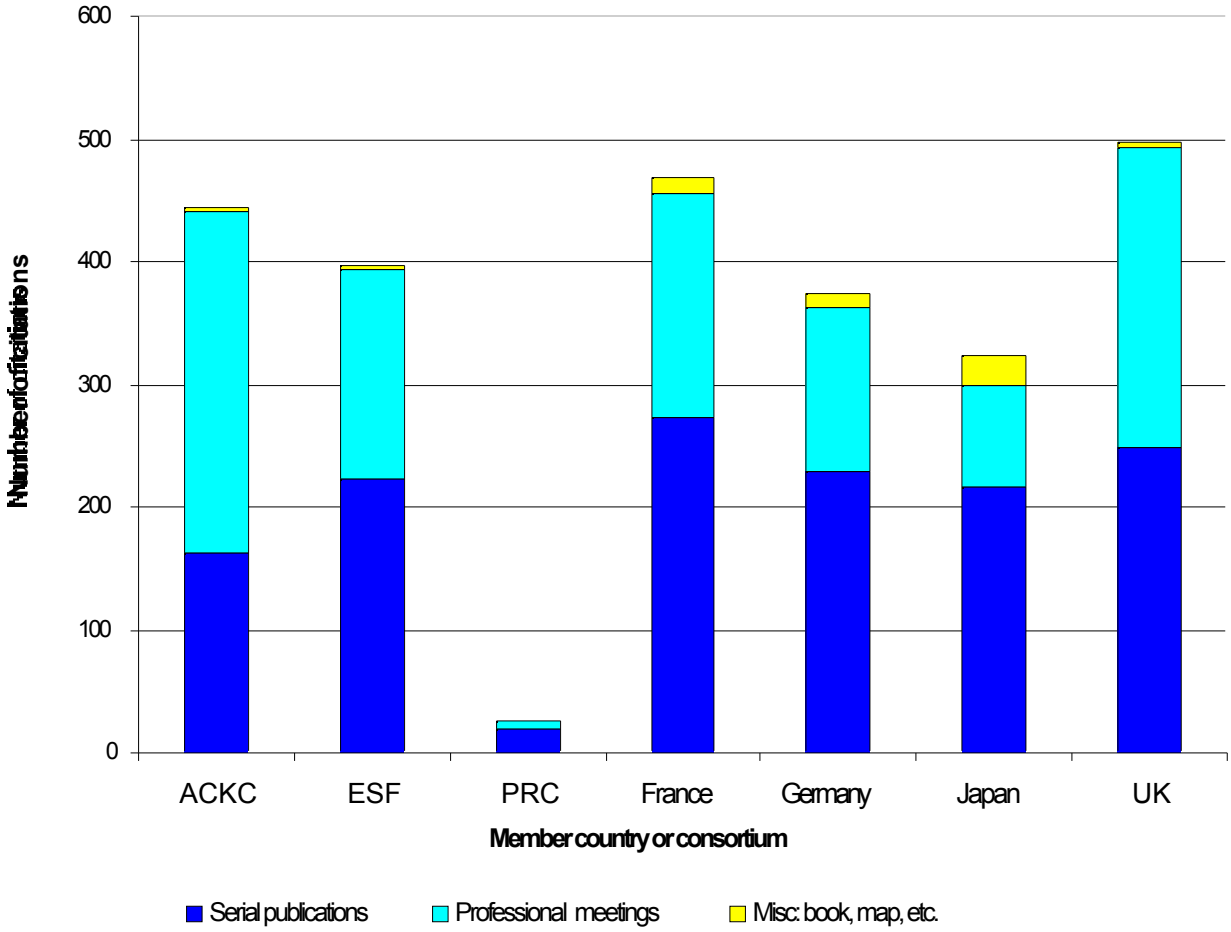

3000
2500
2000
1500
1000
500
0
Serial publications
Professional meetings
Misc: book, map, etc.
Publication category
USA
OtherMembers

Figure 2. Citations sorted by category for non-U.S. members, based first author's country of origin.



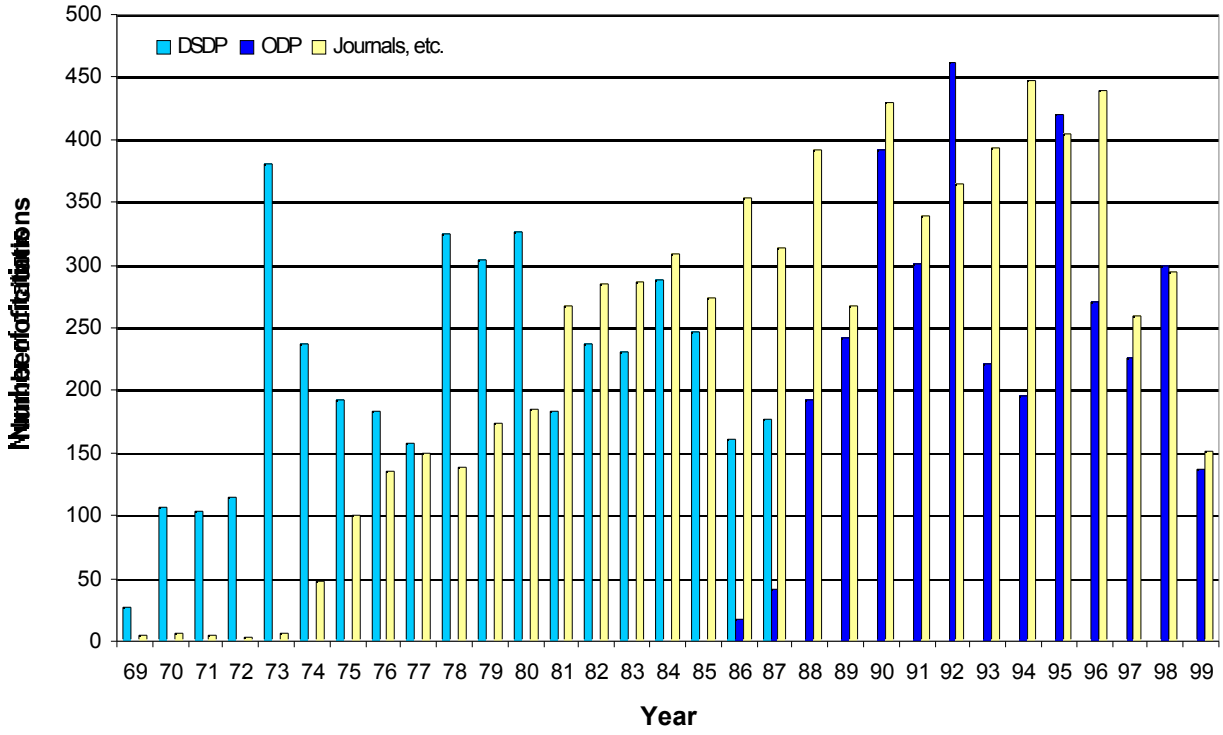
ACKC = Australia/Canada/ Korea/Chinese Taipei Consortium for Ocean Drilling; ESF = European Science Foundation Consortium for Ocean Drilling; PRC = People's Republic of China; UK = United Kingdom.

Citation Distribution in Geoscience Publications

Figure 3 displays the number of "nonproceedings" citations accounted for in the DSDP/ODP citations database vs. the total number of citations from *DSDP Initial Reports* and *ODP Proceedings* volumes.

Table 4 shows the "nonproceedings" citations recorded in the DSDP/ODP citations database with 30 or more citations between 1996 and 1999. Publications with over 100 citations include *Abstr/Prog Geological Soc. Am.*, *Nature,* EPSL, Geotimes, JGR, Marine Geology, EOS, Geology, Mar. Micropaleontology*, and *Geol. Soc. Spec. Publ. (London)*. (*Many of these citations represent abstracts of papers that were given at professional meetings.)

Figure 3. Number of "proceedings" and "nonproceedings" citations per year.



SCIMP Appendix 00-2-04

Active Heave Compensator (AHC)

The *JOIDES Resolution* relied on the passive drill string compensator to isolate the drill string from most of the ship heave. The heave is very detrimental to precision coring because it causes large variations of weight on bit which in turn results in detrimental effects on coring rate and core quality. The Active Heave Compensator (AHC) project began in November 1996 because of difficulties with the diamond coring system (DCS). Decoupling the ship's motion from the drill string is the first step toward improved core quality and hard-rock recovery.

Objectives:

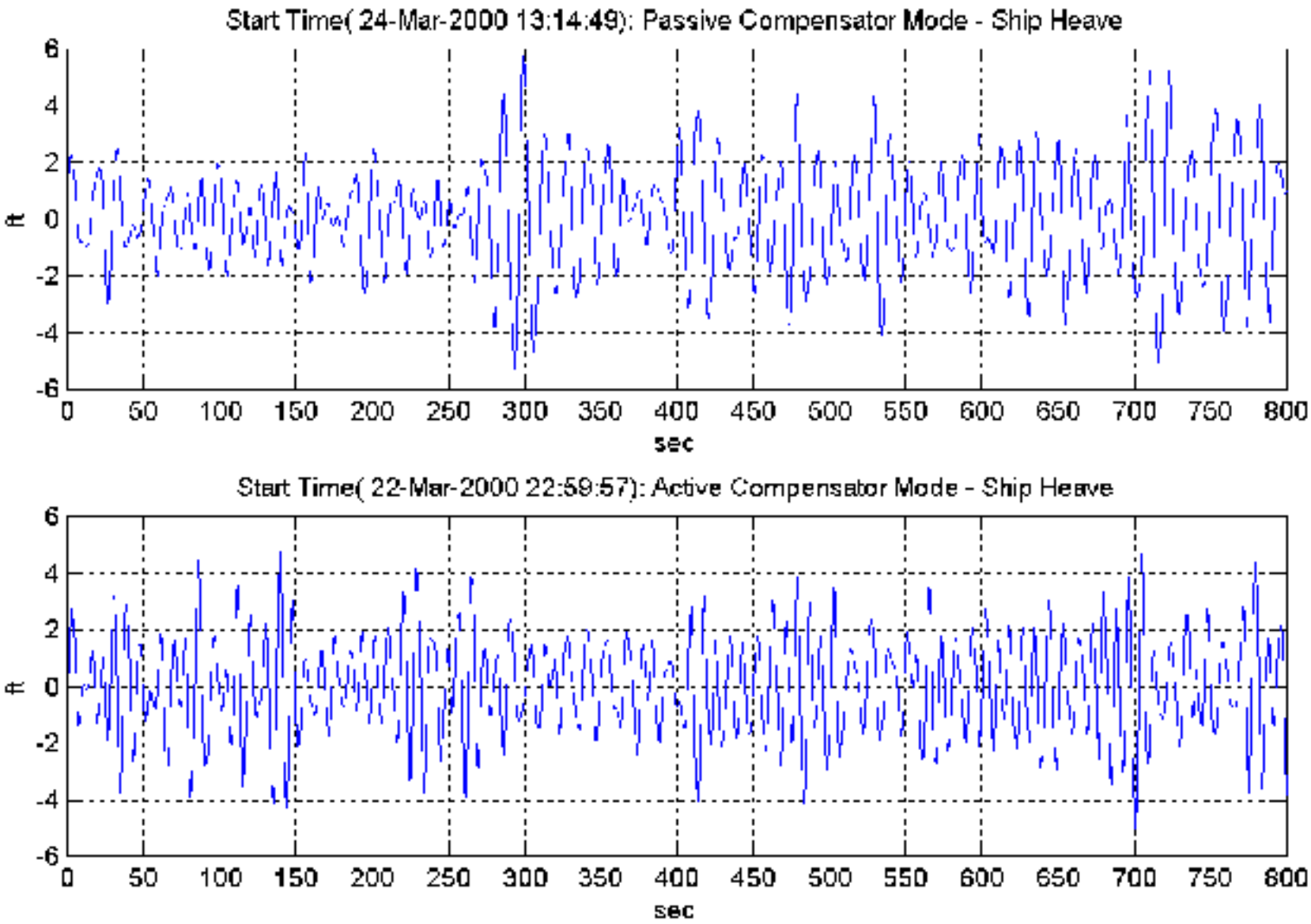
Reduce the ship's heave transmitted to the drill string to low, managed values to reduce large weight on bit fluctuations.

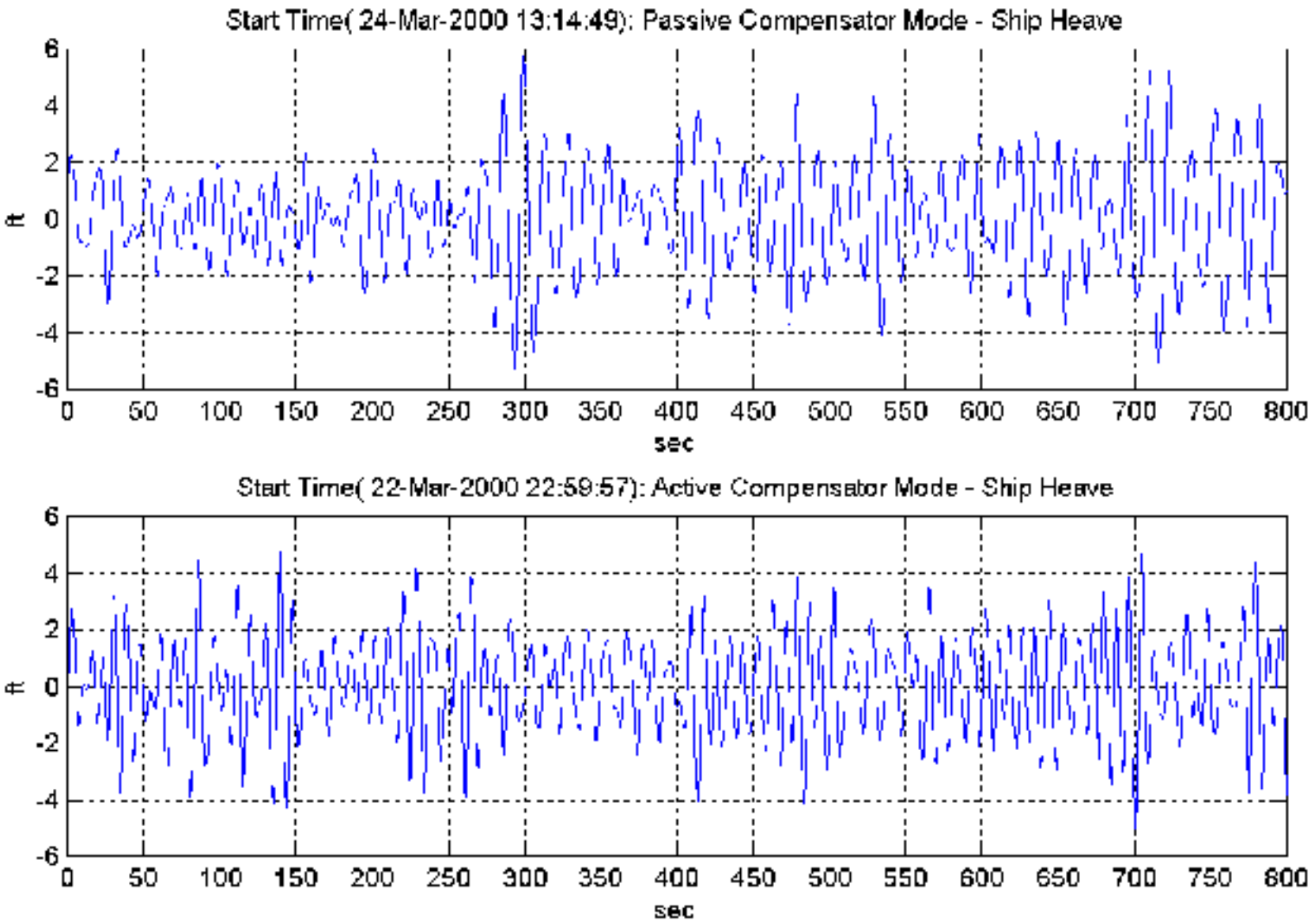
Limitations of the system:

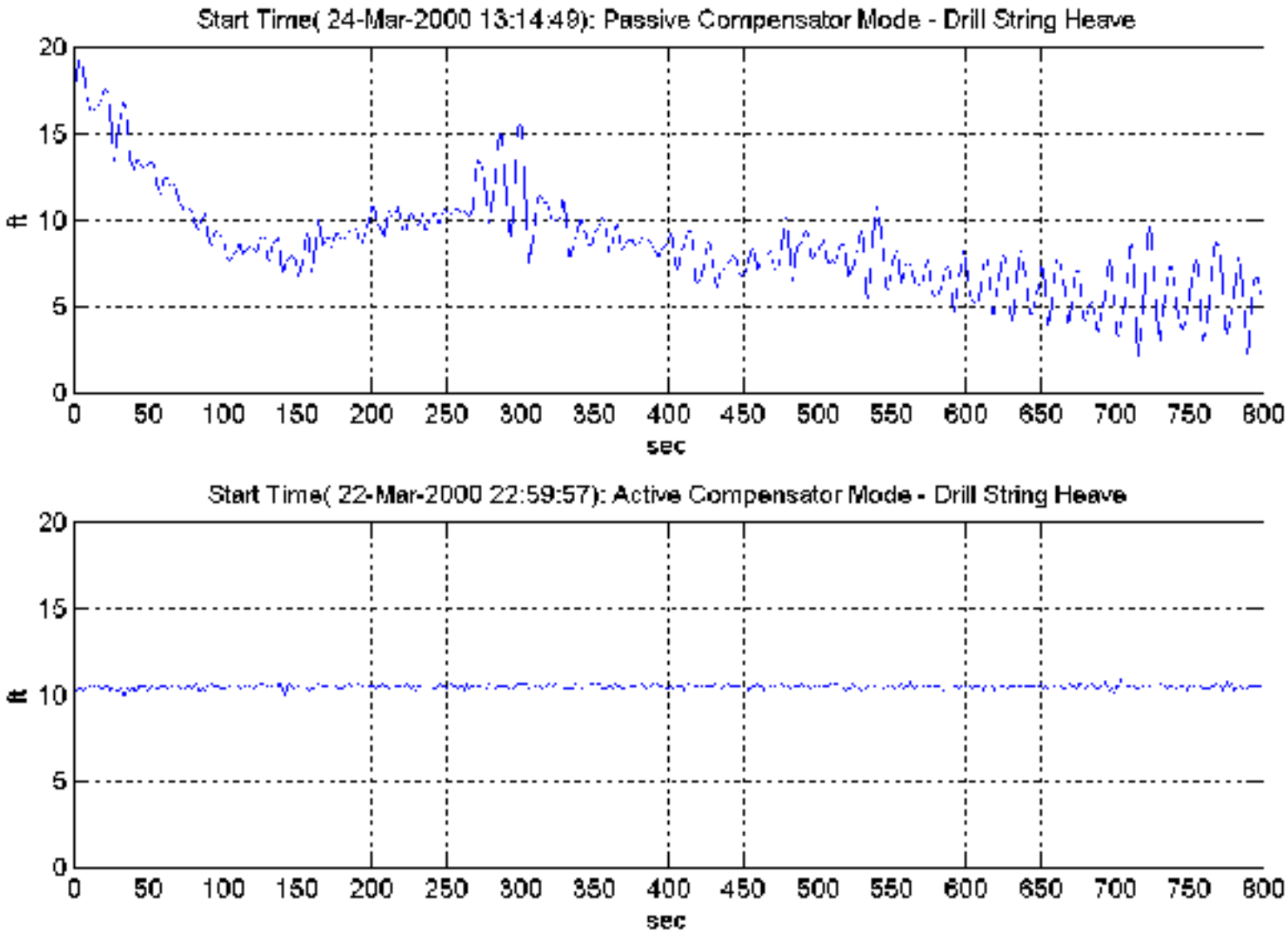
The ship's vertical velocity in response to heave does not exceed 1.25 m/s (4 ft/s)
Heave does not exceed 5 m (16 ft)
AHC does not control weight-on-bit
AHC is not compatible with APC

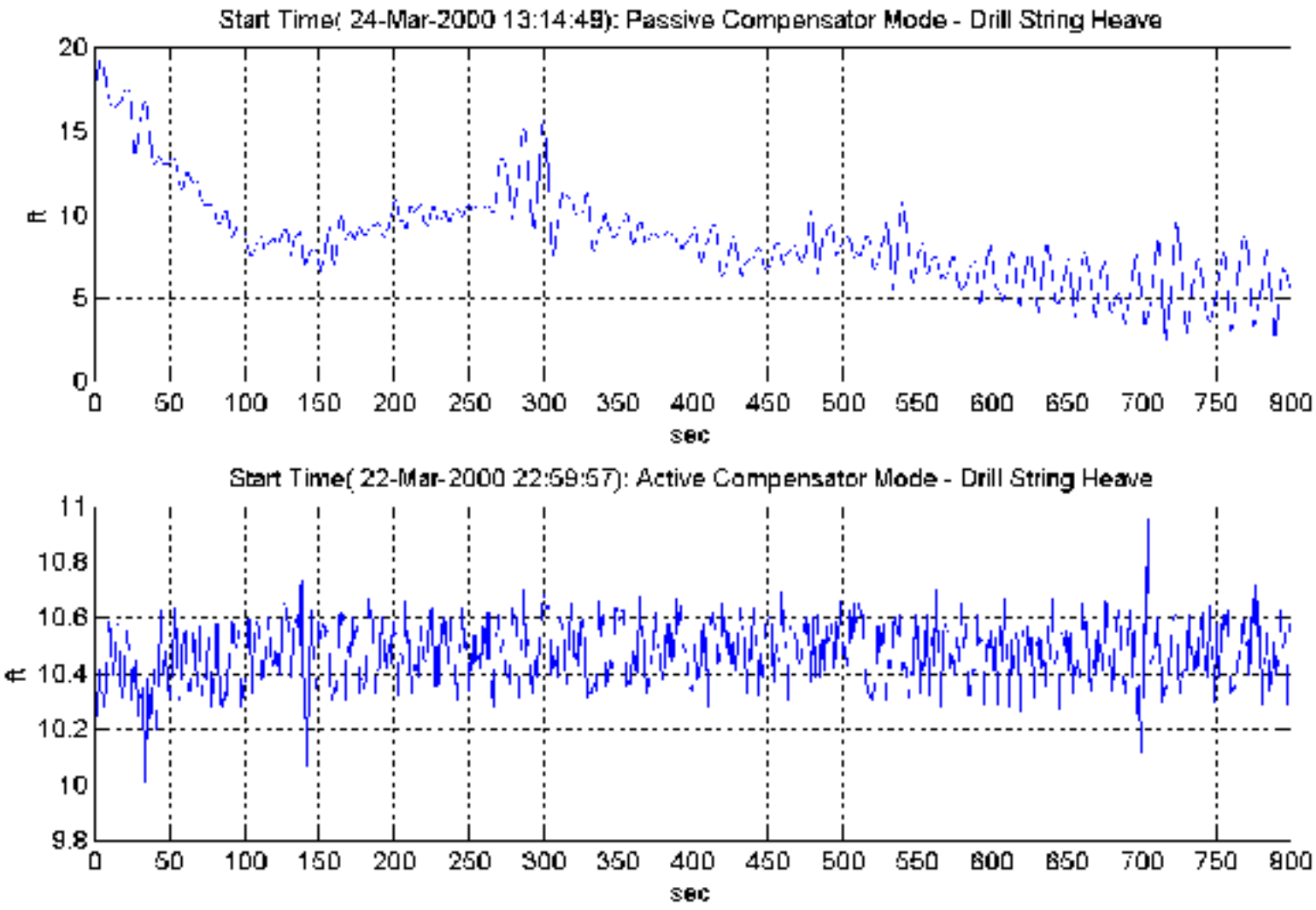
History

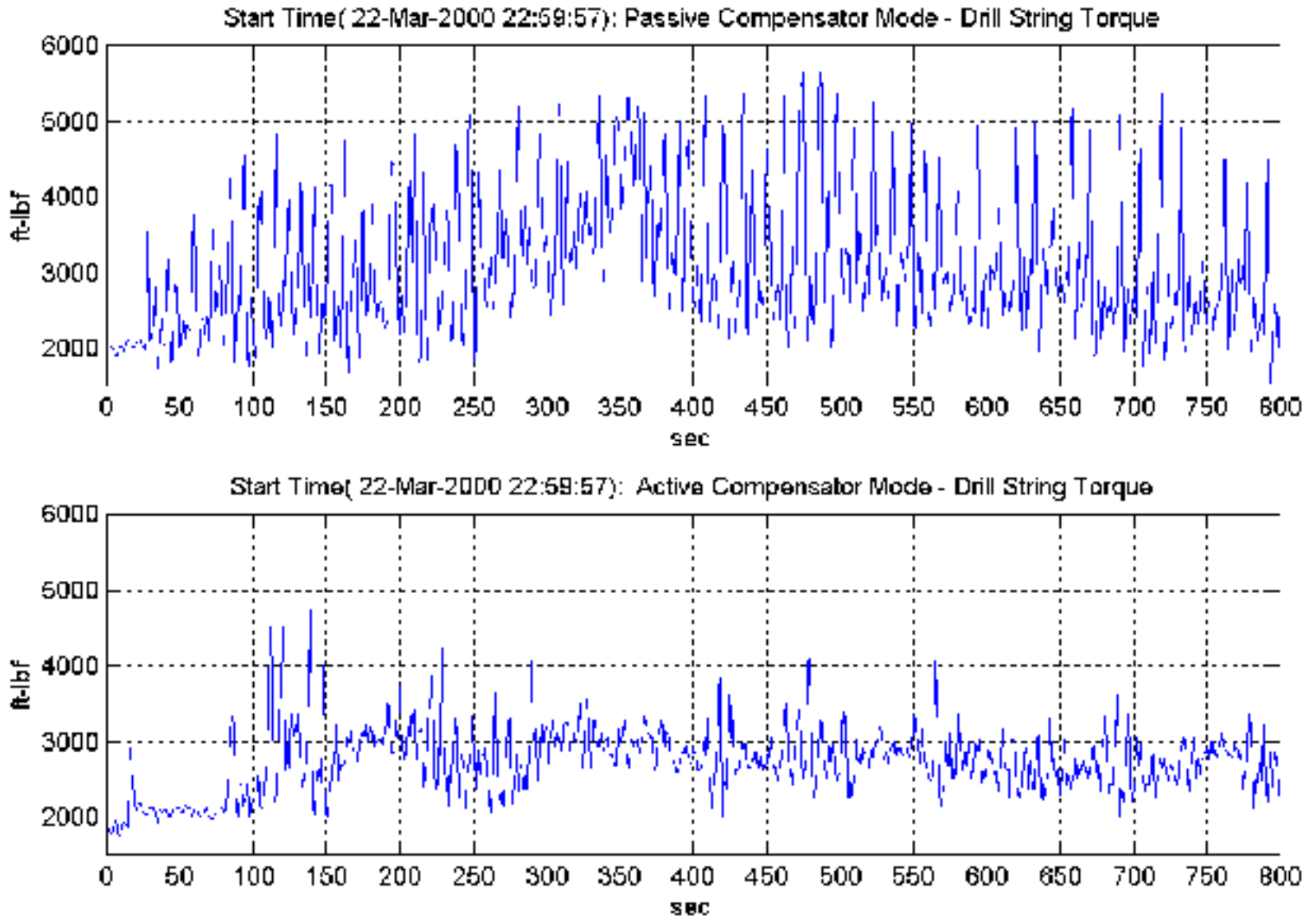
Spring 1996:	EXCOM recommends that ODP continues new engineering developments in the upcoming phase of ocean drilling. High priority projects are hard rock drilling and improved core recovery.
Fall 1996:	AHC recommended by TEDCOM
Spring 1997:	Project approved by SCICOM
Fall 1997:	Statement of Work (SOW) sent out for bid. Only one bid was returned but retracted later. A revised SOW and Request for Quote (RFQ) was sent out.
April 1999:	Purchase order for the AHC was signed and delivered to Maritime Hydraulics of Norway. Installation was scheduled for dry dock in September 1999.
Fall 1999:	Installation of AHC system during dry dock. Technical problems (hydraulic service loop) were encountered and prevented a valid functional test of the system.
Leg 187:	AHC system not used because of technical problems with the AHC cylinders and leaks in the hydraulic service loop.
Leg 188:	New AHC service loop cylinder guards installed and software setup for the accelerometer system corrected. However, the servo valve was not functioning and could not be replaced for Leg 188.
Leg 189:	A new servo valve was installed during portcall and the valve frequency adjusted. System performed as expected and was switched on for the first time at the first site of Leg 189. The AHC system was adjusted, optimized and used. Environmental conditions in the Southern Ocean in the Fall were less than ideal.
Leg 190:	AHC operational and used. Calm seas and excellent hole conditions.

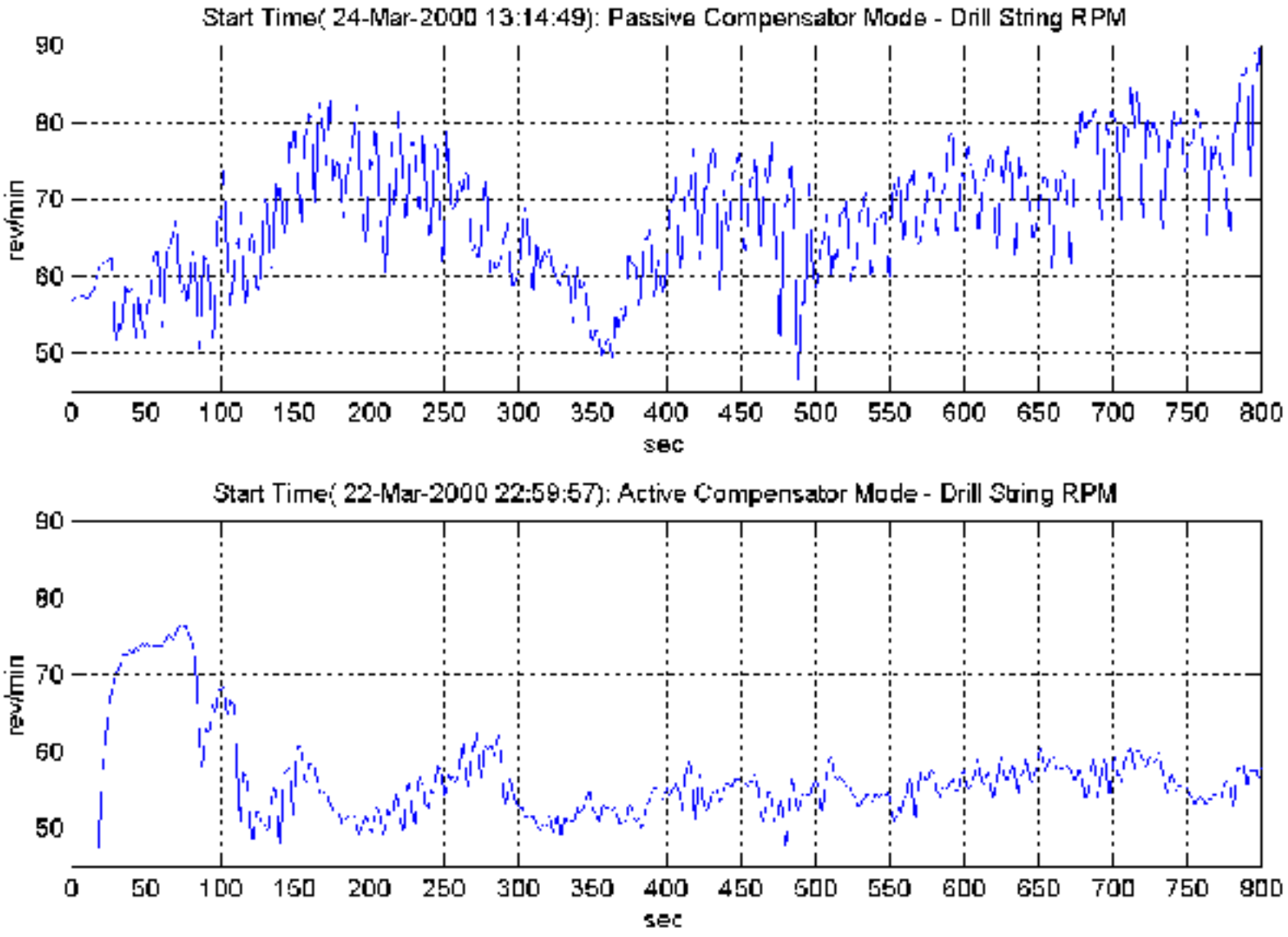

Start Time(24-Mar-2000 13:14:49): Passive Compensator Mode - Ship Heave
ft
sec
Start Time(22-Mar-2000 22:59:57): Active Compensator Mode - Ship Heave
ft
sec


Start Time(24-Mar-2000 13:14:49): Passive Compensator Mode - Ship Heave
ft
sec
Start Time(22-Mar-2000 22:59:57): Active Compensator Mode - Ship Heave
ft
sec


Start Time(24-Mar-2000 13:14:49): Passive Compensator Mode - Drill String Heave
ft
sec
Start Time(22-Mar-2000 22:59:57): Active Compensator Mode - Drill String Heave
ft
sec


Start Time(24-Mar-2000 13:14:49): Passive Compensator Mode - Drill String Heave
ft
sec
Start Time(22-Mar-2000 22:59:57): Active Compensator Mode - Drill String Heave
ft
sec


Start Time(22-Mar-2000 22:59:57): Passive Compensator Mode - Drill String Torque
ft-lbf
6000
5000
4000
3000
2000
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
sec
Start Time(22-Mar-2000 22:59:57): Active Compensator Mode - Drill String Torque
ft-lbf
6000
5000
4000
3000
2000
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
sec


Start Time(24-Mar-2000 13:14:49): Passive Compensator Mode - Drill String RPM
rev/min
90
80
70
60
50
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
sec
Start Time(22-Mar-2000 22:59:57): Active Compensator Mode - Drill String RPM
rev/min
90
80
70
60
50
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
sec

Remaining Issues

The AHC is fully operational, i.e., the drill pipe motion is less than 10% of the ship's vertical motion or heave.

Weight on bit problem: currently difficult for the drillers to read weight on bit when drilling in AHC mode because rapidly changing forces of the AHC are added to the weight indicator. Method that will filter out dynamic forces of the AHC system needs to be developed (e.g., electronic weight indicator that can be filtered, current weight indicator is mechanical; downhole weight-on-bit sub). Work is currently in progress.

System was used on Legs 189 (Fall in the Southern Ocean) and is currently being used on Leg 190 (calm seas and excellent hole conditions). No suffient data to assess the impact of the AHC on core recovery and quality exist so far.

SCIMP Appendix 00-02-5

Update on January 2000 meeting recommendations

The thirteen recommendations resulting from the January, 2000, SCIMP meeting are summarized in this handout. They have been grouped by topic for ease in presentation. A short background/summary section is presented for each set of recommendations.

1) Personnel Issues

SCIMP Rec 00-1-1: Attrition of technical expertise
SCIMP Rec 00-1-2: Technician training

2) Equipment/Laboratory

SCIMP Rec 00-1-3: JANUS Hard Rock AppleCore
SCIMP Rec 00-1-4: Digital Imaging Resource Allocation
SCIMP Rec 00-1-5: Removal of XRF from the JOIDES Resolution
SCIMP Rec 00-1-6: Laboratory Modifications (Microbiology)
SCIMP Rec 00-1-13: Catwalk Core Temperature Monitoring

3)Underway Geophysics

SCIMP Rec 00-1-7: Underway Geophysics Review
SCIMP Rec 00-1-8: Magnetometer Review

4) Seismic/Log/Core integration

SCIMP Rec 00-1-9: Seismic/Log/Core Integration equipment
SCIMP Rec 00-1-10: Seismic Project Files
SCIMP Rec 00-1-11: Seismic /log/core integration training manuals
SCIMP Rec 00-1-12: Site Survey data submission requirements

1) Personnel Issues

SCIMP members visited the JOIDES Resolution twice during its three-day meeting. The main objectives of the first visit were to tour the renovated lab stack and to meet with both the on-going and off-going technicians. SCIMP members met with the technical staff and, panel members asked for input regarding the level of technical staffing, training needs, current laboratory equipment needs, level of knowledge about JANUS applications, and long-term changes/needs regarding technical positions in the current program.

A common theme/concern among the ODP technical staff and SCIMP members was what will happen to the technical staff (and hence, the onboard technical expertise) as ODP winds down toward 2003. SCIMP members are concerned that experienced shipboard and shorebased personnel will find other employment towards the end of the program and can envision poorly staffed laboratories during the last year of the program. It is not clear to the panel how the transition will occur from ODP to IODP, and the panel recommends that IPSC and JOI explicitly address this issue and make the technical staff aware that they are addressing the issue.

SCIMP Recommendation 00-1-1*:* SCIMP is keenly aware of, and concerned about, the high risk of significant technical attrition on the JOIDES Resolution as ODP approaches its conclusion in 2003. SCIMP strongly recommends that JOI and IPSC develop a plan that will assure the preservation of all critical technical skills towards the end of ODP. This plan should be in place and communicated to all ODP staff by January 1, 2002.

Update: *No specific action taken on this recommendation. The "Orcutt" transition committee, however, has been tasked with the development of a transition plan and SCIMP hopes thecommittee will address this issue.*

Another issue of concern to SCIMP is maintaining a high level of training and technical skill among the sea-going only (ASPP) staff. Currently, ASPP employees attend workshops or training without any compensation for their time. Such a policy is detrimental to maintaining a high level of expertise and esprit de corps. SCIMP understands that this lack of compensation stems from Texas A&M University's personnel policies, but the panel recommends that ODP-TAMU should aggressively pursue a change in its current training practices regarding ASPP employees.

SCIMP Recommendation 00-1-2: SCIMP recommends that ODP-TAMU provide the necessary shore-based training for all ASPP employees in a manner that appropriately compensates them for their time.

Update: *A proposed policy change has been submitted to the TAMU system originally in January and was resubmitted in revised versions in April and May. The policy change is currently at the TAMU system general counsel for approval, and expected to be resolved within the next few weeks. The new policy will compensate ASPP employees for shore-based training or special projects at the same rate as sea pay, i.e., 80% above the base salary for the additional time.*

2) Equipment/Laboratory

Hard-Rock AppleCore
SCIMP Core Description Laboratory Working Group (LWG) members evaluated both the hard-rock and soft-rock versions of AppleCore (the JANUS core description applications). The LWG members believe the Hard Rock AppleCore application will never be able to achieve the desired results needed for archival and distribution of hard-rock core descriptions. The data input and reporting functions are too restrictive for most hard-rock descriptions and, in most likelihood, the application will not be used by petrologists because it does not record the data they need. SCIMP members believe that current GIS applications could be modified to provide a suitable hard-rock core description application. Further development of the Hard Rock AppleCore application is not recommended.

SCIMP Recommendation 00-1-3*:* SCIMP recommends that ODP-TAMU cease further development of Hard-Rock AppleCore and await a recommendation by the Core Description Lab Working Group on development of a new application.

Update: *No further development of the Hard-Rock AppleCore version is planned. Development and implementation of a hard rock description application, such as the system developed by the ICDP for the Hawaiian Scientific Drilling Project, hinges on the availability of digital images, which has temporarily been placed on hold. Without the digital imaging system in hand, new discussions need to take place. ODP-TAMU internal evaluation suggests that for description of basalts the MS Access based ICDP software could be implemented with minor alteration to ODP style as a stopgap measure. ODP-TAMU also recognizes, however, that this software was designed specifically for description of basalt, and adaptation to archive descriptions for any other commonly recovered hard rock lithology (gabbro, peridotite, felsic rocks, ash layers, etc.) is a much more challenging undertaking. During the current schedule (Legs 190-201-current to March 2002) four legs will probably recover significant quantities of basalt; no legs on the schedule are likely to recover gabbro or peridotite, although there are several highly ranked proposals in the review process that target these lithologies. One leg currently on the schedule is targeting felsic rocks and sulfides.*

The use of a GIS application, such as ArcInfo, as a hardrock description tool has been discussed by ODP-TAMU, but due to lack of resources, no progress has been made on this front..

Digital Imaging
SCIMP members discussed the state of digital imaging on the JOIDES Resolution, including the currently deployed Archive MST (AMST) that contains a digital camera. SCIMP members believe it would not be a good use of valuable and limited ODP

development resources to continue the development of the AMST digital camera and made the following recommendation:

SCIMP Recommendation 00-1-4: SCIMP applauds ODP-TAMU's decision to purchase a digital imaging system from GEOTEK. Due to the high priority of this measurement on upcoming legs, we reiterate our request that the new GEOTEK system be deployed and operational by June 2000 as specified in (SCICOM-approved) SCIMP Recommendation 99-2-12. Appropriate resources should be focussed on the integration of the GEOTEK line scan camera into the ODP infrastructure including:

- Deployment of required resources
- Data storage/archive procedures
- JANUS data model
- Post-cruise image distribution plan

To alleviate space concerns in the post-drydock core lab, the AMST should be removed to provide space for placement of the GEOTEK track. Sensors from the existing AMST should be retained on board the JOIDES Resolution for use by the shipboard scientific party, if needed. No resources should be spent on further development of the alternatives to the GEOTEK line scan camera system.

Update: *Internal review at ODP-TAMU by a digital imaging working group resulted in a detailed list of technical specifications that are needed for a digital imaging system. An RFQ was submitted in early March, 2000, to vendors of digital core imaging systems so that ODP-TAMU could identify which commercially available RGB line scan digital imaging system should be purchased for use on the JOIDES Resolution. ODP-TAMU received responses from three vendors as of the closing date for the RFQ. Review of the responses to the RFQ was ongoing as of early May 2000. However, because of budget problems created by the high price of fuel for the ship it is unlikely that funds will be available to purchase the system in FY00***.**

XRF removal and Microbiology renovations

The ICP-ES was used successfully on Leg 187. Analytical protocols for various elemental groups still need to be worked out but, overall, implementation of the ICP-ES has been a huge success The success of the ICP-ES has direct implications for the status of the XRF. The ICP appears to be able to replace the XRF in 99% of most needs. Removal of the XRF has implications for other laboratory space on the ship, particularly the microbiology laboratory.

Along these lines, SCIMP members discussed a rearrangement of some of the laboratories on the JOIDES Resolution. In particular, several members of the panel felt that the best location for the microbiology laboratory would be next to the current chemistry laboratory on the F-deck. A subgroup that included SCIMP Chemistry LWG members, ODP-TAMU technical and scientific staff, and several other interested parties examined the lab stack spaces under consideration. They determined that with the removal of the XRF and movement of the thin section, hard-rock sample preparation, and XRD laboratories into the new space on the 7th floor of the lab stack the microbiology laboratory could fit into the F-Deck. Pros and cons of this move were discussed in a full meeting of the panel and the following two recommendations ensued:

SCIMP Recommendation 00-1-5*:* SCIMP recommends that ODP-TAMU remove the XRF from the JOIDES Resolution during the Leg 189/190 transit and portcall.

Update: *The current schedule calls for the XRF to be removed from the ship during the Yokohama port call at the beginning of Leg 191 and returned to ODP/TAMU in working order. The lab changes will be completed during the second half of Leg 191. Required materials have been ordered and will be shipped to Yokohama. The XRF has been decommissioned and disassembly is underway.*

SCIMP Recommendation 00-1-6: SCIMP recommends that TAMU expeditiously (i.e., during Leg 189/190 transit) move the existing thin section, hard-rock sample preparation and XRD laboratories into the new space on the 7th floor of the lab stack. The microbiology laboratory, including the existing apparatus and the expanded apparatus purchased by ODP-TAMU and LExEN should be installed in the F-deck space vacated by this move.

Update: *The proposed date posed a potential risks to the Leg 190 science program, which includes a significant microbiology component, should the lab changes not be completed and the labs be restored to full functionality before the beginning of that leg. There were also concerns expressed regarding the feasibility/desirability of relocating the XRD to the top level of the lab stack. The recommendation now is to leave the XRD on the 5th level, and move all XRD and ICP sample preparation to the top level (along with the thin section making facilities). This simplifies and reduces the cost of making the lab changes, and alleviates concerns regarding the sensitivity of the XRD to relocation and ship motion. (If it is subsequently determined that the XRD interferes with microbiology needs, it can be relocated to the top level at a future time.)*

Catwalk Core Temperatures/Gas Hydrate Distribution
The measurement of spatial temperature variations on whole cores (and, by proxy, gas hydrate distribution) is an essential aspect of future gas hydrate work aboard the JOIDES Resolution. SCIMP saw the results of an off-the-shelf infrared (IR) imaging system that may have potential for mapping gas hydrates in cores on the JOIDES Resolution. The tests, conducted with Infrared Thermal Camera at the USGS in Menlo Park, demonstrated that the IR imaging can provide thermal data for the purposes of measuring and recording "cat-walk" core temperatures (See SCIMP Appendix 00-1-8 for a PowerPoint presentation of this demonstration). The IR camera system appears to have the sensitivity and detail to provide insight into the distribution of gas-hydrates as well as the processes that happen within cores. There may be other technologies that are equally viable. A systematic approach to investigate methodologies to measure spatial variations in cores on the cat-walk must begin in the near future. As such, SCIMP makes the following recommendation:

SCIMP Recommendation 00-1-13: SCIMP recommends that ODP-TAMU investigate the capability to measure spatial variations in core temperature on the catwalk. These non-intrusive measurements should lead to integration into JANUS and should be coupled to measurements made in the physical property laboratory. The results of this investigation should be presented to SCIMP before ODP-TAMU purchases or develops any equipment.

Update: *No actions taken. Currently, a low priority project with no identified resources***.**

3) Underway Geophysics

Underway Geophysics currently involves three data collection processes, including: (1) Precision Depth Records, (2) single channel seismic imaging, (3) magnetometry. The most frequent data type collected are PDR. Seismic lines are being acquired only rarely on a as needed basis. The equipment being used is adequate to the task but is clearly antiquated and of declining serviceability. The technical staff have no experience or expertise in data processing so that the data tend to remain in a crude state unless scientific expertise on a given leg is available to process the data further.

The panel was in unanimous agreement that the JOIDES Resolution's forte is not as a survey ship. The panel, though, did recognize that on some legs a limited survey capability is required. In an effort to define the capability required and whether it would be most efficient and cost effective to have this capability reside in the program or be out-sourced, the following two recommendations were made:

SCIMP Recommendation 00-1-7: SCIMP recommends that the pending purchase or lease of the new seismic gun arrays for the JOIDES Resolution be deferred pending full evaluation of the JOIDES Resolution underway geophysical operations by the SCIMP U/G sub-panel. The evaluation will be completed and presented at the next SCIMP meeting and a full recommendation on U/G operations will follow.

Update: *Alan Huffman had been tasked with coordinating this review. With his resignation from SCIMP the review has been put on hold. See SCIMP recommendation 00-2-1 for the next step on this issue.*

SCIMP Recommendation 00-1-8: *SCIMP recommends that ODP-TAMU determine the cost to repair both magnetometers and properly maintain and service them for the remainder of ODP. These data will be incorporated into the SCIMP's evaluation of U/G operations. Any repairs or other expenses should be deferred pending the U/G report.*

Update: *One magnetometer repaired*

4) Seismic/Log/Core Integration

A SCIMP sub-committee was tasked with developing a vision for the integration of seismic, wireline, and core measurements onboard the JOIDES Resolution and for post-2003 drilling (The report is presented in its entirety in SCIMP Appendix 00-1-7). The report stemmed from the concern of the panel and scientists who have sailed on the JOIDES Resolution over the current capabilities to integrate logging, core measurements, and seismic measurements on the JOIDES Resolution.

We acquire seismics before we drill, we core and make measurements on core, we run wireline logs, and we perform checkshots to determine a time-depth calibration. From these operations there are two levels at which to integrate data. In a Level One capability, core sonic and density measurements, log sonic velocity measurements and Vertical Seismic Profile data, and seismic data are displayed side by side and a synthetic seismogram is constructed from the log data. To achieve this a time-depth tie ('welltie') must be made that typically involves the combination of low frequency check-shot (VSP) data and wireline sonic data to generate a time-depth table. Once this is established, it is possible to post log, core, and synthetic seismic data on a single figure. This image provides an important connection between logging and seismic that has not been utilized consistently on the JOIDES Resolution.

Once wireline and borehole information are time-depth calibrated it is possible to directly post this information on seismic data. This is a second level of complexity because one now must have the seismic data loaded onto a workstation. This information would allow scientists to truly integrate drilling with seismic data on the workstation. Level 2

capability would allow the shipboard party to visualize drilling results and integrate drilling results with previously shot seismic data. This has the potential to increase the interdisciplinary research on the ship.

Efforts to integrate seismic, log, and core data have taken two approaches on the JOIDES Resolution: 1) there are services provided through the Borehole Research Group (BRG); and 2) individual scientists have brought their own hardware and software on board to achieve this integration.

We applaud ODP-LDEO efforts to work on testing and obtaining seismic software (e.g., IESX) and further encourage cooperation with the Site Survey Panel/Data Bank for resolving the issues regarding making digital seismic data available for all ODP cruises. This is an appropriate long-term vision.

In order to continue toward meeting the Level 1 and Level 2 core/log/seismic integration needs, several hardware/equipment, training, and data issues need to be addressed:

SCIMP Recommendation 00-1-9: SCIMP recommends:

1) That shipboard facilities for Wireline/Seismic/core integration include a separate workstation dedicated to this effort .
2) That the IESX software be able to plot directly to large-scale (36") plotters and printers and that this capability be implemented by June 2000 SciMP meeting.
3) That ODP-LDEO and ODP-TAMU provide a plan for integrating the Unix network on the ship.

Update:
1) ODP-LDEO have included funds in the budget for one Unix workstation.

2) ODP-LDEO have successfully printed IESX files (CGM) to the HP plotter at LDEO. They have also purchased a plug-in to allow Canvas on the Mac to read all CGM files and output to a postscript printer This will be useful for smaller scale plots and overheads due to the size of postscript files. ODP-LDEO have also confirmed with TAMU (Adam Klaus) that the plotters on the ship can handle RTL files. The SDI software that they are using at LDEO will convert the CGM output from IESX into RTL format.

3) Liaisons have been appointed from LDEO (Ted Baker and Mary Reagan) and TAMU (David Becker) to investigate this issue and further details will be provided at the next meeting.

SCIMP Recommendation 00-1-10: SCIMP recommends that LDEO develop a procedure for creating IESX project files for each ODP drill site that will include the digital seismic profiles so that these data can be visualized interactively with the log and core data during and after the drilling of each site. The project file should be the basis for the seismic/log/core integration and time-depth conversion capabilities defined in (SCICOM-approved) SCIMP recommendations 99-1-11 and 99-1-12.

Update: *The joint IESX pilot project is included in the FY01 program plan, beginning October 1, 2000. The IESX software has been installed and successfully tested at BRG, SSDB and on the JR. Test data for the pilot study is currently being collected by the SSDB.*

SCIMP Recommendation 00-1-11: SCIMP recommends that LDEO also create a tutorial and training project file with seismic /log/core integration for the shipboard "cookbooks" so that technicians and scientists can improve their skills with IESX , GEOFRAME, and the integration process while at sea. This training project and documentation should be available for SCIMP review by June 2000.

Update: *The IESX software has been installed and successfully used on the JR during Leg 188. Development of the cookbook for shipboard (as well as pre-cruise) use is ongoing and will continue through the pilot phase of the IESX project. A version of the cookbook will be presented to SCIMP and the January 2001 meeting.*

In addition, a demonstration of the IESX software will be made to the Site Survey Panel (similar to the presentation made to SCIMP in Perth) when they meet at Lamont-Doherty in late July.

SCIMP recognizes the need to have digital seismic data available on each ODP Leg and also recognizes the challenges faced by ODP-TAMU and ODP-LDEO in getting such data from scientists. Therefore, SCIMP makes the following recommendation regarding site survey data and wireline/seismic/core integration.

SCIMP Recommendation 00-1-12*:* SCIMP recommends that JOI modify the site-survey data requirements for seismic profiles in the Data Submission Guidelines (DSG). The modification will include the following.

(a) For each final processed seismic profile submitted with a proposal, digital seismic data with navigation supplied and with supporting documentation of the processing stream used, must be provided to the data bank manager in industry standard SEG-Y

format on 8-mm tape. The data bank manager will advise the appropriate SSEP when these data are received. This data submission requirement should be rigorously enforced and proposals should not be considered for scheduling by OPCOM until this requirement is met.

(b) the data bank manager will maintain the digital seismic data and support documentation and these data will be treated as ODP proprietary information as specified in the current DSG.

Update: The DSG guideline has been modified to allow for password-protected digital data submission to the SSDB and endorsed by the SSP. The new data submission guidelines are shown below:

"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 Data Bank 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 Data Bank 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.

SCIMP APPENDIX 00-2-06

Date: Wed, 07 Jun 2000 20:51:09 -0500
From: "JRS Miriam Kastner" <jrs_kastner@resolution.tamu.edu>
To: <Rickm@bu.edu>
Cc: <janecek@quartz.gly.fsu.edu>
Subject: SciMP meeting
Mime-Version: 1.0
X-MIME-Autoconverted: from quoted-printable to 8bit by quartz.gly.fsu.edu id JAA67698

Dear Rick and Tom,

In response to your email, rick, yes Art and I were planning to contact the panel's chair, Tom, before the meeting but were very busy and did not get to do i yet.

There are two important points we would like you to act upon at your meeting:

1. The squeezers;

2. Resistivity measurements.

1. Since at least Leg 131 (may be already 112) some of us geochemists have requested from TAMU to get two more automated squeezers plus the Ti containers essential for some topical cruises, but as yet it has not happened. For example, after Leg 131 Joris and I separately urged TAMU about it, and here we are back and are facing the same squeezing problems with no change and loosing again fluid samples from crucial intervals!!!!!!!!!!!! . We are talking about a few thousand dollars over the past >10 years for better science that costs millions of dollars. We have faced this situation on every subduction zone leg and the same problem must apply to shallow water coring at any place, especially when diagenesis is intense.

The issue is that when we drill deeper in these difficult, or shallow water, environments it is difficult to squeeze pore fluid from low permeability sample in the short time available between cores, and therefore we either do not recover fluids from the most interesting and crucial intervals, like the decollement, or at best get 1-2 cm3, thus compromise both the shore-based and shipboard science. The squeezing time is especially short between cores at such intervals because the whole rounds require much pre-squeezing cleaning to avoid drill fluid (surface seawater) contamination. We have shown time and again when we had extra squeezing time because of drilling problems that we then recover 2 to 3 times the amount of pore fluid from such samples. For example, on the present cruise, we are trying to expand the geochemical program, trying to introduce new

measurenments such as hydrogen and DOC concentrations, we are working closely with the microbiologists, providing them with samples when possible, but unfortunately because of a few thousand dollars, beyond certain depths we cannot share the fluids when almost nothing to nothing is available.

The solution to this important problem is simple: On such cruises, two additional automated squeezers should be installed on one of the lab counters in the nearby paleo-lab, which is not heavily used on such cruises, at most have two micro-paleontlogists, and then remove them and store them either downstairs or at TAMU. This is simple and cheap for cruicial biogeochemical science objectives of ODP and for the future program.

2. When I came aboard and asked about resistivity measurements on the two shifts Art Spivack and Pierre Henry told me that resistivity measurements are not being measured anymore. At first I thought it is a bad joke, but then realized that the physical properties tech indeed did not undertand what I am talking about. After Leg 185 when Art told Joris that resistivity measurements were not done because he was told that the electrodes for this measurement are not on board, Joris was shocked, but assumed it was anomalous; unfortunately he was wrong. Someone has decided to romove this important measurement from the routine protocol without consulting with some of the physical properties and geochemistry scientists. This is most unfortunate and Art and I, and definitely Joris and all other geochemists who wish to use pore fluid geochemistry for correct interpretations and modeling urge your panel to immediately re-introduce this measurement into the routine protocol and data base. For this leg we have solved the problem and are getting great data, including of resistivity anisotropy, by having one of the techs (Eric Meissner) built electrodes for the softer sediments (they are working great), and Pierre Henry brought with him a simple great system for the harder sediments, and I spent some time with the physical properties tech, explained to her what is being measured and why, and wrote out for her the basic equations and definitions. The dollar investment for this measurement is minimal.

Art and I urge your panel (a) to decide that resistivity measurements be added to the required present list of protocol of physical properties measurements, and (2) to have on board at least two sets of working electrodes for resistivity measurements in softer sediments, plus a system for measuring resistivity of harder sediments and rocks.

If something else will come up in the next day or two we will let you know. Otherwise things are going well.

Best wishes,
Miriam and Art

SCIMP APPENDIX 00-2-07

Date: Thu, 08 Jun 2000 10:39:25 -0500
From: "Kathy Phillips" <phillips@odpemail.tamu.edu>
To: <janecek@quartz.gly.fsu.edu>
Cc: "Ann Klaus" <annklaus.odpgcr.odpmail@odpemail.tamu.edu>,
"Jeff Fox" <fox.odpgcr.odpmail@odpemail.tamu.edu>,
"Jay Miller" <miller.odpgcr.odpmail@odpemail.tamu.edu>,
"Carl Richter" <richter.odpgcr.odpmail@odpemail.tamu.edu>
Subject: answers to your questions
Mime-Version: 1.0
X-MIME-Autoconverted: from quoted-printable to 8bit by quartz.gly.fsu.edu id LAA68739

Tom, Jeff, Jay, Carl, and Ann,
I am entering my comments in blue in case there are specific questions about these comments.

QUESTION ONE: What needs to be done to make the data set available to the community?

ODP would need to allocate funds to pay for one of the other two options that I presented at the 1999 SciMP meeting:
Reproduce the database on CD-ROM with free distribution rights (e.g., make 3000 CDs), or house the database on the AGI web site with free access.

How much would these two options cost? These are the estimates we got from AGI in 1999. Note that these costs are based on doing a first time purchase of one of the product options and having that same product updated the next year; they are not based on purchasing one product the first year and another product the second year. Kathy Phillips has contacted AGI to see how much these two options would cost now that we've already paid for the development of the database for over 16,000 records, but she may not have an answer in time for your meeting.

To produce the database on CD-ROM with free distribution rights (make 3000 CDs):
First year - - - $17,500
Next year - - - $100, plus $1.00 per new citation added to the database and $4,500 for CD production. Please note that ODP is not allowed to purchase a single CD from AGI and reproduce the CDs ourselves. This is a copyright issue between AGI and INMAGIC (search software for the database).
Note, this does not include distribution costs! One thing that would have to be determined is how would we distribute the CD. Would TAMU tackle this, or would we send addresses to AGI and have them do it (for a fee). Who would we give the CD to? Would we add it to a volume, or do a separate distribution run? If we did a separate run, who would receive the CD? We could send it to our standard distribution list, but that would mostly reach libraries and institutions, not individual scientists. We'd also have to decide what to do about the Proceedings paid subscribers. Would we

give them the CD for free (e.g., industry subscribers) or would we send them the CD for a fee (AGI quoted a different price if we were going to sell the CDs for a fee). We could send it to all scientists who had participated in the program, but it would be a nightmare to find everyone's current mailing addresses. All of this would have to be ironed out before we entered a subcontract with AGI for production of a product.

To have AGI house the database on their web site:
First year - - - $23,700
Next year - - - $5,000 maintenance fee, plus $1.50 per new citation added to the database
Note, AGI will not allow us to host the database on ODP's web site. The AGI web site is not mirrored in foreign countries and last year they were not able to give us any guarantee how easy/smoothly users outside the US could access the site.

In comparison, the single copy of the database which we received in December cost $10,682.40. The cost breakdown was as follows:
12,103 reference citations @ $0.80 each: $9,682.40
(Note we received 16,396 citations, but had already paid for 4,293 which were DSDP citations.)
Data adaptation to allow for author or institution affiliation addition to approximately 1000 records: $500.00
CD ROM set up: $500.00
Kathy has asked AGI to give us an estimate of the cost to update the records in the database at the end of 2000 and produce a new CD. When she gets the estimate we can share it with you. Based on 1999 prices, we estimated the annual update of the single CD would cost $100 plus $1.00 per new citation.

QUESTION TWO: What can ODP do with the information we purchased from AGI?
We have purchased use of the data for research and informational purposes related to the program, but we can't disseminate parts of the database.
We can generate statistics and reports based on the information in the database and distribute them to program panels or member country offices.
We can print out lists of citations from the database for use by program panels or member country offices, as long as they use the information for in-house purposes. For example, they could share the information at ODP meetings as a means of illustrating how much science was generated by their country that was related to the program, but they couldn't publish a list of citations on a web site so a group of scientists could access the citations.
A specific example: ODP Canada recently requested that we provide them with a list of all the publications in the database that were authored by Canadian authors. AGI will allow the ODP Canada office to use the information for their annual report to their funding agencies, but they can't list titles, authors, etc. on the web for the Canadian community.

QUESTION THREE: Does ODP have the means to fill requests such as this one from individual scientists?
"I want a list of all the gas hydrates papers that have been written related to ODP."

Though we have the know-how, we do not have the staffing to handle these types of requests from individual scientists. We only have the staffing to support database analysis work and the generation of reports for panels and member countries. We could not handle preparing information like this for individual scientists. If we purchase the CD-for-distribution-option that AGI offers, individual scientists could use the information in the database to perform specific searches just as they use the standard GeoRef database - for research purposes, but not for duplication or distribution of any portion of the database. The drawback here is that we have only considered annual updates to our citation database; GeoRef adds new records monthly. How many program records are added on a monthly or annual basis? At this point, I have no answer.

QUESTION FOUR: What would it take for Joe-scientist to generate this information himself using GeoRef? And how is this different from what Kathy Phillips would do with the single copy of the database we have?
I'll answer the second part of the question first. In a nutshell, the database ODP purchased contains the same information that is in GeoRef, only some of the information may be listed in different fields (we also paid AGI to add author affiliation information to approximately 1000 records--we assume they added the author affiliation info to GeoRef as well as to our database subset!). The main difference is that AGI's main database contains over 2 million records; the subset of their database that they have created for us was based on the key words that are listed in Table 1 of the Appendix summary that is part of the Science Operator's report. The benefit of working with this subset of data is we never have to run a series of queries to locate program-related data. Joe-scientist would have to run these queries at the beginning of each search.

Working from GeoRef, here is what Joe-scientist would have to do:
1. Run queries to search for Ocean Drilling Program, Ocean Drilling Project, ODP. (Note this will not include any citations linked only to DSDP, Deep Sea Drilling Program, Deep Sea Drilling Project, IPOD, or International Phase of Ocean Drilling). Many of these records list the "Research Program" as all three programs. If you are interested in only ODP, the search is a little more involved.
2. Then they would have to run a query to search for the results from step one, plus "gas hydrates." They would also have to query on "gas-hydrates", "gas hydrate", "gas-hydrate," etc. AGI enters the information for each record as it was published; this explains the many variations in spelling, punctuation, etc. that can be found in a "single" search term. After playing with the many searches that were necessary to achieve the end results we wanted, I discovered that rather than looking for each of these variants, I could simply search for "hydrate" or "hydrates" and get similar results. Actually, this is where Joe Scientist would have some advantage in using the database; Joe Scientist would know if all "hydrates" were "gas hydrates" or if the search needed to be further modified.
3. Then they would have to sort all records by ID# and review the list to cut out duplicates (e.g., there is a good chance that the words appear in more than one form in one citation listing).

It would be important for Joe-scientist to think of all the different derivations for the terms he is interested in, otherwise he wouldn't catch all the records. For example, when Kathy searched in different ways, this is what she came up with:
Search criteria ---- # records
ODP + gas hydrates ---- 122
ODP + gas-hydrates ---- 120 (punctuation really does make a difference)

Ocean Drilling Program + gas hydrates ---- 134
Ocean Drilling Program + gas-hydrates ---- 130
ODP or DSDP or IPOD, and gas hydrates OR and gas-hydrates ---- 158
Ocean... or Deep... or International..., and gas hydrates OR and gas-hydrates ---- 160
Some of these records may be duplicates, so they would have to be sorted by ID# and the list would have to be reviewed to cull out the duplicates.

QUESTION FIVE: How much time is involved in pulling data from the database

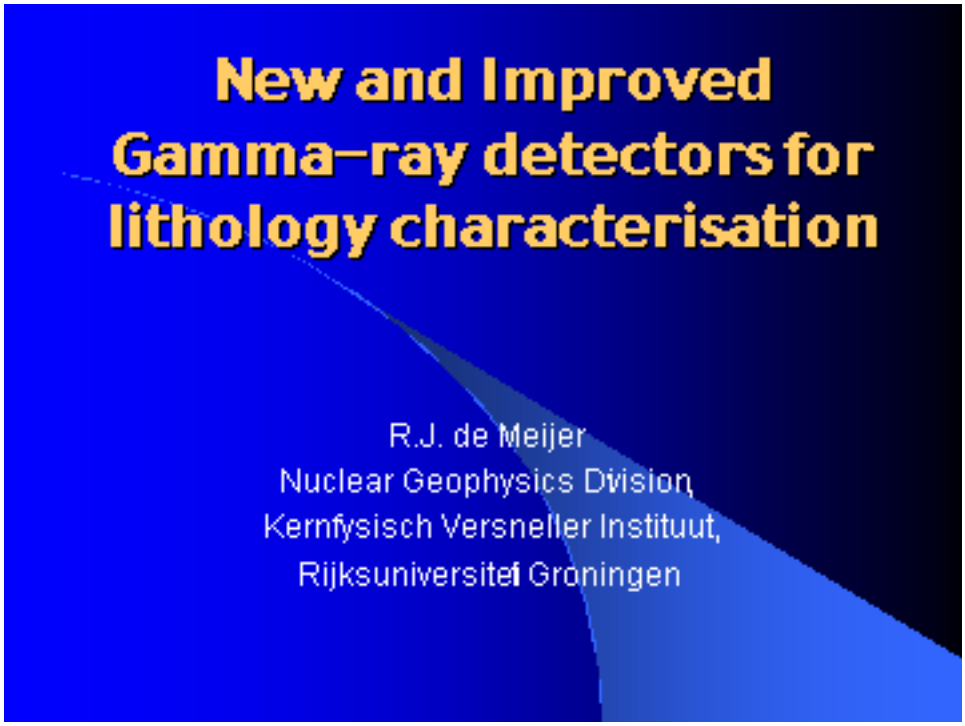
If you will pardon a non-scientific analogy, this is like asking how much time is involved in purchasing groceries at the grocery store. The time involved is determined by what you are going to the store/database for. If you are in search of the number of publications that U.S. authors have contributed to between 1969 and 1999, this involves a quick query command and your results are almost instantaneous. If you want to know how many of those publications are from DSDP or ODP publications vs "outside" publications, this can be done through a sort of the previous results or an additional command to the previous query. But if you are interested in where the program is disseminating it's information into the scientific community - journals, professional meetings, books - this becomes a bit more complicated and far more time consuming. In the study I just completed, I went member country by member country, year by year, record by record to get a broad picture of where DSDP/ODP science has been presented world-wide for the last 31 years. This gives us actual numbers of publications/presentations. Using these numbers we are able to figure the percentages of presentations in journals, professional meetings, etc. for each country and for the program as a whole (e.g., what percentage of U.S. authored science goes directly into journal literature vs the percentage that is presented in professional meetings). We can also tell which journals are published in most often, and which country leads in those publications, etc.

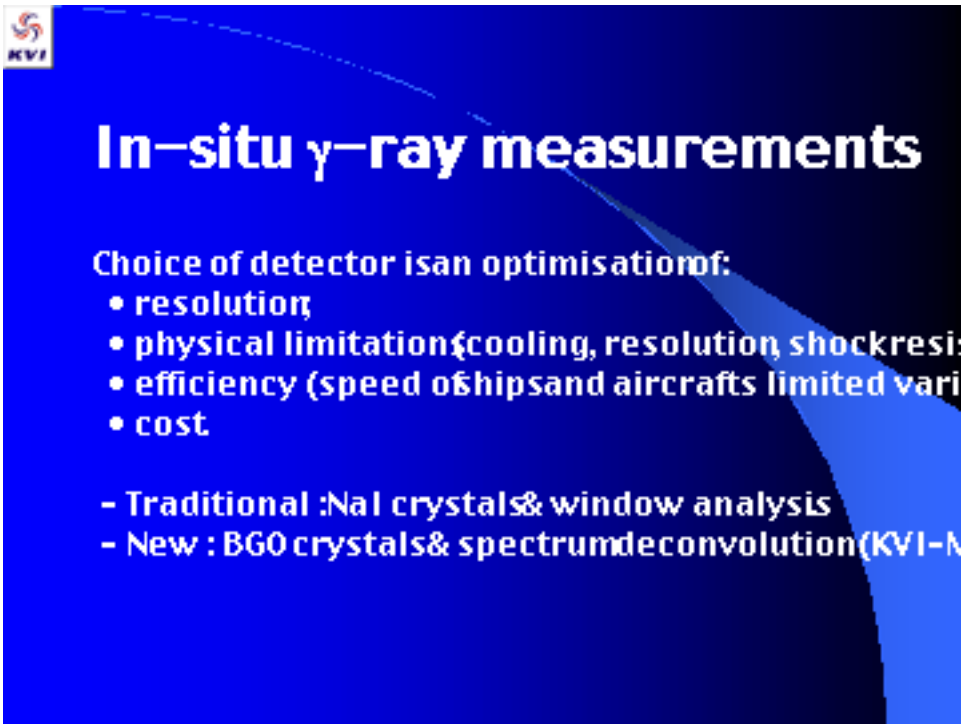
Ann asked if I could give a rough estimate of the time I have spent in the study I have just completed. I would have to estimate (roughly) a solid 3 weeks to a month. (This allows for learning curve in use of the database, designing data sheets to allow for efficient data manipulation, etc.) This work was sandwiched in between my regular responsibilities since the arrival of the CD, so this is at best a rough estimate.

Please feel free to call or e-mail for further information or clarification. I am in the office until 3:00p.m. each day and will be glad to help you in any way. AGI has indicated that they will get back to me today with cost information on annual updates (on some of the options discussed above) based on the 2000 rates. I will forward that info to you as soon as it arrives.

Kathy Phillips
Publications Specialist
Ocean Drilling Program
1000 Discovery Drive
College Station, TX 77845-9547
(979) 845-1191; fax: (979) 862-3527
Phillips@odpemail.tamu.edu

SCIMP Appendix 00-2-08

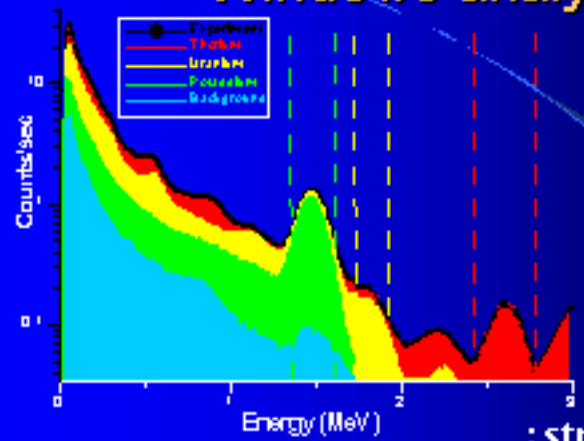




Properties of NaI and BGO detectors for in-situ measurements

	Advantages	Disadvantages
NaI	low price	moderate Z-value & density
	large volumes (< 4ℓ)	brittle & hygroscopic
	moderate resolution	
	low temperature drift	
BGO	high Z-value & density	moderate price (5 × NaI)
	high sensitivity (especially photopeak)	moderate volumes (< 2.5ℓ)
	robust	T < 80°C

Windows analysis



$$c_K = [n_K + \beta n_U + \gamma(n_U + \alpha n_{Th})] / S_K$$

$$c_U = [n_U + \alpha n_{Th})] / S_U$$

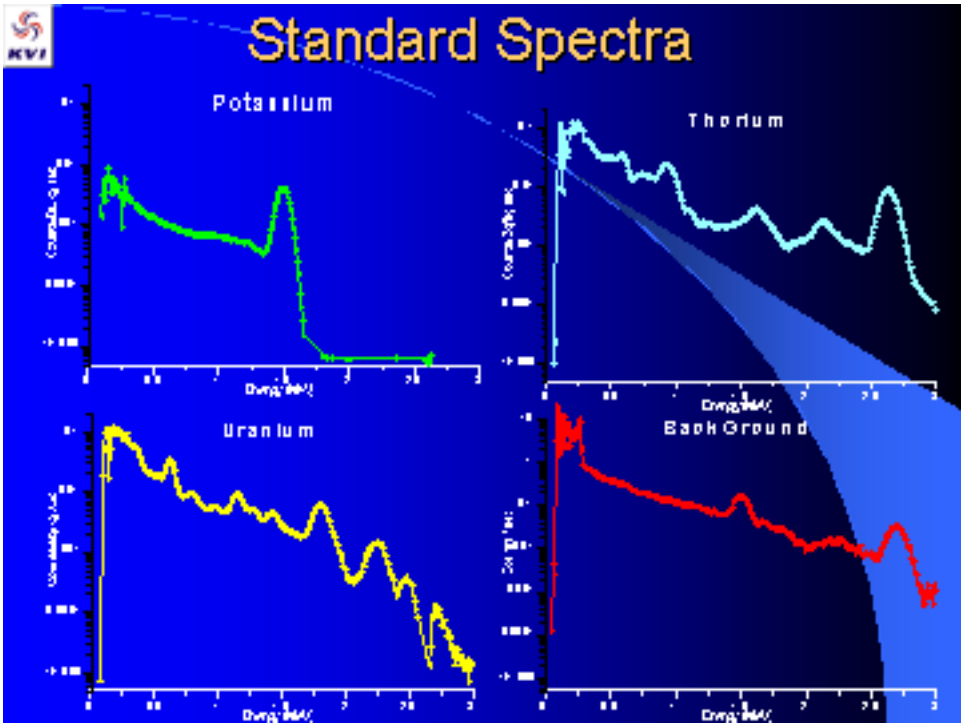
$$c_{Th} = n_{Th} / S_{Th}$$

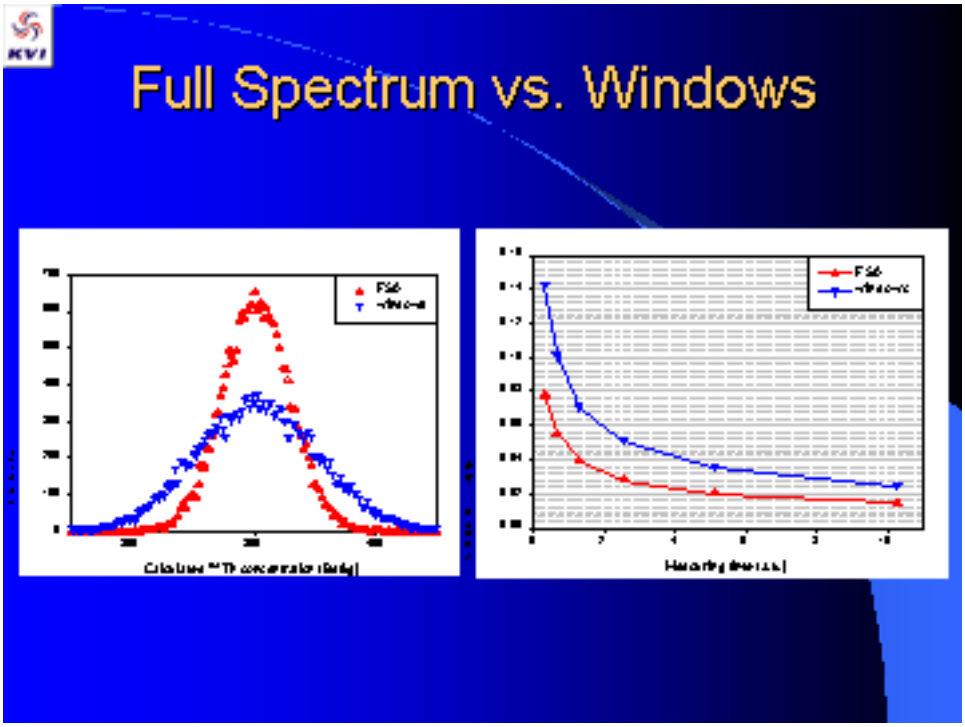
_: stripping factor Th to U;

_: stripping factor U to K;

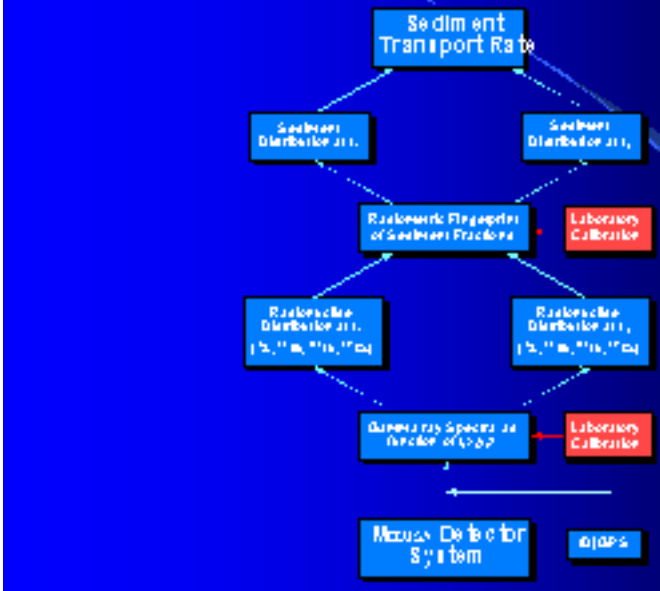
_: stripping factor Th to K;

S: sensitivity factors


Standard Spectra
Potassium
Thorium
Uranium
Back Ground


Full Spectrum vs. Windows

Radiometric sedimentology



Radiometric Fingerprint

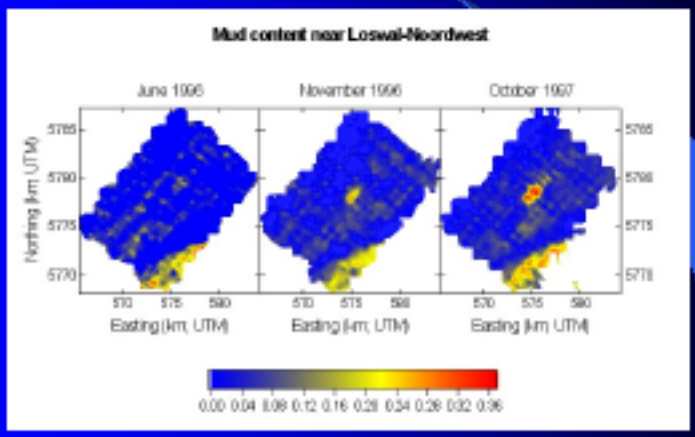
Fingerprint, A, relates activity concentration of the samples, C, to sample composition, F, through a linear model $C_k = P_m A_k^m$

with: P_m the size of the sediment fraction m of sample i,
$\Sigma_m P_m = 1$, for m sediment fractions (fine-coarse), samples and k radionuclides

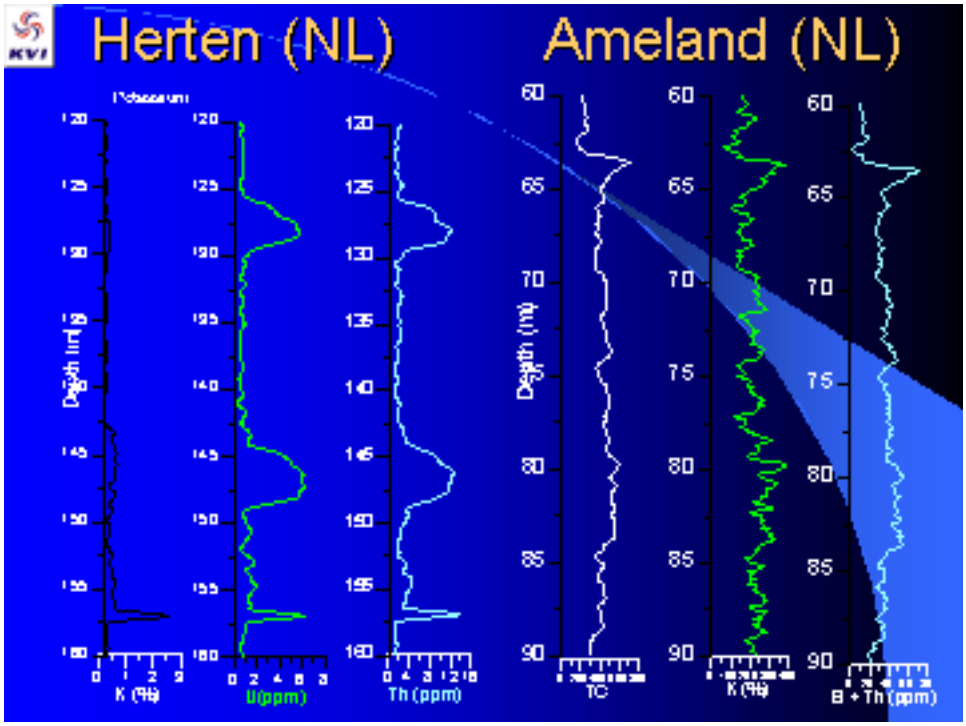
$$\begin{bmatrix} C_x^1 & C_a^1 & C_{Th}^1 \\ C_x^2 & C_a^2 & C_{Th}^2 \\ \vdots & \vdots & \vdots \\ C_x^i & C_a^i & C_{Th}^i \end{bmatrix} = \begin{bmatrix} F_{mud}^1 & F_{sand}^1 \\ F_{mud}^2 & F_{sand}^2 \\ \vdots & \vdots \\ F_{mud}^i & F_{sand}^i \end{bmatrix} \begin{bmatrix} A_x^{mud} & A_a^{mud} & A_{Th}^{mud} \\ A_x^{sand} & A_a^{sand} & A_{Th}^{sand} \end{bmatrix}$$

Sediment type	^{40}K	^{238}U-series	^{232}Th-series
Mud (< 63 μm)	520±50	29±3	34±4
Sand (> 63 μm)	254±6	6.5±0.3	5.9±0.4

Tracing dispersal



Airborne survey

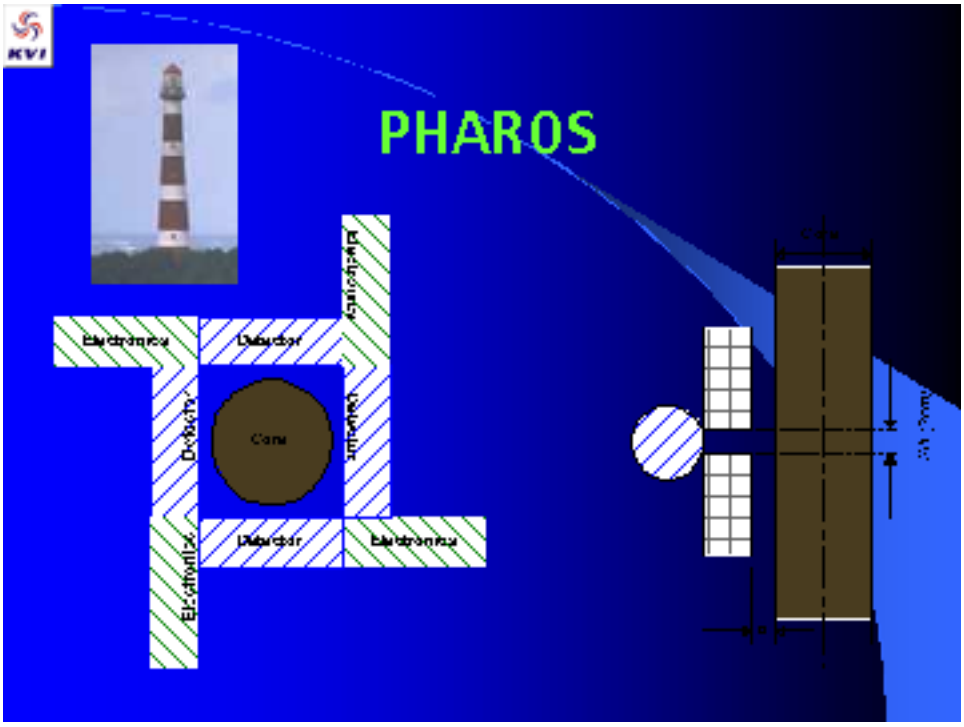


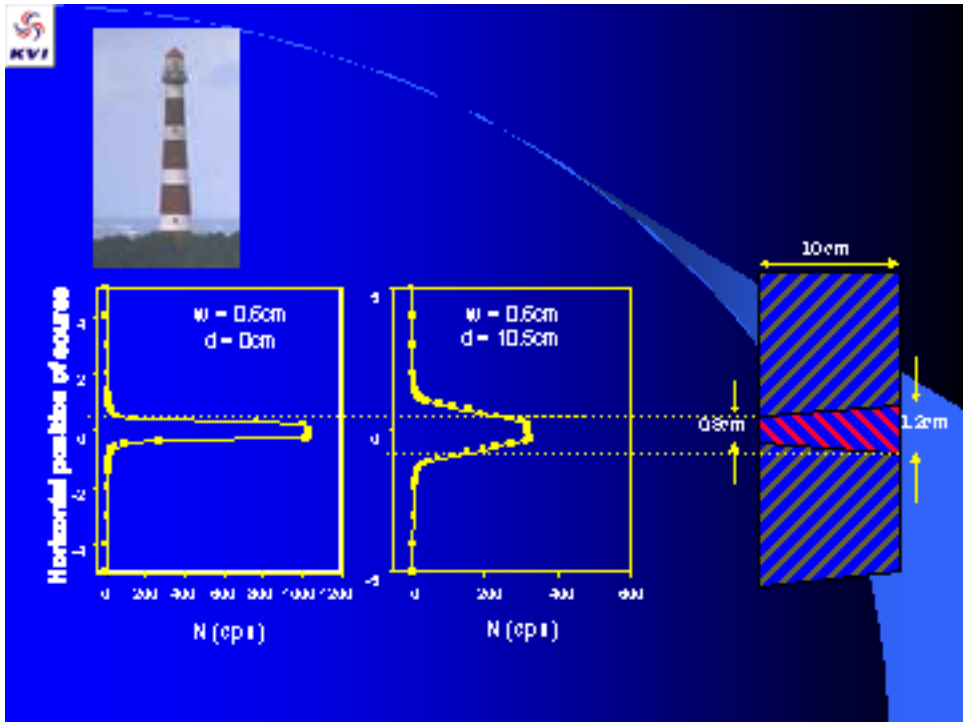
PHAROS

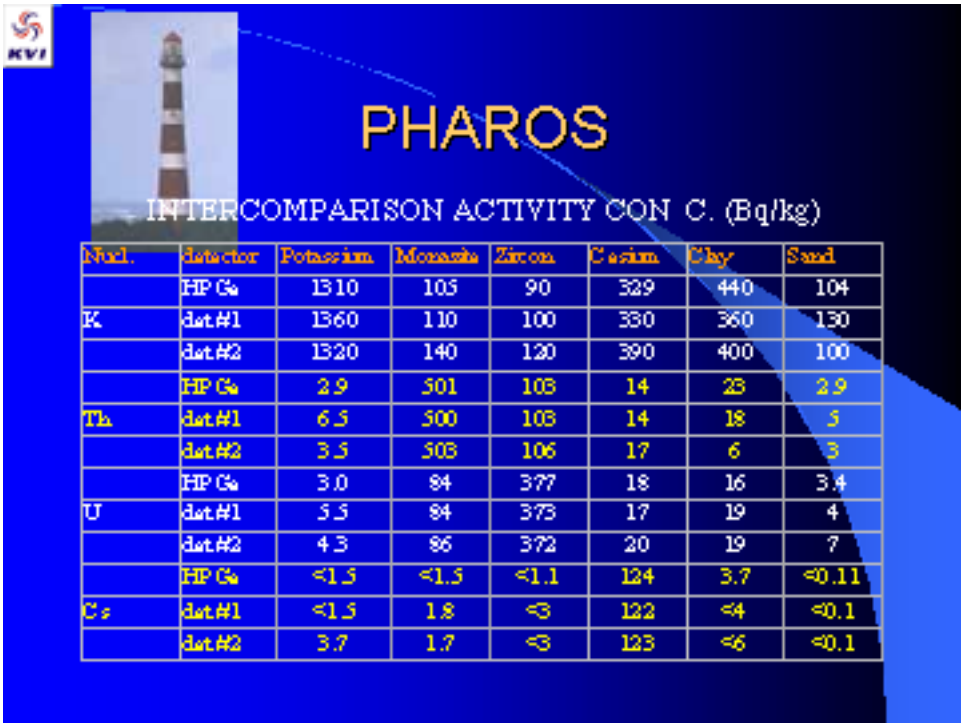
Pluri-detector, High-resolution Analyser of Radiometric properties Of Soil cores

- Automatic logging of soil cores: length <1m; diameter <10cm.
- Spatial resolution: standard (at present) 2.5cm; 1.0cm proven.
- Spectral γ-ray analysis: ^{40}K, ^{60}Co, ^{137}Cs, ^{232}Th, ^{238}U.


PHAROS


PHAROS
Core

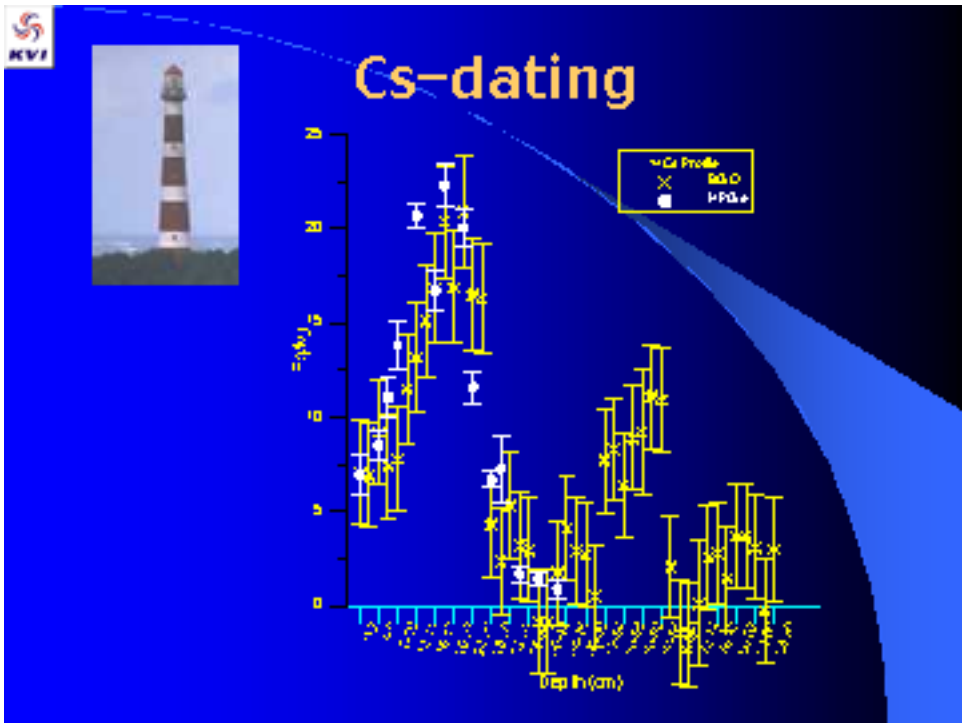




PHAROS

INTERCOMPARISON ACTIVITY CON C. (Bq/kg)

Nucl.	detector	Potassium	Monazite	Zircon	Cesium	Clay	Sand
	HP Ge	1310	105	90	329	440	104
K	det.#1	1360	110	100	330	360	130
	det.#2	1320	140	120	390	400	100
	HP Ge	2.9	501	108	14	23	2.9
Th	det.#1	6.5	500	108	14	18	5
	det.#2	3.5	503	106	17	6	3
	HP Ge	3.0	84	377	18	16	3.4
U	det.#1	5.5	84	373	17	19	4
	det.#2	4.3	86	372	20	19	7
	HP Ge	<1.5	<1.5	<1.1	124	3.7	<0.11
Cs	det.#1	<1.5	1.8	<3	122	<4	<0.1
	det.#2	3.7	1.7	<3	123	<6	<0.1



CONCLUSIONS

- BGO has clear advantages over NaI.
- Disadvantages like drift and resolution can be handled.
- Full spectrum analysis increases efficiency compared to windows.
- BGO+FSA allows spectral gamma-ray in reasonable times. In combination with fingerprinting, quantitative lithologoly info to be obtained.

SCIMP Appendix 00-2-09

Recommendation		Advancement	Comments
Downhole Tools			
98-1-05	Use Sequential Logging strategy	Implemented	Needs Monitoring
98-1-06	SCIMP Third Party Tool Input	Implemented	Needs Monitoring
98-2-02	Web-based Logging Primer	Implemented	
98-2-10	Evaluation of Wireline contract	No progress	Needs redefinition by SCIMP
98-2-13	WST as part of standard operations	Implemented	Available as needed
99-1-04	Routine use of TAP tool	Implemented	
99-1-05	Drill String Heave Compensation test	Implemented/Inprogress	Needs monitoring / follow-up report
99-1-06	Determine Large Diameter Tool targets	Implemented/Inprogress	Follow-up report needed
U/G and Seismic/Log/Core Integration			
99-1-11	Enable Geoframe siesmic and sonic modules	Implemented/in progress	Monitor - See Working Group Rec 00-2-1
99-1-12	BRG to have Time-depth calibration expertise	Implemented/in progress	Monitor - See Working Group Rec 00-2-1
99-1-13	Site Survey data submitted in digital form	No progress	Monitor - Await FY01 IESX Pilot study report
99-2-10	Abandon 6 -channel streamer	Implemented/in progress	Monitor - See Working Group Rec 00-2-1
99-2-11	Investigate Tuned Gun arrays	In Progress	Monitor - See Working Group Rec 00-2-1
00-1-07	Evaluate U/G operations	No progress	See Working Group Rec 00-2-1
00-1-08	Defer repairs on Magnetometer	Implemented/in progress	Some repairs done
00-1-09	Purchase hardware for data integration	Implemented/in progress	Monitor Unix network integration
00-1-10	Create IESX project files	Implemented/in progress	Monitor - Await FY01 IESX Pilot study report
00-1-11	IESX tutorial and training manual	Implemented/in progress	Monitor - Await FY01 IESX Pilot study report
00-1-12	Site Survey data in digital form	No progress	Monitor - See Working Group Rec 00-2-1
Publications			
97-1-05	Investigate Print alternatives to new IR format	Implemented	Alternatives not accepted by EXCOM
98-2-03	IR Volume Pricing	Implemented	
98-2-04	SR submission procedures	Implemented	
98-2-05	Establish Leg Synthesis requirements	Implemented	
98-2-06	Investigate costs for citation database	Implemented	AGI / GEOREF Citation DB developed
99-1-03	Retain hard copy of JOIDES Journal	Implemented	
99-1-10	ReiterateLeg synetheis requirements	Implemented	
99-2-01	AGI/GEOREF citation purchase	Implemented	Not to SCIMP specs but OK
99-2-02	Change in Preliminary Rpt authorship	Implemented	
99-2-03	Change in Borehole Prelim Rpt Authorship	Implemented	

Core Description			
97-1-08	Core description application development	Implemented / In Progress	Hard Rock needs major revision
99-2-12	Commercial Digital Imaging Camera	No Progress	
00-1-04	Commercial Digital Imaging Camera	No Progress	Choose Vendor, Allocate Funds
00-1-03	Cease further revisions of HR AppleCore	Implemented	
Chemistry			
99-1-16	Equip Microbiology Van for Leg 185	Implemented	
99-1-17	HYACE and PCS Tool Development	In Progress	
99-1-18	Finalize DVTP as mature Third Party Tool	Implemented	
99-1-19	In situ Temp and Fluid monitoring	No Progress	Needs Advocate / funds
00-1-05	Remove XRF	Implemented	
00-1-06	Move Microbiology Lab to F-deck	In Progress	
00-1-13	Catwalk core temperature Monitoring	No Progress	Needs Advocate / funds
Micropaleo/MRC			
97-1-07	MRC Reporting through SCIMP	Implemented	
98-1-04	Pre-cruise training for PAL and Applecore	Implenented/Ongoing	Leg 191 scientists trained at TAMU
98-1-07	MRC Slide redistribution	Implemented	
98-2-01	New JANUS Paleo app progess report	Implemented	
99-1-07	Continue Training on PAL	Implemented/Ongoing	
99-1-08	Support of MRC meeting	Implemented	
99-1-09	Knappertsbush as new MRC curator	Implemented	
99-2-05	Paleo technical support	Implemented/Ongoing	Need to Monitor-- still problems
99-2-06	Portable PAL application	No Progress	Other higher priority issues with PAL
99-2-07	Prioritize MRC efforts	Implemented	
Computers/JANUS			
97-1-01	JANUS oversight by SCIMP	Implemented	
97-1-02	Development of Age Model application	Inplemented In Progress	
97-1-03	JANUS oversight by SCIMP	Implemented	
97-1-04	Advisory Committee for Data Migration	Implemented	SCIMP monitors progress
98-2-08	Establish Mirror Site at NGDC	Implemented	JANUS DB replicated periodically
99-2-04	Ensure Data entered into JANUS apps	Implemented/ Ongoing	Paleontology still problematical
Curation			
97-1-06	Begin Wrapping cores in Plastic	In Progress	On-going project-- well established
98-1-01	Eliminate 6 month wait for Archive sampling	Implemented	
98-1-03	Develop integrated Sampling Policy	Implemented	
98-2-07	Adopt Integrated Sampling and Data Policy	Implemented	
99-2-08	Revise Core Wrapping scheme (wet only)	Implemented	Only wet cores wrapped
99-2-09	Sand Blaster Use and Availability	Implemented	

Miscellaneous			
PERSONNEL			
98-2-09	Consolidation of JOI and TAMU PR Services	No Progress	Needs redefinition by SCIMP
98-2-12	JOI Evaluate ODP-TAMU personnel needs	No Progress	Needs redefinition by SCIMP
99-1-01	JOI Continue evaluation of Wireline Services	No Progress	Needs redefinition by SCIMP
99-1-02	JOI Continue evaluation of TAMU Personnel	No Progress	Needs redefinition by SCIMP
99-1-20	Develop Flexible Technical staff system	No Progress	Some proposals/ideas submitted to TAMU Management
00-1-01	Preserve critiical tech skllls	Implemented/in Progress	IODP and Transition Committee formulating plan
00-1-02	ASPP training compensation	Implemented/in Progress	Plan working thru TAMU System
ODP Engineering			
98-2-11	TEDCOM evaluation of DSD projects	Implemented / In progress	TEDCOM currently evaluating as of May 00 meeting
99-1-14	Drilling Parameters to Scientific Party	Implemented / In progress	Data now available in digital form
PPGs			
98-2-14	Timely PPG reports	Implemented	
99-1-15	Catalog of Legacy Holes	Implemented	
IODP/RISER SHIP			
99-2-13	Riser Ship Laboratory changes	Implemented	
99-2-14	Working Group for Riser science	No Progress	IODP concern
99-2-15	Observers on Riser ship	No Progress	IODP concern
99-2-16	Acadamia-Industry interaction	Implemented/ongoing	Several recent workshops
SCIMP Panel Structure and Logisitics			
97-1-09	Lab Working Groups established	Implemented	
98-1-02	Timely SCICOM minutes to SCIMP	Implemented	

SCIMP Appendix 00-2-10.1

Minutes of the Hydrogeology PPG Meeting

April 9 and 10, 2000 in Boulder, Colorado, USA

The Hydrogeology PPG held its first meeting at the University of Colorado, Boulder, Colorado, USA on April 9 and 10, 2000.

Participants (no regrets)

Hydrogeology PPG Members
John Bredehoeft (US)
Earl E. Davis (Canada)
Shemin Ge (US)
Steven M. Gorelick (US)
Pierre Henry (France)
Henk Kooi (The Netherlands)
Allen F. Moench (US)
Martin Sauter (Germany)
Peter K. Swart (US)
Tomochika Tokunaga (Japan)
Clifford I. Voss (US)
Fiona Whitaker (UK)

ESSEP Liaison:
Barbara Bekins (US)

Invited Guests:
Kevin Brown (US)
Adam Klaus (US)
Roger H. Morin (US)
Liz Screaton (US)

Graduate Student Assistant
Chereé Stover (US)

Introduction

The first Hydrogeology Planning Group meeting started with brief introductions of all the PPG members and their expertise. Some of the members presented their recent work as relevant to this PPG. Following the PPG member introduction were several presentations by the ESSEP liaison and the invited guests who have been involved in a variety of ODP activities.

Barbara Bekins gave an overview on the ODP Long Range Plan, ODP proposal evaluation process, and the SSEP's role in fostering proposals, a few proposal abstracts in the system that have fluid flow components, and the auxiliary science funding mechanisms by NSF and USSAC. Adam Klaus described the capabilities of the laboratories on board the JOIDES drillship, Resolution, the standard core processing on board the JR during research legs, site survey requirements, and briefly the capability of the new drillship. Earl Davis described the development, capabilities, and advances in borehole seal instrumentation, CORKs (Circulation Obviation Retrofit Kits), and some of the latest CORK monitoring results. Liz Screaton focused on in-situ permeability packer tests and data analysis using fluid flow modeling. Roger Morin updated the group on the activities of the Scientific Measurement Panel and hydrogeologic applications of geophysical logging. Kevin Brown illustrated flux meter instrumentation on the sea floor, its long-term monitoring capability, and how the results are used to infer diffusive fluid flux combining chemical and biological data. Pierre Henry informed the group of the proposed Gulf drilling project in Europe.

We then discussed our working strategy and decided to focus our efforts on identifying major scientific issues and strategies for tackling them within the context of the ODP Long Range Plan and research lag activities. Following is a summary.

Review of Scientific Issues

Hydrologic system as a unifying theme After a brief discussion, we quickly reached a consensus that it is critical to understand hydrogeologic processes in order to understand a variety of processes in submarine environments either near the surface or in the deep interior of the earth. It is understood that fluid flow is an effective agent in transporting heat and solutes and redistributing heat and solute in the earth's crust at all scales. Fluid flow and sediment deformation are closely coupled processes; therefore, fluid flow plays important roles in sediment compaction and erosion. Also intimately linked are fluid pressure state and seiemic rupture processes. Consequently, it is important to consider the hydrogeologic systems as dynamic and as involving coupled processes. The basic state variables describing the hydrogeologic processes include pore pressure, stress and strain, temperature field, and water chemistry fields. These state parameters need to be measured and understood both spatially and temporally.

Driving mechanisms Closely associated with the state of a hydrologic system are the mechanisms that drive fluid flow. We identified the following five mechanisms. First, variations in topography create gravity-driven flow systems. Second, fluid density differences arising from either temperature or solute concentration gradients result in buoyancy forces and cause convection. Third, stress or strain in sediments forces the fluid-matrix to undergo volumetric change in either compression or expansion mode, which induces fluid flow from regions of compression to regions of expansion. Sedimentation, erosion, or tectonic processes can result in stress or strain change. Fourth, internal fluid sources from mineral dehydration or petroleum maturation need to be taken into consideration. Fifth, osmosis has been recognized in some sedimentary basins on land as a driving force for fluid flow. In clay-rich submarine environments, osmosis should not be overlooked. We further noted many fluid flow processes are transitory. This requires studying some geologic settings at different stages of their evolution, and in instances where time scales of variability are likely to be short, this will require continuous monitoring.

Issues of interest We recognized that spatial heterogeneity in sediment parameters continues to present a major challenge to studying hydrogeologic processes in both continental and submarine environments. We noticed the lack of routine hydrogeologic measurements during the past research legs and strongly feel the need for such measurements in the future. In-situ hydrologic testing methodologies were also discussed. Hydro-fracturing tests received much attention for obtaining fracture information and stress tensor data. A better understanding of water budgets and global flux, such as the sources and pathways of fluids, at ocean-continental margins and at global scale is urgently needed. Establishing cost effective hydrogeologic monitoring networks could be potentially invaluable in providing much needed measurements and monitoring of state variables of hydrologic systems. The scale and instrumentation of the hydrogeologic monitoring network need to be further discussed. We also need to better understand the role of fluids in diagenetic processes, gas hydrate and petroleum formation, salt-water intrusion in coastal regions, and in deep biosphere and mid-oceanic ridge environments.

Preliminary Work Plan

To better focus our future discussion, we organized our thoughts in the following work plan, which is preliminary and may be substantially revised in coming months. We expect to communicate our ideas and progress through email prior to the second meeting.

A. Introduction
- Global importance of submarine groundwater flow, societal impact

B. Hydrologic Goals
- Goals from Complex Report w/hydrology
- Land-sea floor connection

C. Review State of knowledge
- Existing marine work
- Lessons from terrestrial

D. Approach
- Template of processes
- Global network
- Choose representative settings
  - extensional middle oceanic ridges
  - active margins, flux and seismogenic zone
  - passive margins
  - carbonate platform
  - ridge flanks
  - ocean islands
  - hydrates
  - glacial margins?
- Variations (heterogeneity) in space and time

Wedge variation along strike
Land/sea, high and low topography, catchment, climate, aquifer connection
Land ocean interaction in the coastal zone

Routine data and targets of opportunities
State and parameters

E. Recommendations

New tools
Modeling approaches
Formalized conceptual
Test analysis
Inverse modeling
Site Survey
Increase number of hydrologist

Future Meeting Logistics

We developed a preliminary partial list of areas or groups from which we would like to invite guests to our next meeting. These areas or groups are: the site survey panel, continental drilling community, and experts in different geologic environments. We agreed that we would like to request to hold the second meeting on September 24 and 25, 2000, in Paris. Pierre Henry has agreed to be the potential host.

Respectfully submitted,

Shemin Ge
Chair of the Hydrogeology Program Planning Group

SCIMP Appendix 00-2-10.2

The Arctic's Role in Global Change Program Planning Group (APPG)
Minutes of 1st Meeting
March 9-10, 2000
Sola Strand Hotel, Stavanger, Norway

Members present

Jan Backman	(U of Stockholm, Sweden)
Bernie Coakley	(Tulane U, New Orleans, USA)
Timothy Collett	(US Geological Survey, Denver, USA)
Dennis Darby	(Old Dominion U, Virginia, USA)
Jean Paul Foucher	(IFREMER, Brest, France)
Tim Francis	(Geotek Ltd, UK)
Mikhail Gelfgat	(Aquatic Co, Russia)
Martin Hovland	(Statoil, Stavanger, Norway)(**Chair**)
Michael Kaminski	(U College, London, UK)
Yngve Kristoffersen	(U of Bergen, Norway)
Chris Wiley	(Dept. of Fisheries & Oceans, Canada)
James Zachos	(U of California, Santa Cruz, USA)

Members absent

Anatoly Gorshkovsky	(Murmansk, Russia)
Wilfred Jokat	(Alfred Wegener Inst., Germany)
Jörn Thiede	(Alfred Wegener Inst., Germany)
Kozo Takahashi	(Kyushu U, Japan)

Liasons present

Hans Brumsack	(ESSEP, Oldenburg U, Germany)

Observers/Alternates/Guests

Rudiger Stein	(Alt. for Jörn Thiede, Germany)
J. Paul Dauphin	(Obs., NSF, USA)

Garrik Grikurov (Obs., VNIIO, Russia)
Naja Mikkelsen (Obs., Denmark/Greenland)
Ove T. Gudmestad (Guest presenter, 10.03, Statoil, Norway)
Stein Sandven (Guest presenter, 10.03, Nansen RSC, Bergen, Norway)
Roar Heggland(Guest presenter, 09.03, Statoil, Norway)
Sverre Planke (Obs., 10.03, Scient. Measurm. Panel, U of Oslo, Norway)

1. Introduction and mandate

Meeting began at 0930 AM with introductory remarks and round table brief introduction. Chairman stated the workscope and mandate of the Arctic Climate PPG as given by SCICOM:

"***Overall Goal***

To develop a mature science plan concerning those aspects of Arctic drilling that bear on global problems, particularly with respect to the climate system on time scales from decades to millions of years. This PPG will build on the existing Implementation Plan of the Nansen Arctic Drilling (NAD) program and will consist partly of NAD scientists.

Mandate

1. Design a scientific drilling strategy to investigate the role of the Arctic in influencing the global climate system. Besides climatic and paleoceanographic studies, this strategy may also address those aspects of the Arctic's tectonic development and magmatic history that may have significantly impacted global climate or that may otherwise relate to globally important problems.
2. Summarize the technical needs, opportunities, and limitations of drilling in the Arctic.
3. Encourage and nurture the development of drilling poroposals.

Timeline

This PPG will exist for 1 year and will be evaluated by SCICOM at the end of that year."

2. Member statements

The most of the first day (09.03) was used to let each member introduce himself and to state his speciality relevant for the PPG:

Martin Hovland (Chair): The main focus of this first meeting will be to find out where we stand with respect to short-term (2001-2006) and long-term (>2006) scientific Arctic drilling. What are the technical difficulties we have to solve? Which scientific objectives are most urgent and achievable in the short-range?

Jan Backman provided a status of the coring inventory so far in the Arctic Ocean. Whereas there have been acquired about 800 cores from sediments laid down over the last 1 Ma, there is only one other core with sediments aged at 36 Ma, from the Arctic Ocean. Thus, there is an incredible gap in data coverage from the period 1 Ma to about 35 Ma from the Arctic

Ocean! Because this ocean is regarded as having a major influence on global climate, it is of great importance to acquire cores covering the Eocene through Pliocene interval.

Bernie Coakley provided an overview of geophysical data acquired during the SCICEX expeditions with US nuclear submarines, 1991 to 1999. The following areas were mapped to some extent with Chirp high resolution seismics, side scan sonars, and swath bathymetry: The Lomonosov Ridge, The Gakkel Ridge, and the Yermak Plateau. Fresh lava flows were even detected on the Gakkel Ridge. Because geophysical data obtained with surface vessels in the Arctic Ocean are very scarce, the SCICEX-acquired data are invaluable as site survey data for future Arctic drilling. The future of SCICEX is, however, uncertain and may not be continued, even if the investigated areas have only been partly mapped.

Timothy Collett reviewed some of the new results gained on gas hydrates. He talked about the Mallik gas hydrate well, and the role of methane as a future climate (radiatively active) gas that will probably dominate over CO2. Since about 20 % of the World's gas hydrate inventory exists in the Arctic, it is important to acquire some knowledge on what role marine gas hydrates and in particular Arctic marine gas hydrates may play in future climate change.

Dennis Darby stated that there is evidence that the Arctic seems to play an important role in initial cooling in the North Atlantic prior to Heinrich events (massive iceberg discharges into the N. Atlantic from Canada). During the last 30 kyr, the Arctic ice sheets rapidly collapsed and discharged enough icebergs into the N. Atlantic to cause this cooling. Furthermore, there is new evidence of several warm intervals during the Holocene in the western Arctic Ocean with the largest (a 6^{o}C increase) at about 6000 years ago and lasting about 500 years. These fluctuations might follow a natural climate cycle that is amplified in the Arctic sediment record that will provide insight into the warming we are now witnessing. It is therefore of the utmost importance to acquire many high-resolution climate records from the Arctic, i.e to drill in high sedimentation drift locations.

Tim Francis has been involved in the development of the Hyace hydrate coring device. With long operational experience from the ODP, he stated that the most important question is on how to drill. What technology systems are needed to gain our scientific objectives.

Michail Gelfgat provided a review of Russian and other platforms currently available for Arctic scientific drilling. There is currently no dynamically positioned (DP) vessel equivalent to the Joides Resolution capable of keeping station in Arctic Ocean ice conditions (even with ice-breaker support). A compromise can, however, be done by reducing the requirements to geotechnical size drilling rigs. In so doing, it should be possible to make up a system capable of acquiring some hundred of metres of core even in thick ice conditions at up to 1500 m water depth. Thus, a similar system as that used to drill from the ice of lake Baikal (1998) consists of a 90mm inner core barrel diameter complete coring system, with light-weight aluminium drillpipes.

Chris Wiley provided a review of the Canadian platforms utilized in the Canadian Beaufort Sea and the availability of platforms both remaining from the Beaufort and currently within the Canadian Coast Guard. He stated that historically Arctic drilling requires a "system"

rather than a single vessel - and as a result it is extremely expensive. For example the "Kulluk" has DP with anchors and winches. In severe ice conditions it needs four (4) ice breakers for "ice management". For shallow water (less than 500 m water depth) there are available systems whereby we can drill in the Arctic today - however, any ODP initiatives will have to compete for availability with the oil industry. There is a current proposal to ODP utilizing an Arctic class 4 barge built for the Beaufort Sea ("Sea Empress", "Arctic Kiggiak") utilizing two icebreakers for ice management. As with the "Kulluk" this is an anchored unit. When working in the Arctic Ocean it is very important to involve the native community at an early stage of planning.

Michael Kaminski stated that because most forams conserved in the sediments of the Arctic Ocean are of the agglutinated type, we still do not have a workable biostratigraphy for the Neogene of the Arctic. To drill a biostratigraphic site, therefore has very high priority.

Jean Paul Foucher stated that heat flow transfer in the sediments of in the Arctic Ocean is largely unknown. How much gas hydrates and permafrost is there in the Arctic Ocean and how do these conditions affect the heatflow? Furthermore, there are areas of active fluid flux which need to be studied and compared to other such areas. The use of Cork observatories in the Arctic will also become a scientific objective in the future.

James Zachos reviewed the marine oxygen isotope curve, going back to about 70 Ma BP. It was constructed from about 10,000 data points (of which none are from the Arctic ocean!). It shows the warmest period to be the Late Paleocene Thermal Maximum (LPTM), which has an excursion on the isotope value indicating a methane greenhouse condition, possibly caused by the destabilization of marine gas hydrates. So far, we only have climatic (SST, precipitation) information for the Antarctic Ocean (about 8 degrees C warming), but assume that the climate the Arctic Ocean was severely affected as well by this rapid warming. The LPTM is a very important climate marker that needs to be sampled in the high north! It is possibly present on the Lomonosov Ridge. He also showed new oxygen isotope data for marine molluscs collected from Ellesmere Island (~80°N). They indicate late Paleocene coastal SST of 10°C for the Arctic. They represent the only quantitative constraints on SST for the high northern latitudes (>65°N) for the entire Paleogene.

Yngve Kristoffersen emphasised the following points: The main challenge is to perform drilling in the Arctic on a limited budget. When we go there, for ODP, we have to guarantee results as we cannot afford to fail. We need a short-term and a long-term plan. Getting to some of the main objectives will require some new technology. We probably have to start at the periphery (moderate ice conditions) and work our way into more difficult areas as we gain experience.

Rudiger Stein stated that the entire Arctic Ocean is very important for the World's organic carbon budget. Only the Laptev Sea contains about 1% of the global carbon budget. The main missing information from the Arctic Ocean are long continuous cores, spanning some significant time periods beyond the last couple of millions of years.

Garrik Grikurov provided an update on the German/Russian cooperation in the Laptev Sea.

3. Brief discussion

The second day started with a brief discussion on how to continue. It was decided that the Chairman should assign each member with tasks to solve before the second meeting, so that that meeting can run effectively.

4. Guest presenters

Two guests had been called in to provide some information bearing on Arctic ice conditions and on new technology employed in the Arctic.

Stein Sandven from the *Nansen Remote Sensing Centre* in Bergen gave a presentation on ice prediction and monitoring using satellite data. Whereas visual systems are dependent on daylight conditions, the thermal radiation and active radar systems can operate independent of daylight and cloud cover. The ERS SAR (synthetic aperture radar) has a resolution of about 100m. The newer Canadian RADARSAT has a resolution of 45 - 50 m and is used on most expeditions now for ice condition forecasting. Sandven said that since 1978, when NRSC started monitoring ice conditions, the amount of sea ice in the Arctic has been reduced by about 3%. Furthermore, there is evidence that the multi year ice is decreasing at a rate of about 7% per decade!

Ove Tobias Gudmestad from the engineering department in *Statoil* gave a review over petroleum industry activity in the Arctic Ocean. Whereas the ODP would like to drill in up to 5000 m of water, the petroleum industry is only working in shallow water up to 200 m and extensively use ground-based (rigid) platforms. Testing of most designs to go into the Arctic Oceans is done in ice tanks of Hamburg University and elsewhere.

5. Statement from J. Paul Dauphin, NSF

In order to help this PPG understand the planning structure of ODP and IODP, J. Paul Dauphin offered to provide an overview of the future planning as it has been stated so far. It has now been decided that USA and Japan will go ahead on an equal basis, with USA responsible for a riserless vessel, also after the start of IODP. The plan is to select a new vessel by 2003 and to convert her to IODP-standards by 2004. Japan will be responsible for providing a riser vessel. The plan here is to construct the vessel by 2004 and start operations in 2006.

The transition between ODP and IODP during 2003 is intended to be "seamless". This transition will be looked after by the International Working Group (IWG) and the International Plannning Subcommittee of IODP (IPSIC). It is still uncertain how Europe will contribute, but it is expected that their responsibility might be for some of the alternate

platforms (i.e. platforms for special short-term drilling) for drilling in the Arctic and on continental shelves.

A model being considered by IPSC is that each country or group of countries is economically responsible for operating the vessels or platforms, such that the comingal funds can be set aside for the Science Funding only.

6. Assigned tasks for the next meeting

The three main tasks that the Chairman needs help on for the next meeting are as follows:

A) Provide some high-priority science plans and include at least 3 other aims or goals with the drilling besides the main scientific objective.

B) Provide a list of systems available for Arctic drilling, complete with technical specifications and capabilities (up to 2000 m water depth and 500 m penetration).

C) Provide a detailed list of aspects we need to plan for expecially in Arctic drilling: i.e. Safety, Pollution, Politics, Logistics, etc.

Members of the Arctic Climate PPG were assigned the following tasks:

Task A)	Cenozoic objectives:	James Zachos, Michael Kaminski, Jan Backman Naja Mikkelsen
	High resolution coring:	Dennis Darby
	Site surveys:	Bernie Coakley
	Mesozoic objectives:	Rudiger Stein / Jörn Thiede
	Tectonic evolution:	Bernie Coakley, Yngve Kristoffersen, Wilfred Jokat, Jörn Thiede
	Hydrates/Fluids/Microbiol.:	Timothy Collett, Jean Paul Foucher
Task B)	Hardware systems and availability:	Chris Wiley and Michael Gelfgat
Task C)	Specifics of Arctic drilling:	Tim Francis, Naja Mikkelsen.

7. Next meeting

Permission will be sought to stage the next meeting in Calgary (host Chris Wiley) as this is the hub of Canadian Arctic engineering and of the Arctic Marine Geology Group, where we would like to seek some advice and information.

Permission will be sought to stage the next meeting on June 26 and 27, 2000.

1st Arctic Climate PPG meeting completed on 10.03.2000, 1500 PM.

(Finally approved Minutes of 1st meeting approved on 26.07.2000).
M. Hovland (signed)

SCIMP Appendix 00-2-10.3

Draft minutes of the 26th TEDCOM Meeting held at GFZ, Potsdam on 23rd and 24th May 2000

Summary of TEDCOM Recommendations to SCICOM

TEDCOM RECOMMENDATION # 001-1
Following the excellent progress on the AHC installation and monitoring of its effectiveness TEDCOM request that SCICOM ensure that ODP-TAMU proceed quickly with the simulation studies which can now use real data. This is required in order to build a model, analyze existing observations, predict what may happen in different geological and geographical areas and allow unexplained or aberrant behaviour when using the AHC to be analyzed.

TEDCOM RECOMMENDATION # 001-2
TEDCOM request that SCICOM take steps to ensure immediate collaboration between ODP-TAMU and the BRG of LDEO in order that their combined expertise be pooled to provide a comprehensive package of down hole and rig floor instrumentation for upcoming Leg 193 and any future sensor developments. If necessary both should prioritize their objectives and should be supported with funding if necessary in order that the studies shown by both parties at the current meeting be properly harnessed for effective use by the programme.

TEDCOM RECOMMENDATION # 001-3
TEDCOM request that SCICOM ask ODP-TAMU to review their approach to poor core recovery in unconsolidated, non-cohesive sediments and when doing so bear in mind existing tools available in the geotechnical industry together with ones currently under development.

TEDCOM RECOMMENDATION # 001-4
TEDCOM request SCICOM to ensure that, before the end of the current programme, ODP-TAMU have an up-to-date inventory of all of their existing operational tools, that each has a folio of up-to-date drawings and an operational manual together with a digital copy of the information in a commonly available format. This is probably the best legacy that engineering can give to the IODP and it should therefore be a requirement that the Borehole Research Group at LDEO also comply with regard to all downhole logging tools and associated software.

Those present:
Members:

Dieter Eickelberg (Germany)	Hugh L Elkins (USA)	Sergio Persoglia (ESF)
Frank Schuh (USA)	Earl Shanks (USA)	Howard Shatto (USA)
Alister Skinner (UK, Chair)	Shinichi Takagawa (Japan)	Brian Taylor (Aus/Can/Pacrim)

Apologies from:

Guests/Liaisons:

Helmut Beiersdorf (Germany, EXCOM Chair)
Jeff Fox (USA, Director, ODP-TAMU
David Goldberg (USA, LDEO)
William W. Hay (Germany, SCICOM Chair)
Dennis Nielson (USA, DOSSEC)
Eddie L. Wright (USA, ODP-TAMU)
John Farrell (USA, Acting Director, JOI-ODP)
Mike Friedrichs(USA, ODP-TAMU)
Ulrich Harms(Germany, GFZ)
Yoshiro Miki (Japan, JAMSTEC)
Lothar Wohlgemuth (Germany, GFZ)

Apologies from:

Tom Janacek (USA, SCIMP Chair)
Brian Jonasson (USA, ODP-TAMU)

Opening Remarks:

Skinner opened the meeting by thanking Ulrich Harms on behalf GFZ for agreeing to host this meeting and for making arrangements for the meeting.

Bill Hay commented briefly on why SCICOM had agreed to TEDCOM holding a meeting in Potsdam, the centre for the International Continental Drilling Programme (ICDP). ODP are making preparations for the successor programme IODP in co-operation with a number of other committees being set up under an International Working Group (IWG). The new programme will involve two ships and other platforms so there is good reason to make close links with ICDP who already use various platforms and technologies. Such an exchange of technology and ideas will make for better facilities for scientific drilling of the future within broadly similar but separate Advisory Systems for specific programmes.

John Farrell explained the relationship of ODP to JOI. JOI is the main contractor for the Ocean Drilling Programme and he is presently the Acting Director in a transition period. In due course a modified structure approved by the JOI Board of Governors and the National Science Foundation will emerge but JOI will still manage ODP and the ODP Budget of $46m which is divided among the sub-contractors TAMU/LDEO/JOI/JOIDES.

Within the USA there is a long term planning undertaken by the US Science Support Programme (USSSP) which is looking after the transition from ODP to IODP. The present ODP science operations with the ship will end in 2003 but there will be a wind-down period for all other activities. There will not be a gap between programmes but there will be a gap in drilling operations.

The JOIDES Office will move from Germany to USA (Miami) this year and Chris Harrison will be EXCOM Chair and Kier Becker SCICOM Chair.

A Request For Purchase (RFP) for the 'IODP' programme will be formulated in 2002. In the meantime an International Working Group Support Office (IWGSO) has been set up and sponsored by STA and JAMSTEC in Japan and JOI in USA. Details can be found on www.iodp.org.iwgso@brook.edu

Agenda Items

A draft agenda was prepared and accepted. It is attached as Annex 1. The numbering which follows ties in with the agenda topics.

1. Apologies for Absence

Apologies were received from Members and Guests/Liaisons as shown above.

2. Approval of 25th TEDCOM Final Draft Minutes

The Final Draft Minutes plus Annexes mailed after the 25th TEDCOM meeting at College Station were approved. Skinner said that he would try to continue mailing a complete set of attachments with the finally agreed draft minutes to those attending plus absent members, alternate members and liaisons.

3. Report on Activities at TAMU

Mike Friedrichs commenced with an update on the Active Heave Compensation System (AHC). There is attachments as Annex 2 which cover the main points of his talk. Instrumentation placed on the rig allowed for data gathering with the AHC system active and passive. This data presented in graphical form shows clearly the potential of the AHC to allow for more efficient and controlled coring on board the JOIDES Resolution. The heave compensation efficiency (relative to vessel heave) has been increased to above 95% and above 98% has been achieved. Virtually stable RPM (within 10 RPM) and no lifting off bottom of the bit while coring or drilling has been achieved. To date there has not been good correlation with hook load but there are other factors here including passive compensator efficiency and length of compensator ram extended.

These tests were carried out in approximately 2500m water depth with the drill string extended to around 300m below sea floor.

Howard Shatto asked if the data had been used for simulation yet but Friedrichs stated that to date he has not had time to do any simulations. However it was hoped that these could be completed by September of this year.

After congratulating ODP-TAMU on an excellent achievement with the AHC discussion centred around certain aspects of the as yet limited data and operations. It was fully understood and agreed that data gathering and simulation needs to continue in order to develop models and understanding of what is happening and that for proper comparisons this will have to be made in different boreholes, geographical areas and using different drilling/coring parameters. **(See TEDCOM Recommendation #001-1).**

Two major points became evident after questions from Hugh Elkins, Helmut Beiersdorf and John Farrell :

1. The AHC can only be used up to certain weather conditions - after that it becomes too dangerous on the drill floor because of the high speed movement of heavy masses.
2. 'Proper' drilling techniques have to be used in order to properly control the AHC and the drilling parameters. Thus the air cannot be bled out of the compensator as a method of feeding the drill string; the brake must be released and the traveling block lowered in that manner.

The first point will be one which will require some thought by the Co-Chiefs as it will impinge on operations, core quality and other factors. However it is generally known that operations in bad weather with or without active heave compensation will produce less, and poorer quality, core and less stable boreholes.

Eddie Wright then summarized the rest of the ODP-TAMU activities and all the information is contained in Annex 2.

He highlighted features in the **Leg summaries** and **Upcoming Leg Planning**, all of which are documented in the Annex. Clearly ODP legs are becoming more ambitious in the pursuit of science and are requiring more engineer time on board the vessel in order to prepare and maintain the tools.

In this context Wright mentioned that there is a trend towards leg specific engineering and staffing to cope with this.

All existing **ODP-TAMU Engineering Projects** together with timelines are documented in Annex 2.

Mention was also made of having to prepare items for third party tools, including the HYACE tool - this is covered by the demonstration and discussion reported on later in the minutes.

Leg 193 may have a full sensor monitoring system and this needs to be linked in to the work done by

Discussion on tools, measuring systems and data acquisition systems ensued and clarification was sought on various points. Clearly there was a lot of work and limited engineering effort available. This will be referred to again under the minutes of the closed session.

The **Passive Heave Compensator** low friction seals are leaking. There may be a need to resolve this. There may not be a problem or there may be a solution to reduce the leakage if the seals are wearing too fast. Elkins reported that contamination in the recent oil analyses may be due to dockyard activities and could settle down. In any event a replacement set of seals is being manufactured and will be on standby if required. It is certainly something which can be left for the time being as long as it is monitored.

The load pins on the Compensator Block which are manufactured by TOTCO are not working well. They are essential to good rig floor instrumentation and are being repaired again.

The **Rig Instrumentation System**, documented in Annex 2 is working well and a variety of rig information can be recorded. In addition alarms can be set and can be at different settings for different 'stations'. Skinner asked if there were any plans to integrate relevant data with the geological archive but there is not at present although the data is compatible with the JANUS system.

The **Hard Rock Re-Entry System** report is in Annex 2. If the offshore trials are successful the tool can be further developed to ream out ADCB holes and to emplace deeper casings using a top and bottom hammer on the casings.

The **Advanced Diamond Core Barrel (ADCB)** is also reported on in Annex 2. This mining type core barrel can be further developed with a triple tube coring system and a shut-off valve for detecting core blockage. Questions were asked about the actual RPM which could be deployed via the API drill string for the diamond coring and it was generally accepted that they would be lower than desired but probably acceptable.

4. Report on Activities at BRG (LDEO)

Dave Goldberg gave his presentation immediately after Mike Friedrichs as it complemented the active heave data. Annex 3 has details. The Borehole Research Group (BRG) had run a drill string acceleration tool six times on different core barrels during leg 185. They would hope to continue these experiments on leg 191 and other legs and possibly also add a drill string acceleration tool to the top of the drill string. A similar temperature probe tool could be accommodated with the core barrel and this would be important if running commercial LWD or MWD tools in 'hot' scientific areas.

During Leg 188, logging while drilling and downhole WOB via MWD mud pulse worked (first time!!) despite the deep water and the fact that only sea water was being used as the drilling fluid. It was also hoped to run a similar experiment to the Leg 185 coring system tests using this MWD sub and the AHC switched on and off for comparison purposes but this comparison was not possible due to problems with the AHC on that leg.

In general the data collected showed a good similarity with that obtained with subsequent instrumentation and recording of AHC activity which suggests that, under controlled conditions, it may be possible to calibrate downhole with instrumentation on the rig floor.

Frank Schuh, John Farrell and Eddie Wright led the questioning on the mud-pulsing parameters and instrumentation sensors. It was agreed that the measurement of RPM would be important and Goldberg thought that some form of acceleration sensor could possibly be incorporated to do that.

It was agreed that the comparison of rig floor and downhole was significant and should be further monitored to see if a direct or calibrated relationship could be determined. This would allow a whole new monitoring from the rig floor given the new rig instrumentation system. TEDCOM felt that the experiments intended for leg 188 should be conducted at the next suitable opportunity in order to pursue this. They also felt that ODP-TAMU and BRG should work much more closely together in order that joint experiments and data

gathering be made to enhance the valuable data obtained from both. **(See TEDCOM Recommendation #001-2).**

5. Report on OD21 Activities

Shinichi Takagawa gave an update on the status of the OD 21 Project. He stated that the contract for the build will be with Mitshubishi Heavy Industries and the hull will be built by Mitsui. Design work had commenced and the cutting of steel would commence soon. A project timeplan, contained in Annex 4 indicated that completion of construction is scheduled for the first half of the Japanese Fiscal year 2004.
Outline particulars give a vessel length of 210m, width of 38m and a height from keel to top of derrick (Crown Mount Compensator) of 116m. Draft is designed as 9.2m with thrusters retracted.
There will be four laboratory decks including the roof deck where the core will come off the rig floor.
Vibration issues from logging winches and other machinery are being addressed. Accommodation is planned for 150 persons in large single rooms x7, standard single rooms x121 and twin rooms x11. A typical single room will have a floor area of 10sq.m. and be 2.4m high.
A dual derrick capacity will be installed but will not be fully implemented in the first stage.
The vessel will not be able to cope with Bridges and Canals in similar fashion to JOIDES Resolution.

6. Technological Development Projects for the ICDP

Ulrich Harms gave a short introduction to the International Continental Drilling Project (ICDP) by way of introduction to the next two speakers. Dr Emmermann who was unavailable at this time will give the full presentation of ICDP and GFZ later.
The annual budget of the ICDP is 700,000 USD. The programme is proposal driven, has no centralized equipment and small organizational groups. GFZ is the executive committee centre and has an organizational support group of five persons. GFZ also hold logging and testing tools which were originally developed for the KTB borehole in Germany.
Lothar Wohlgemuth outlined the operational support given to many different scientific drilling targets in diverse places such as Lake Baikal in Russia, Hawaii deep drilling and San Andreas fault targets in USA, Chixilub Crater in Mexico or Dabie-Sulu in China.
Within a small budget and huge scientific requirements very notable achievements have been made including:
Coring and drilling with often small diameters to 5km depth
Obtaining high quality core and oriented core
Using directional drilling
Making borehole measurements in different diameter boreholes
Conducting hydraulic and other in-situ tests
Ensuring good quality data and information management

New tools have been designed in order to carry out the work and include a special top drive system which will fit on different 'rigs of opportunity', special drill strings, logging tools and drilling information systems. A special pump down packer system which is wireline retrievable is also used and can be applied in horizontal holes also - again wireline retrievable by a pump-down overshot tool. Logging tools able to withstand temperatures of up to 250 degrees C are also available but most of the logging tools are only suitable to 150 degrees C with slimhole tools suitable for up to 70 degrees C being planned for 2001. For these slimhole tools the maximum tool diameter is 52mm and the minimum hole size is 90mm.
The data management system includes digital core photographs and it is PC-based with information available via the web.
Consult http://icdp.gfz-potsdam.de for more details. Brochures were also available at the meeting and key

.

7. Portable Drilling Rig for ICDP

Dennis Nielson, the Chief Executive of DOSECC outlined the facilities available to ICDP through his facility based in Salt Lake City, USA. They have a hybrid coring system utilizing drilling rigs of opportunity plus a special diamond coring top drive system which can be 'inserted' for coring operations with a variety of drill strings. Details were circulated (see Annex 5). This system has cored to 14500' in Hawaii in one Scientific programme and has also used 'H' size mining string to 9,800' and to 10,201' on Hawaii. It will try to achieve 18,000' with 'H' string in Hawaii.

Such drilling and coring depths without recourse to heavy duty drilling equipment is a major achievement. While the above drilling has been in hard rock the PAGES community are now showing interest for laccustrine areas where good climatic records can be obtained. Various transects have been proposed by PAGES (PEP1-PEP3) together with IMAGES who have interests in the Oceans and Arctic/Antarctic. Other configurations of rigs are required for this.

For Lake Drilling DOSECC have proposed a Lake Drilling System the GLAD 800. It is a standard rig transported in 20' ISO containers which are then converted into the barge for deployment. Eight containers are used to make the barge with open space in the centre to form the moonpool. Flotation plus ballast are put in the containers which are floated upside down for rig floor strength.

Trials will be conducted in Great Salt Lake and Bear Lake this fall and it is anticipated that the rig will be able to operate with a 16,000 line pull as modified for the barge set-up.

Some sceptism and doubts were expressed as to the suitability of the system for offshore operations, even on relatively calm lakes. Equally some felt that the system, 'cheap and cheerful' as it was would work. It again emphasizes that there is more than one way to tackle a scientific coring target.

8. Presentation of Downhole Technologies - Baker Hughes Inteq

Aeint Picksack of Baker Hughes Inteq gave a presentation on various downhole tools including the wireline retrievable directional and gamma tool the 'navigamma' and downhole motor coring tools, oriented coring and pressure coring tools. A full presentation of his talk has been made on a CD-rom and the overheads will be prepared for the minutes as Annex 6. Aeint stressed that it was only with the co-operation of scientific drilling that such tools can be easily developed as this allows the necessary research and testing time to complete the tool development. Many of the items which he described had their first 'outings' in the KTB scientific drilling in Germany.

The day finished with a short tour around the historic GFZ campus and a view of some of the buildings in which many early scientific experiments and observations were carried out. This was followed by a reception hosted by Professor Rolf Emmermann Executive Director of GFZ and Head of the ICDP in Potsdam.

9. Introduction to the International Continental Drilling Programme (ICDP)

Professor Rolf Emmermann presented the background to ICDP and the method of choosing sites for drilling. If a letter proposal is accepted by the executive committee then a workshop is convened. This precedes any other activities. Next the best place and persons are picked to take the project forward. The scientists picked need not necessarily be from member ICDP countries but will be the best for the job in hand. Communication is by ICDP Newsletters and their Website.

Many of the scientific objectives and themes of the ICDP are closely aligned to the ODP. A Scientific Rationale Document prepared for the case for establishment of the ICDP was produced in1993 and contains

10. A TEDCOM insight into an ODP Leg

Brian Taylor, the new TEDCOM member for the Can/Aus/Pacrim consortia sailed on ODP Leg 188. Skinner asked him at short notice for his comments or views on that leg. Brian, who comes from a geotechnical drilling background, agreed that he did not have much time to think about this but said that he had two comments to make.

The first was that it seemed difficult to find the sea bed with the drill string and that the discrepancy between echo sounder water depth and drill string length allowed the APC to be activated a number of times before seabed was reached. There was some discussion that this was 'not the norm' but ODP-TAMU said that they should have the data to check how often this occurred. If it is a common occurrence Brian suggests that some from of acoustic sensor be used to check drill string proximity to seabed before firing the first APC.

The second comment was that on one occasion, in difficult ground and weather conditions, no core was being recovered and there was no option but to drill further to try and obtain some. He suggested that a wireline activated hammer sampler, a common tool in the geotechnical industry, would have obtained a sample without drilling unnecessarily and would have helped the scientists make a decision on what to do next. Skinner said that this has been suggested a number of times at TEDCOM meetings by those familiar with the technique but that it has never been taken up by ODP-TAMU. **(See TEDCOM Recommendation # 001-3)**

11. New members for TEDCOM

Skinner reported that the debate regarding the list of potential US members for TEDCOM, which took place at the 25th TEDCOM, had allowed him to correspond with USSAC and put forward some names for their consideration. Using the names put forward and confirmed as being willing to stand, together with the background information provided allowed USSAC to propose four names to their members. Joe Castleberry of Fugro and Keith Morton of Chevron were clear favourites and John Farrell of JOI has agreed that both can be asked to join TEDCOM. Joe has a geotechnical background and Keith works with former TEDCOM member Alex Summerour on deepwater engineering problems.

Dieter Eickelberg announced that Germany will be providing a new member for TEDCOM and that he is standing down. He enjoyed his period with TEDCOM and hoped that he could keep in touch. Skinner thanked him for all his work on behalf of TEDCOM and hoped that he would continue to act, along with Ted Burgoyne, as our liaison to IPSC.

Skinner asked Harms if ICDP-GFZ would be interested in providing a liaison to TEDCOM and was told that they would. Skinner will confirm with SCICOM that this is in order and report back to Harms.

Bill Hay said that he would look into whether China would be eligible to send someone and asked about France. Skinner said that he thought that France was not allowed a TEDCOM Member due to their reduced subscription. In any event France could be asked if they wished to send a guest to the meeting and this will be looked into.

12. IPSC - an update

Dieter Eickelberg then gave a summary of the work of IPSC the sub-committee of the IODP IWG.

Five meetings have been held so far and good progress has been made. Input to the Conceptual Design Committee (CDC) has been completed and a report has been provided together with a Management Report. Brian Taylor had done some consultancy work for CDC.

Dieter also reported that Ted Burgoyne is heading a technical sub-committee of IPSC and that John Armentrout is also doing some consultancy work for them.

Skinner reported that, regarding the CDC a report in its draft form is now out to review and comments are encouraged. The details can be found on the web at
http://www.joi-odp.org/USSSP/cdc/default.html (this is a word version) or
http://www.joi-odp.org/USSSP/cdc/cdcreportfinal.pdf (this is in PDF format)

There is also a comment form for your comments and this should be returned to IPSC at ipsc@umich.edu

13. A.O.B.
There was no other business proposed and following agreement on item 14 Skinner requested a closed session for TEDCOM Members.

14. Date and venue for next meeting
This has been proposed for College Station on 28th and 29th November 2000, Jeff Fox to confirm this is possible in due course.

The meeting then adjourned for closed session after Skinner thanked Uli Harms for his very efficient organization and helpfulness in hosting the meeting.
A Closed Session was called in order to discuss the workload and priorities of ODP-TAMU as there was clearly many more projects listed by them than it was possible to complete up to the end of the programme. In addition SCICOM requested some prioritization and guidance on what could be taken forward to the new programme.

As a preamble to the above the overall meeting was reviewed with the aim of deciding how to transfer technology to the new programme and ensure that as much of the tools and developments currently scheduled could be realistically completed before the end of the programme.

It was already clear to members that IODP would be different with separate operators, most likely separate management and different platforms and requirements. That said it was equally clear that there should be a common thread to development so as not to re-invent the wheel.

The project list proposed by ODP-TAMU could not realistically be expected to be completed by the end of the programme and it was likely that the funding for it would not be available anyway. Given the fact that ODP-TAMU had themselves said that there was now even more of a requirement for engineering personnel to sail on legs this will reduce the manpower even more when it comes to tool development and completion.

However TEDCOM were unwilling to pre-judge what ODP-TAMU felt to be achievable and, instead of arbitrarily cutting projects made recommendations based on the following parameters.
1. ODP-TAMU's greatest Legacy to a new programme will be the proper documentation of all existing tools and an inventory of Manuals, Drawings and Operational Parameters. This must be a priority from now and be fully completed by the end of the programme. In discussion it was clear that this is true for any engineering aspects of ODP and thus would also apply to BRG and shipboard laboratory equipment which has been specially adapted. **(See TEDCOM Recommendation #001-4).**

2. ODP-TAMU should not continue with any development which they can not be reasonably sure of completing by October 2002.
3. Even within the above the project load must be achievable else it will have to be further modified rather than have the timeline extended.
4. Any tools required for science legs after 2002, and still not developed should come back for review by TEDCOM.
5. Various items mentioned in the Project Planning or reporting to TEDCOM have already been stated by TEDCOM to be long term objectives beyond this programme and its funding. Even if they are there 'for completeness' they should be dropped. Examples are the Retractable Core Bit for the ADCB and Real-time Downhole Sensors.
6. Items such as the Sonic Core Monitor, on the development list for many years, is unlikely to succeed in coming to completion in the little time remaining and should thus be dropped now to save engineering time for other, more achievable gain.
7. If projects can be joint funded with external monies then those projects must be considered separately.
8. ODP-TAMU and the BRG at LDEO must liaise closely on downhole and drill string instrumentation for monitoring and must share their knowledge and expertise in order to save personnel time in short supply by both parties as well as achieve results at less expense to the programme. It is clear that by working together much can be achieved quickly and be put to use within the remainder of the programme.

Some of the above are embedded in the recommendations made at the beginning of the minutes and all were explained and discussed with the ODP-TAMU, BRG and SCICOM representatives before the meeting closed.

15. HYACE - Demonstration and Discussion

TEDCOM and Guests/Liaisons then trained to Clausthal for a briefing and a demonstration of the HYACE coring tool which is of interest to ODP for the collection of Gas Hydrates at 'in-situ' pressure and temperature. The tools have been designed with ODP use in mind.

A briefing was given by Professor Amann of the Technical University of Berlin who is the co-ordinator of the project and by Professor Marx, recently retired Head of the facility at the Technical University of Clausthal which carried out much of the design work and fabrication of the HYACE tool. Skinner is also a member of the HYACE development team.
Some details are contained in Annex 7. Full details of HYACE (Gas **HY**drate **A**utoclave **C**oring **E**quipment System) can be found on the HYACE homepage http:/www.tu-berlin.de/fb10/mat/HYACE.html.

Two demonstrations were prepared and executed. One using the push/percussion tool and the other using the downhole rotary tool. Both successfully recovered good core. More detail is contained in Annex 7 prepared by Skinner for the Funding Partners. The extension of their use into other ODP coring activities (i.e. using the tools without autoclave but with ordinary core barrels) was also commented on.

Discussion with TEDCOM and Liaisons/Guests centered around the design of the tool, observations of the test and operations within ODP. It was stressed that the tool was entirely compatible with ODP APC/XCB BHA's and was actually being tested in a mock-up ODP BHA, complete with flapper valve and landing/locking ring in the test shaft. The fishing neck on the tool is also compatible with the ODP wireline so great care has been taken to ensure compatibility with the other ODP wireline tools in the same BHA.

Certification of the lab transfer chamber (LTC) which will accept the core upon reaching deck has commenced and it is anticipated that it will be completed in June. A prototype multi-sensor logger similar to the existing GEOTEK one is also under construction.
The autoclave can be pre-filled with water or inert fluid prior to sampling to ensure it is free of contamination. The motor presently blocks off all fluid passage upon full stoke but this can, and should, be modified before actual borehole use.
The G-forces on landing can affect the shear pins and the instrument sensor package but tests will be made to ensure that these are within acceptable limits.

Tool make-up and operation is now being reviewed and an operations manual is being prepared. Mike Storms of ODP will visit in mid-June and discuss some of the fine tuning of this.

Discussion then turned to an operational test on board the JOIDES Resolution. Leg 191 had been proposed by ODP but a review of the geology suggests that it may not give the tool a fair trial due to the presence of chert. Additionally a long period would have to be spent at sea for a short test of 50 consecutive hours in an already crowded (with engineering tests) schedule.
Leg 194 offers a better possibility for a trial with less offshore time for personnel and a similar number of test hours spread over a number of days, fitting in with the science and using 'end of borehole' time so as not to jeopardize the science of the borehole. SCICOM will make contact with the co-chiefs to see if this can be accommodated. Leg 195 could also be considered on the same basis but this pushes a test even further back and also closer to the actual upcoming gas hydrate leg where it is hoped to utilize the tool for science.

SCIMP Appendix 00-2-11

Lab Working Team Membership

Lab	Chemistry	Phys Prop	Computers	Downhole	Paleomag	Micropaleo	Core Descrip	Curation	Microbio	Underway	Publication	JANUS	Age/Depth
Primary Contact	J. Miller	P. Blum	M. Hastedt	D. Schroeder	C. Richter	J. Firth	C. Escutia P. Wallace	J.Firth	*T. Davies	A. Klaus	A. Klaus	D. Becker	P. Blum
Membership	D. Graham A. Pimmel C. Peng T. Bronk B. Julson J. Suhonen J. Ledbetter B. Olivas D. Sims M. Kamei	C. Prince A. Ledwon E. Moortgat B. Mills P. Pretorius R. Gjesvold	G. Acton B. Mills B. Julson	A. Klaus T. Gustafson S. Dillard B. Julson P. Pretorius R. Gjesvold	G.Acton M. O'Regan C. Endris B. Mills	R. Davis S. Dillard T. Gustafson J.Miller J.Beck	B. Mills B. Julson	J. Huckemeyer S. Prinz B Hamlin P. Rumford	B. Julson T. Bronk	D. Sims D. Graham S. Prinz B. Hamlin			J. Firth G. Acton C. Richter
ISD/DSD	D. Fackler	C. Bodley	S. Tran	D. Fackler D. Ferrell	C. Bodley?	D. Hornbacher	D. Fackler J. Beck	Fackler	S. Tran?	D. Hornbacher			
SCIMP liaison	G. Wheat R. Murray	M. Lovell C. Buecker	B. Celerier TBN	B. Celerier M. Lovell C.Buecker	E. Kikawa	K. Macleod	T. Janecek P. Michael	R. Murray T. Janecek	D. Smith	S. Planke TBN	T. Janecek	J.Ortiz TBN	K. MacLeod TBN

ODP email = **last name@odpemail.tamu.edu**

SCIMP Liason	**Email Address**
Christian Buecker	buecker@gga-hannover.de
Bernard Celerier	Bernard.Celerier@dstu.univ-montp2.fr
Thomas Janecek	janecek@gly.fsu.edu
Eiichi Kikawa	kikawa@mailgate.jamstec.go.jp
Mike Lovell	mtl@leicester.ac.uk
Ken MacLeod	macleodK@missouri.edu
Peter Michael	pjm@utulsa.edu,
Rick Murray	rickm@bu.edu
Joe Ortiz	jortiz@ldeo.columbia.edu
Sverre Planke	planke@geologi.uio.no
Dave Smith	dcsmith@gsosun1.gso.uri.edu
Geoff Wheat	wheat@mbari.org
TBN	
TBN	
TBN	

SCIMP APPENDIX 00-2-12

Physical Properties:	Update underway as a result of improvements during transit after Leg 189
Paleomagnetism:	Manual is completely outdated and is currently being rewritten
Organic Chemistry:	Updated and in review
IW Chemistry:	Will require update as a result of change from AA to ICP analysis
ICP Chemistry:	Draft has been distributed
UW Geophysics:	No action, guide available, protocol changes quickly
Paleontology:	No action, User manual for the PAL application and the microscopes exist; inventory is available on the web; processing methods and preferences depend on the scientist.
Shipboard Sci Handbook:	Handbook outdated, revision in progress.
Core Description:	No action, core description manual still up-to-date, AppleCore manuals exist.
Downhole Tools:	No action
Microbiology:	No action, wait to hire technicians and establish procedures