Report of the
Scientific Measurements Panel

January 18th – 20th, 1999
At Texas A&M Conference Center, Houston

Scientific Measurements Panel Participant List

Members

David Anderson	(US, NOAA)
Bernard Celerier (for Lallement)	(Universite de Montpellier II)
Arthur Cheng	(US, Western Atlas)
Peter Flemings	(US, Penn State University)
Brian Huber	(US, Smithsonian University)
Alexandra Isern	(A-C-CT-K, University of Sydney)
Thomas Janecek (Chair)	(US, Florida State University)
Christopher MacLeod	(UK, University of Wales)
Roger Morin	(US, USGS)
Rick Murray	(US, Boston University)
Joe Ortiz	(US, Lamont-Doherty Earth Observatory)
Sverre Planke	(ESF, University of Oslo)
Geoff Wheat	(US, W.Coast &Polar Regions Undersea Res Ctr)
Juergen Wohlenburg	(Germany, RWTH-Aachen)

Liaisons

Gerry Iturrino	(Borehole Research Group-LDEO)
Jay Miller (Host)	(Ocean Drilling Program-TAMU)
Frank Rack	(Joint Oceanographic Institutions, Inc)
Jeff Schuffert	(JOIDES office)

Guests

John Firth	(Ocean Drilling Program-TAMU
Ann Klaus	(Ocean Drilling Program-TAMU)
Laurent Meister	(Western Geophysical)
Bill Mills	(Ocean Drilling Program-TAMU)
Ken Verosub	(University of California-Davis)

Observers

David Feary	(EXCOM-University of Sydney)

Apologies

Alan Huffman	(US, Conoco)
Won Soh	(Japan, University of Tokyo)

NOTE: This report of the meeting is grouped primarily by agenda items and is not always in chronological order of discussion.

A) Introduction

The meeting started on Monday, January 18th, 1999 at 8:30 am and ended on Wednesday, January 27th, 1999 at 12:30 p.m.

The Chairman welcomed the panel to the meeting at the Texas A&M University Conference center and expressed a special welcome to new members Joe Ortiz and Geoff Wheat. In addition, he welcomed alternate Bernard Celerier (for Siegfried Lallement).

Jay Miller, the meeting host, explained some of the arrangements for the meeting.

The Chairman presented a brief overview of the Agenda and asked if there were any other items that panel members wanted to add to the agenda. None were suggested. The Chairman continued with the Agenda, beginning with the Update on Recommendations/Action Items from the June 1998 SCIMP meeting.

B) Update on Recommendations/Action Items -June 98 Meeting

1) JANUS PALEO APPLICATION

Background: ODP-TAMU is now ready to send out a fix that speeds up the existing application. In addition, ODP-TAMU is ready to put out a new application that addresses the speed problem with the old application and incorporates a spreadsheet-type interface. At this point in time the panel recommends the following action:

Recommendation 98-2-1 (by email after the meeting): SCIMP recommends that ODP-TAMU send out the new PALEO application for testing as soon as possible but that ODP-TAMU should not continue with significant further development until ODP-TAMU can provide a report to SCIMP about the robustness of the program and success of its data capture ability. The report to SCIMP does not need to wait until the next SCIMP meeting. It should be distributed via email as soon as it is ready for SCIMP review.

Update: *John Firth (ODP-TAMU) provided an update of the new PAL application. Completion of the new PAL application should be done by end of January, in time for Leg 184. The last features to be added are the Age Profile and Age Model functions that are in the older Janus Paleo application. Values in several pull-down menu tables in the database also need to be fixed or adjusted. A Sample Detail screen has been added and will be available on Leg 184 for extra species level data, such as comments for each taxon in each sample. This screen will be opened from the spreadsheet by double clicking on the sample ID. All feedback from ODP Legs 181 and 182 (summarized mostly by Bruce Hayward and Charlotte Brunner, who came to ODP to train on the Janus Paleo and PAL applications before their cruises) have been addressed (Appendix 99-1-1). In addition, comments from paleontologists who attended the ICP-V in Lisbon were*

summarized and responded to by Jack Baldauf. The user's guide will be revised (by John Firth) to reflect the updates once the PAL application has been finished for Leg 184.

2) BRG WEB SITE DATA USAGE

Background: SCIMP members discussed the difficulties encountered by many scientists in utilizing some of the web-based logging data, and with determining what types of applications are most useful in analyzing the logging data. Based upon this discussion, SCIMP makes the following recommendation:

Recommendation 98-2-2: SCIMP recommends that the Borehole Research Group develop a web-based primer on the general use of logging data and specific applications.

Update: *Gerry Iturrino presented an update. The web-page with primer is essentially complete. The new web page contains a proponent's helper, list of tools, links to other databases, info on upcoming legs, previous legs, applications to different disciplines, and a list of acronyms (See Appendix 99-1-2 for web page layout).*

3) PRICING STRUCTURE FOR IR VOLUME

Background: Several options were presented by Ann Klaus (Manager, ODP-TAMU Publications) for pricing of the IR volume and SCIMP was asked to recommend a pricing structure.

Recommendation 98-2-3: SCIMP recommends that the standard IR product distribution should be a package containing the booklet with the Leg Summary chapter and the volume CD-ROM. After standard distribution is completed, the CD-ROM can be sold without the booklet.

The price of the booklet and CD should be set at $25. In addition, the CD can be distributed without the booklet for a reduced cost of $10.

Update: *OPCOM endorsed (OPCOM Consensus 98-2-5) and approved by JOI on November 4, 1998.*

4) NEW PROCEDURES SR VOLUME

Background: SCIMP makes the following recommendations regarding the SR volume submission, production, and publication procedures:

Recommendation 98-2-4: Revise Scientific Results (SR) submission, production, and publication procedures to take advantage of the WWW medium.

i) Allow participants to meet the publication obligation by submitting manuscripts or data reports at any time post cruise and initiate a peer review process upon submission.
ii) Once accepted, publish individual papers on WWW.
iii) Link all publications to the leg-related citation list on the WWW.
iv) Require fulfillment of obligation (deadline for submission) to be 28 months post-cruise for all publications. Allow additional manuscripts and data reports to be submitted after 28 months.

v) Produce and distribute a CD-ROM containing reprints of leg-related SR papers at 48 months post-cruise.

vi) Continue to require ERB members to remain active for 48 months postcruise. After this period, have Staff Scientists coordinate the peer-review process of additional data reports**.**

Update: *OPCOM endorsed (OPCOM Consensus 98-2-6) with proviso that authors should be given six months to submit a data report to TAMU for publication as part of SR volume if publication rejected from the outside literature. See Section D (Item 12, Review of Labs/Services) of this report for detailed information on publication policy.*

5) CHANGES IN CONTENT AND STYLE OF SR VOLUME

Background: With regards to the content and style of the Scientific Results, SCIMP makes the following recommendation:

Recommendation: 98-2-5:

i) Add to co-chief responsibility: write, or coordinate, a leg synthesis paper to be published in the SR volume.

ii) Publish a booklet that contains the leg synthesis paper to accompany the volume reprint series on CD-ROM.

iii) JOI and TAMU will determine submission deadline for synthesis paper.

Update*: OPCOM endorsed (OPCOM consensus 98-2-7). Ann Klaus provided an update to SCIMP about guidelines for plates and data submission. See Section D (Item 12, Review of Labs/Services) of this report for detailed information on publication policy.*

6) ODP-RELATED PUBLICATIONS

Background: It was the consensus of the panel that a list of outside ODP-publications be maintained. In order to develop and maintain a list of ODP-related publications SCIMP makes the following recommendation:

Recommendation 98-2-6: SCIMP recommends that the science operator investigate the costs and tasks involved in compiling and maintaining a comprehensive list of publications resulting from DSDP and ODP research, in order to assess the significance and impact of the scientific drilling program.

Update: *OPCOM endorsed (OPCOM consensus 98-2-8). Ann Klaus reported that ODP/TAMU is working with AGI/GeoRef to create a citation database specific to ODP research. A parallel citation database specific to DSDP research was developed in 1991 and was published on the "Cumulative Index to the Initial Reports of the Deep Sea Drilling Project" CD-ROM. Plans are to update the citation list specific to DSDP research for 1992 and beyond. ODP/TAMU will have a cooperative agreement with AGI/GeoRef to update the database on an annual basis.*

7) INTEGRATED CURATION/ PUBLICATIONS POLICY

Background: Revisions to Integrated Sample, Data, and Publication policy were reviewed by SCIMP and several additional changes were made.

Recommendation 98-2-7: SCIMP recommends that JOI and ODP-TAMU adopt the revised integrated curation and publications policy.

Update: *Rick Murray guided the near final revision with assistance from JOI and TAMU. EXCOM accepted the policy during their January 1999 meeting. Ann Klaus passed latest version to ODP personnel (staff scientists, curator, database managers) for their comments. See Section D (Item 12) of this report for discussion of comments. The panel extends its thanks to Rick Murray, Ann Klaus, and Frank Rack for finalizing the policy.*

8) MIRROR SITE AT NGDC FOR DATA ARCHIVAL

Background: By the end of the program, 50 plus legs of data will need to be transferred and ODP, NGDC, and JOI are going to face the cost eventually. This proposal by NGDC is planned as a step in mitigating the cost. Establishing a mirror site at NGDC, as at any other site, would require a small amount of one-time funding from JOI/ODP to defray the cost of a database server and software licenses, and would require support from ODP staff for initial configuration of the database and software at NGDC.

Recommendation: 98-2-8: SCIMP recommends that NGDC work with JOI to investigate the most efficient way to complete the DSDP/ODP data archiving. The results of this investigation should be presented at the next SCIMP meeting.

Update: *OPCOM endorsed (OPCOM Consensus 98-2-9). Carla Moore informed the panel (via email) that since the "preliminary proposal" to SCIMP to establish a "mirror site" as a mechanism of completing the archive, two things have happened: 1) NGDC has purchased a new, powerful Oracle database server fully capable of handling a copy of the JANUS database. This means NGDC no longer needs funding/resources to accomplish the archive, and 2) After talking with ODP staff, NGDC personnel have determined that the most efficient way to proceed is not to construct a "mirror" site, but simply to periodically replicate the JANUS Oracle database. See Appendix 99-1-3 for full complete letter by Carla Moore to SCIMP.*

9) CONSOLIDATION OF PUBLIC AFFAIRS

Background: SCIMP believes that it is important to keep the scientific community and general public informed about the results and advances of Ocean Drilling. However, SCIMP is concerned with apparent redundancies in public affair services between JOI and TAMU/ODP.

Recommendation 98-2-9: The SCIMP suggests a consolidation of resources relating to public affairs.

Update: *Frank Rack (JOI) reported that JOI and TAMU had a meeting to define a coherent, integrated public affairs plan. Rack reported that the plan is still under review.*

10) EFFICIENCY OF WIRELINE SERVICES

Background: SCIMP recognizes that down-hole logging is essential to the success of the LRP and feels that wireline services are currently a great strength of the program. The present level of logging is the minimum that must be maintained (See Appendix 98-2-6 of the SCIMP June 1998

report). Moreover, we feel that it would be in the best interest of the program to include more specialty tools in logging operations. Of concern to SCIMP is that the current types of logs being acquired are quite basic for the infrastructure that currently exists.

Recommendation 98-2-10: SCIMP feels that the overall cost of logging operations is high in relation to the basic types of logs being routinely collected. Therefore, SCIMP recommends that OPCOM request JOI to evaluate the cost efficiency of current wireline operations.

Update: *Frank Rack (JOI) reported that JOI is still investigating the efficiency of Wireline Services.*

SCIMP RECOMMENDATION 99-1-1: ***SCIMP recommends that OPCOM advise JOI to continue its evaluation of the efficiency of Wireline Services within the Ocean Drilling Program.***

11) DRILLING SERVICES

Background: SCIMP has prioritized several large FY99 engineering projects in terms of the Long Range Plan (see Appendix 98-2-6). Most of these projects were viewed to be useful but not essential to the success of the LRP. Considering that engineering development is a significant portion of the budget, SCIMP recommends the following:

Recommendation 98-2-11: SCIMP recommends OPCOM and TEDCOM evaluate the cost-benefit and feasibility of engineering projects to determine if they can be accomplished in a realistic time frame in order to benefit the LRP.

Update*: TEDCOM met in November 1998 and Susan Humphris, SCICOM Chair, proposed a new meeting structure that would allow TEDCOM to address short and long-term engineering concerns within the context of the budget and the Long-Range Plan (See Section J, Panel/PPG updates and Appendix 99-1-4 for TEDCOM updates).*

12) ODP-TAMU PERSONNEL

Background: It is the consensus of SCIMP that the ratio of personnel to the scientific product produced by ODP is high.

Recommendation 98-2-12: SCIMP recommends that OPCOM advise JOI to initiate an evaluation of the present staffing throughout the ODP organization.

Update: Frank Rack (JOI) *reported that JOI is still reviewing personnel and staffing throughout the ODP organization. The budget is now balanced, and the sense of urgency to cut at every level is slightly reduced, but JOI is still looking to improve efficiency. TAMU is currently restructuring its logistics staff.*

SCIMP RECOMMENDATION 99-1-2: ***SCIMP recommends that OPCOM advise JOI to continue its evaluation of personnel and staffing within the Ocean Drilling Program.***

13) WST AS PART OF STANDARD LOG OPERATIONS

Background: SCIMP members discussed the utility of the Well Seismic Tool (WST) for correlation of logging, core, and seismic data. The panel felt that the ability to correlate these data would be greatly improved by the standard use of the WST on each leg.

Recommendation 98-2-13: SCIMP recommends that the WST be a part of standard logging operations.

Update: *OPCOM Action Item 98-2-8A: BRG-LDEO will investigate the cost of making the WST part of the standard logging operations. Gerry Iturrino reported the tool is available for standard use as of Leg 182. There is, however, some concern from ODP/TAMU of resource allocation if this is to become a standard measurement. Operation of the tool requires manned underway watch, as well as over -the-side watch in even moderate seas. Seventy-two man-hours were required for maintenance on the guns during Leg 179 and they were never fired. This extra resource allocations is not seen as a stringent limitation, but all should be aware that making this a standard measurement (i.e., no additional cost from BRG-LDEO perspective) does have a significant hidden cost. See Section H (core/log/seismic integration) and Section N (Technical Support) of this report for further discussion of technical resource allocation.*

14) PPG REPORTS

Background: Of concern to SCIMP is the general lack of PPG reports, especially from the groups that will have specific equipment and service requirements (e.g., Deep Biosphere PPG). To remedy this lack of information, SCIMP recommends:

Recommendation 98-2-14: In order to provide advice on future scientific measurements programs generated in PPGs, it is essential that PPGs are directed to provide timely reports on their meetings emphasizing, in particular, the potential needs of proposed scientific measurement programs.

Update: *SCICOM chair, Susan Humphris, reminded PPG chairs to provide timely reports and latest reports are now posted on the JOIDES web site. SCIMP notes that new JOIDES web-site not yet up and running.*

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SCIMP ACTION ITEMS

1) JANUS LIAISONS

Background: SCIMP discussed the development of protocols to deal with JANUS-related issues. A consensus of the panel was that at least two SCIMP individuals are needed to keep track of changes in the program and provide the panel (and ODP-TAMU) with relevant information on a timely basis.

Action Item 98-2-1: The SCIMP chair will appoint two individuals from SCIMP to become JANUS liaisons to ODP-TAMU.

Update: *Dave Anderson and Joe Ortiz appointed as watchdogs for JANUS.*

2) POST CRUISE DATA MIGRATION

Background: SCIMP examined the topic of the migration of post-cruise data into the JANUS database. David Anderson presented a series of questions and issues relating to migration of post-cruise data

Several other data/publication storage and data migration issues were raised, including:

1) How long should IR and SR volumes remain on a WWW,

2) Who will maintain web-site after the program ends (repositories?), and

3) Does what you keep on a web-site influence the cost (and thus a need for SCIMP to prioritize)?

At this point in the discussion, it was clear that the Panel needed to gather further background material to continue on this topic and to make specific recommendations. The following Action Item resulted:

Action Item 98-2-2: The SCIMP chair will designate a sub-committee of SCIMP to begin investigation of these data migration and WWW issues and lead a discussion of these issues at the next SCIMP meeting.

Update*: Dave Anderson and Joe Ortiz appointed to subcommittee. Dave Anderson and Joe Ortiz led a discussion on this topic at this meeting (See Section G, Date Migration and Archival)*

3) LABORATORY EVALUATION PROCEDURES

Background: A watchdog listserver/message board will be set up to post messages. Each laboratory or service will have a message board in which the ODP-TAMU lab working groups and SCIMP watchdogs can discuss issues pertinent to the particular lab/service (see Appendix 98-2-7 of June 98 report for a list of the SCIMP watchdogs and the ODP-TAMU liaison for each lab/service).

Issues that need the attention of the whole panel will be posted to the main listserver in order that all members and working groups will be notified on a timely basis. Issues that require additional expertise or policy decisions beyond what can be accomplished via the message-board discussions will become agenda items at the next meeting.

Action Item 98-2-3: The Chair of SCIMP will work with ODP-TAMU to set up the listserver-message board either at ODP-TAMU or at Florida State University.

Update: *Done. Jay Miller and Tom Janecek provided overviews of the message board and its use at this meeting (See Appendix 99-1-5 for instructions on message board setup and use)*

4) NEW MEMBERS

Background: SCIMP members offered several names as potential replacements. Panel members will encourage others to submit applications.

Action Item 98-2-4: The SCIMP chair will write a letter to SCICOM/OPCOM chair expressing the SCIMP's priorities for new member's areas of expertise.

Update: *Done. New members include Joe Ortiz, Geoff Wheat, and Alan Huffman.*

5) NEXT MEETING LOCATION AND DATE

Background: several potential locations were discussed, including:

1) The TAMU conference facility in Houston (Jay Miller-Host)
2) Another Houston conference facility (Arthur Cheng-Host)
3) Florida State University (Thomas Janecek - Host)

As exploration of industry ties to ODP will be a major agenda item for the next meeting, either of the first two locations in Houston would allow the panel to take advantage of the close proximity of many different industry connections.

Action Item 98-2-5: The SCIMP chair will poll the panel shortly after meeting to finalize a date in January for the next SCIMP meeting. The SCIMP chair will work with Jay Miller and Arthur Cheng to determine a suitable location for the meeting.

Update: *Meeting held at TAMU Conference Facility in Houston*

C) Liaison Reports

1) JOI REPORT- (Frank Rack)

Frank Rack reported that Kate Moran (JOI Director) is trying to integrate different parts of ODP into a more efficient system with better communication. A first step has been standardizing the various web sites into a more unified format. JOI is also involved in several efficiency reviews. Fiscal examinations will take place in March. Efforts are also underway to improve the individual leg Press Releases. The new JOIDES Guide to the Ocean Drilling Program is finished and will be out soon.

Organizational efforts for the conference on multi platform post-2003 drilling and exploration (COMPLEX) are underway. Invitations to the first authors of letters of intent have been sent out.

Japan has moved forward with regards to the riser vessel and have budgeted start-up funds to begin development of the ship.

The Annual Co-chief review has been reestablished by JOI. This year's review touched on the need for (1) More communication, (2) Better coordination of international scientific party selection (3) Praise for new sample distribution policy, and (4) Improvements in the shipboard email system. The co-chiefs also commented on the need (from their viewpoint) for some equipment upgrades, including Logging While Drilling (LWD), a new XRF, and X-ray imaging of cores (These equipment items are discussed below in Sections D and L of this report)

The fifth Performance Evaluation Committee (PEC V) has been initiated. This PEC will address a variety of issues including, the progress of scientific goals with respect to the Long Range Plan (LRP) budgetary prioritization, the effectiveness of the new JOIDES Panel structure, and future engineering developments.

The Undergraduate Student Trainee Program has been finalized. The program provides for a Student Trainee to be linked to a shipboard mentor. The aim is to have three positions available annually.

Several ODP/Industry partnerships are being developed. These include both scientific-based partnerships (e.g., areas of data migration, GIS digital maps with overlays of industry seismic surveys and ODP drill holes) and technical partnerships (e.g., MWD, Hammer Drill, Pressure Core Barrel, JAMSTEC).

2) JOIDES REPORT (Jeff Schuffert)

Jeff Schuffert reported that the new JOIDES office is up and running and that a high priority has been place on getting the web site established.

The new JOIDES office conducted a quick, informal literature review and found that significant results of an ODP Leg often come out much later than the leg SR volume and may not, in many cases, be related to initial leg objectives. The JOIDES office found that approximately every 3rd or 4th issue of Science and Nature has an ODP reference. They are now examining the best way to get these kinds of manuscripts into a bibliographic reference. The panel expressed some concern over duplication of effort with ODP-TAMU's bibliographic efforts.

An all electronic version of the JOIDES Journal is under consideration by the JOIDES office. Panel members queried Schuffert about the target audience of the JOIDES Journal and the best way to reach that target office (hardcopy? electronic? both?). The Panel felt that the hard-copy version of the JOIDES Journal reaches an important audience outside the normal ODP channels and urged the JOIDES office to continue printing a hard copy. Along these lines, SCIMP made the following recommendation:

SCIMP RECOMMENDATION 99-1-3: ***SCIMP applauds the move toward electronic publication of the JOIDES Journal by the new JOIDES office but recommends that some form of the JOIDES Journal continue in printed form due to the varied audience of the journal.***

Schuffert also reported on the progress of the upcoming COMPLEX meeting. He noted that over 270 papers (covering 14 themes) have been received.

3) EXCOM REPORT (David Feary)

David Feary reported that the programmatic prioritizations of the ODP labs and services was well received by EXCOM and that this prioritization showed that the program was effectively dealing with constraints in funding.

The Phase IV-IPOD Steering Committee (IPSC), a committee to deal with the post-2003 transition, has been established. It is a sub-committee of SCICOM, reporting through SCICOM to EXCOM, consisting of people very familiar with ODP but not currently involved in the JOIDES structure.

Feary explained that OD21 has $22 million budgeted for ship design, and over $500 million will be required over next three years. He noted that it is important to think of post 2003 as a multi-platform program. Feary was asked if the Continental Drilling program would be included as part of the multi-platform initiative? Feary responded that there would be more links with such programs, but they would not be as formal as those, for example, utilizing shallow-water drilling platforms.

Finally, Feary noted that during the latter stages of Phase III, engineering developments and fine-tuning of coring systems for the OD21 vessel will be tested on the JOIDES Resolution.

4) ODP-TAMU UPDATE (Jay Miller)

A detailed ODP-TAMU operator's report can be found in Appendix 99-1-6. Jay Miller reported on items of specific concern to SCIMP.

Message boards
The SCIMP message boards are up and running. At the moment anyone can register but soon the boards will be available only to panel members and those at ODP who need access. Attachments up to 200K in size can be posted. All messages will remain active but may be archived as the board grows in size. The boards will be used as a "corporate memory" device to archive procedures followed for various actions (e.g., what to do when and if the XRD goes down). It will also be used to keep ODP and SCIMP personnel abreast of new issues and problems as they arise, rather than waiting until the biannual meeting.

Progress of Microbiology Lab
Leg 185 will sail a microbiologist to look at contamination during operations. Tracers (1µm microspheres) will be used to look at downhole contamination. Perfluorocarbons are to be placed in surface water and drilling fluids as a tracer. Tests will be conducted to look at surface microbes to determine if they contaminate downhole operations.

A van has been purchased and will be delivered to Fremantle prior to Leg 184. It will be set up aft of the elevator shaft on the lab stack during Leg 184 transit. Approximately, $41.5K has been spent (laminar flow hood, freezer (-80°C), incubator, refrigerator) on outfitting the van. An additional $86K is to be spent before dry dock.

Minolta Spectrophotometers
Some panel members expressed concern that Minolta was going to discontinue supporting the Minolta Spectrophotometers currently on the ship. It now does not appear that Minolta is going to discontinue this support, but even if they did there are three spectrophotometers on the ship that should be acceptable until 2003.

ADARA
ADARA will no longer support the tools and do not want to continue interaction with ODP. ADARA will deliver all tools, diagrams, etc. to ODP. The ODP/SCIMP LWG will need to consider how to proceed with regards to replacement, repair, and maintenance of these tools.

AppleCORE
The next version will include storage for digital images and hard rock functions. Hopefully the version will be delivered to the ship for Leg 184. Eve Arnold will sail on Leg 184 to assess the new version. On Leg 185, an ODP programmer will sail and generate output files.

Dry Dock
Miller noted that dry dock is rapidly approaching and now is last opportunity for input about the dry dock plan.

Modification of guidelines for third-party tool development
A new version of the third party-tool development guidelines has been generated by ODP-TAMU that takes into account the changes in the JOIDES advisory structure. The new guideline will be posted on SCIMP message board. The main revision is that the responsibility of day-to-day reporting now resides with the Science Operators who report to SCIMP. See Section K (Third Party Tools and Appendix 99-1-7) for further discussion.

Internal laboratory capital expenditure plan
JOI wants a list of equipment with life expectancy and need for replacement (list provided in Appendix 99-1-8).

Paleomag Plan and Physical Properties Lab
Developments and upgrades of core logging tracks are delayed as Bill Mills currently is focussing on upcoming dry-dock efforts.

5) BRG REPORT (Gerry Iturrino)

Gerry Iturrino reported on a number of developments at BRG (Appendix 99-1-9) but much of the discussion was deferred to the lab/services updates later in the meeting. The Well Seismic Tool (WST) is now available on a "as needed" basis. Limited testing of SAGAN (core-log integration application) took place on Leg 182. The first deployment of the TAP (Temperature, Acceleration, Pressure) tool also took place on Leg 182.

The web-based "User's Manual" for accessing downhole data is now up and running (URL: www.ldeo.columbia.edu/BRG/ODP/Logging/index.html). Iturrino was questioned about the usage of the web site. He will provide statistics at the next meeting as well as how BRG plans to advertise the availability of the web-site access.

Iturrino noted that all conventional data has now been migrated into the BRG database. More that 50 holes of FMS data have been transformed to GIF files for web availability. They should be on-line in February 1999. Panel members who have recently sailed noted that there have been numerous requests for paper copies of FMS data on recent legs. Iturrino replied that color copies can be made by Schlumberger on the ship, but the BRG-LDEO can only produce black and white copies at LDEO. It was noted that there is a contractual issue as to the number of color copies that can be produced on board the ship (as well as some practical time concerns). Iturrino said he will investigate the cost of producing more color copies.

Iturrino was questioned as to why the Geochemical Logging Tool (GLT) is not being used. The primary reason the GLT has not been used is that it has not been requested by proponents. He

also noted that the tool is not routinely supported by Schlumberger, it is time consuming to run and process data, and many co-chief scientists will not budget time to run the tool.

In response to a question about how BRG determines staffing on each leg, Iturrino responded that LDEO subcontracts with the Leicester, France, Aachen, and Japan groups. They tap into the expertise from the group that best fits the leg's requirements. In addition to leg staffing, the groups in Leicester and France provide some shore-based services (e.g., FMS processing, special projects, web-site assistance). Finally, Iturrino was queried about the cost of satellite data transfer vs. email data transfer? He will look into this comparison and report back to SCIMP at the next meeting.

D) Review of lab/services status

1) SCIMP Message Board

The SCIMP message boards are now up and running. The Panel discussed the best way to utilize the boards. Three main uses were discussed and approved by the panel, including (1) archives of equipment and policy discussions (corporate memory), (2) providing timely responses to laboratory issues raised by TAMU personnel or SCIMP members, and (3) assisting in preparation of lab and operator reports. In addition, the message boards can be used to post equipment status updates and post-cruise comments about equipment by shipboard scientists.

Several panel members suggested that it would be beneficial for oncoming Shipboard Scientific Party members to have access to the boards prior to sailing in order to get information or make queries about their labs. The Panel decided that the easiest way to accomplish this is for the Staff Scientist to inform the Shipboard Scientific Party on how to view the message boards. One concern with this type of Shipboard Science Party access is making sure that no information is lost (e.g., in the event an oncoming scientist makes a request to an LWG member that is not forwarded elsewhere). Anther concern would be filtering the comments of Shipboard Scientific Party members. ODP-TAMU will work out protocols.

An additional message board, called "SCIMP", will be added to the message board list by ODP-TAMU staff. This board will deal with SCIMP issues or other concerns that cross many labs or services.

2) CORE DESCRIPTION

The Hard-Rock version AppleCore is to be tested on Leg 184. A report will be presented at the next meeting.

Of concern to the Panel is the integration of digital images into AppleCore/Janus. Use of the DMT Color CoreScan system (to scan the unsplit cores in order to match cores and logs) was discussed. The DMT Color CoreScan system was used on Legs 173 and 176. The number of legs for which it would be useful is limited, as many times the hard-rock cores would be crumbly or too small. In sum, there are instances/legs where it may be useful to lease the unit to meet leg specific objectives but it should not be purchased for regular use on the ship.

It was noted that digital images of cores in most cases would be useful to tie measurements to the exact location in the core. Bill Mills responded by noting that a new digital image camera (not a line scan camera) has been purchased, but it has distortion at the end of the images. This distortion either needs to be discounted or an algorithm needs to be written to adjust for it. Images storage size would be approximately 1 Mb/m. See Section G (Data Migration/Archival) for a more detailed discussion of image formats and storage issues.

3) CHEMISTRY (INCLUDING XRF/XRD)

Rick Murray reported that the chemical equipment in the existing wet labs is in good shape with no immediate SCIMP issues. The three gas chromatographs will be replaced and the alkalinity program is being re-written. Dry-dock upgrades (contingent on available funds) include new hoods, cabinetry, and bench tops.

Both the XRD and XRF are currently working. The capital replacement costs are high for each unit. The XRF was viewed by SCIMP (in its lab prioritizations) as essential in one of six categories/themes of the LRP. The topic of on-board ICP-ES measurements was brought up as the cost has dropped to a point where these units are comparable in price and size to Atomic Absorption (AA) units and one unit could replace both AA and XRF for the cost of AA replacement alone. Topics such as sample preparation techniques, equipment robustness, etc., still need to be addressed. It was noted that an ICP (see note below) is scheduled for trial deployment on Leg 187. The panel decided it would be best to initiate a discussion of replacement of the XRF and AA with ICP-ES on the message boards in order to make a more definitive statement at our next meeting about potential replacement.

Note added after the meeting (but before finalization of this meeting report):
Discussion at the SCIMP meeting revolved around the consideration of an ICP for Leg 187 whereas it appears that a DCP was originally proposed for deployment. SCIMP, along with Leg 187 shipboard scientists are now investigating potential opportunities to be gained as well as the ramifications that would result from leasing an ICP-ES for Leg 187.

The quoted replacement costs of an XRD ($200K) as well as the type of XRD needed were the next topics for discussion. The idea of replacing the current unit (should it fail) with a table-top XRD, which is considerably less expensive ($60-$100K), was considered by the panel. The ODP Chemistry LWG has expressed concern that any model (tabletop or otherwise) needs to include automatic multi-sample handling (which may not be available on tabletop models). It was not known at this point how comparable the data are between table-top and cabinet models. Again, the panel felt it would be best to initiate a message-board discussion and urge outside users to comment on the two types of XRDs. The information should be compiled by the next meeting so TAMU/SCIMP would have the necessary information to make a rapid decision on replacement (within the context of SCIMP equipment prioritizations) should the XRD suffer catastrophic failure.

4) PHYSICAL PROPERTIES

A policy change in the MAD methodology (freeze dryer vs. oven) was discussed by the Panel. Freeze drying would allow the PP samples to be used by geochemists, as well as speed up the measurements. Freeze drying, however, is not a recommended ASTM procedure for measurement of bulk density, and the cost of a large capacity freeze dryer also is a concern to the panel. The panel was reluctant to recommend a change to ASTM methods without hearing more from the Physical Property community. The SCIMP PP-LWG was charged to take this issue to the message board and solicit outside discussion with recent users and shore-based labs. The topic will be revisited at the next meeting.

Several recent PP lab users noted what appears to be an overall equipment deterioration in the lab. It seemed to them that there are far too many equipment breakdowns to be acceptable. Bill Mills noted that some of the equipment is due to be replaced as track-based methodologies take over in the future. The SCIMP PP-LWG will monitor post-cruise evaluations about the PP lab in order to assess the extent of this problem.

5) PALEOMAGNETICS

Nothing to report at this meeting.

6) UNDERWAY GEOPHYSICS

The current issue facing ODP-TAMU and SCIMP is that there are very few technicians who can operate the underway equipment. ODP-TAMU recommends a standard configuration of the guns to minimize drain on the technical staff. This issue is discussed in more detail in Sections H (Core/log/seismic integration) and N (Technical support). The SCIMP UG-LWG will begin a survey, via the message boards, to determine what would be the best way to simplify and standardize the underway equipment.

7) DOWNHOLE TOOLS

Heave and acceleration measurements
The Temperature and Acceleration Pressure Tool (TAP) has been built to replace the Temperature Logging Tool (TLT). Recent comparisons (Leg 182) of heave recorded by the TAP tool with heave as recorded on the ship show a good correlation but with slightly different magnitudes. The Panel feels that the routine use of the TAP tool is a good objective as long as the co-chief scientists have been informed of time constraints that may come about through tool use and that the co-chief scientists have the option not to run it, if necessary. SCIMP makes the following recommendation regarding the TAP tool:

SCIMP RECOMMENDATION 99-1-4: ***SCIMP recommends that BRG-LDEO use the TAP tool routinely for the purpose of acquiring acceleration data and testing the efficiency of WHC under different cable length and heave conditions. The Co-Chief scientists must be informed at the pre-cruise meeting at TAMU of the potential use of this tool and additional logging time***

that may result from the use of the tool. In addition, the Co-Chief scientists must have the option not to run the tool.

Future BRG goals in 1999 include rig-floor instrumentation during dry dock, modification of the Drill String Acceleration (DSA) tool in order to measure acceleration while coring. Goals for 2000-2001 include plans to utilize off-the-shelf MWD equipment to acquire drilling data downhole.

The Borehole Research Group has requested time to test the active drill-string heave compensator after dry dock (Leg 186E) utilizing MWD (weight on bit and torque measurements). The panel supported this idea, but it was not clear to the panel how much time will be needed for this test. The panel felt that it would be best to have BRG and ODP-TAMU discuss the most appropriate time/leg for these tests based upon dry-dock results and the science needs/time constraints on Leg 186E. With this post-dry dock testing goal in mind, SCIMP made the following recommendation:

SCIMP RECOMMENDATION 99-1-5: ***SCIMP recommends that BRG-LDEO evaluate the active drill string heave compensator as soon as possible after dry dock using MWD (weight on bit and torque measurements).***

Large diameter tools

Industry has many advanced downhole tools that are too large to be deployed through the pipe on the *JODIES Resolution*. Several PPGs have noted that deployment of some of these large-diameter tools, in particular the NMR and modular formation dynamics tester, may be very useful for accomplishing the objectives the of the LRP (gas hydrates, vertical and horizontal permeability). In addition, SCIMP, at its last meeting, recommended that the Wireline Services program of ODP needs to investigate the use of more specialty tools (See SCIMP June 1998 meeting report, in particular the background material associated with SCIMP Recommendation 98-2-10).

At this point, little is known about what engineering developments would be required for large-diameter tools to be deployed on the *JOIDES Resolution*, as well as what is the tool availability and tool expense. With these issues in mind, SCIMP and BRG will begin to look at active ODP proposals and evaluate what tools should be used to achieve the proposed science. If it is deemed that Large Diameter Tools are a useful methodology to achieve these goals, then BRG-LDEO should obtain information on the technological innovations and associated costs required to allow these tools to be used on the JOIDES Resolution. Along these lines, SCIMP makes the following recommendations.

SCIMP RECOMMENDATION 99-1-6: ***SCIMP recommends that BRG-LDEO begin the evaluation of possible targets for large diameter tool deployments with proponents of active ODP proposals and pursue the acquisition of technological information and costs of these deployments with ODP-TAMU and SEDCO, if the scientific need for the tools is demonstrated.***

The SCIMP Downhole LWG will begin an assessment of the science involved in the list of Active ODP Proposals and make recommendations, independent of BRG, as to the proper tools needed to accomplish the goals set out in the proposals within the context of the LRP.

Additional discussion ensued regarding the oversight of proposals for BRG engineering development projects. Several panel members felt that BRG-LDEO engineering initiatives did not undergo the same rigorous review that is given to scientific proposals within the ODP system. Along these lines, the SCIMP has requested that at its next meeting BRG-LDEO provide the panel with a "paper trail" that details the review process used to evaluate the proposals for these projects.

8) SHIPBOARD COMPUTERS/NETWORKS

Several issues were brought to the Panel's attention, including Y2K compliancy, complaints about CC-Mail, storage capacity for digital images, and database backup procedures.

Complaints about CC-Mail include restrictive import and export capabilities in order for scientists to take home mail messages and import them into their own systems on shore. In addition, it was noted CC-Mail is not Y2K compliant.

SCIMP LWG members reported that shipboard backup time often take excessive amounts of time and leaves scientists without access to data during critical parts of the cruise (e.g., report preparation).

With new imaging capabilities on the ship, data storage will become a problem. The panel feels that any compression is unacceptable, but current data storage facilities only give two options: lossy compression of high-resolution images or no compression of low-resolution images (See Section G for more discussion) .

These issues of storage capacity, backup procedures, and CC-Mail will be addressed by the SCIMP and ODP Computer/Network LWG over the next few months, with updates posted regularly on the message boards.

9) DATA MIGRATION/JANUS

Problems associated with JANUS query rebuilding have been reported for most legs. One suggestion was to keep a test database available on the ship (and shore) as a testing platform for new versions. In addition, third party tool users could use this test platform when developing an interface to JANUS. Bill Mills noted that currently there is a "test login" to JANUS. The SCIMP and ODP Data Migration/JANUS LWG will investigate this "test login" feature to determine if it suitable for most testing purposes.

Most of the discussion regarding data migration was deferred to the presentation given by Dave Anderson and Joe Ortiz that occurred later in the meeting.

10) CURATION

Rick Murray gave a short presentation on current curatorial statistics compiled by John Firth (See Appendix 99-1-10). Of particular note was the fact that the West Coast Repository receives the most educational visitors whereas the Bremen Repository has more scientific visitors. The panel was pleased to find that most requests are filled within a few days.

One of the CAB members, Rick Murray will be on Leg 185. In order to avoid any conflict of interest for Leg 185, it was decided that Tom Janecek would be an interim CAB member for 185 sampling issues.

11) PALEONTOLOGY/MRCS/THIN SECTIONS

Paleontology
The issue of continued training for paleontologists on the new PAL JANUS application was a topic for discussion. The new PAL program does not appear to have a significant learning, based upon input from paleontologists who sailed on Legs 181-183. The previous JANUS steering committee recommendation was that the scientists should be trained by ODP-TAMU prior to going to the ship. Before SCIMP recommends that ODP-TAMU discontinue training paleontologists prior sailing (or discontinue offering to train them), the Panel felt that input from a few more legs was necessary, particularly in light of the fact that a manual has not been completed.

SCIMP RECOMMENDATION 99-1-7: ***SCIMP recommends that ODP-TAMU continue to provide training for the PAL JANUS application to paleontologists prior to sailing on the leg. This training should continue until it can be demonstrated by ODP-TAMU that the paleontologists can easily learn the program on the ship during portcall or transit to the first site.***

Paleontology Processing Lab
A list of sieves available on ship is now on the ODP web page (http://www-odp.tamu.edu/sciops/labs/paleo/sieves.html).

Microscopes
The JOIDES Resolution now has 2 Spot Digital cameras set up on microscopes. These cameras are designed especially for microscopy, and provide much higher resolution images than video CCD cameras (of which there are still 2 available on ship).

Reprint Collection
The JOIDES Resolution paleontology reprint collection is now catalogued in a FileMaker Pro Database and is available for searching onboard the ship.

Micropaleontological Research Centers
Brian Huber gave a short presentation on the MRCs for the benefit of the new members. In addition, he noted that the MRC web page now has ages (some numeric, most relative) attached to the samples.

In an effort to improve the utility of the MRCs for the ODP community, Huber has proposed to hold a workshop in May 1999 at the Smithsonian to discuss (1) designing a new sampling strategy, (2) how to improve database, and (3) coordinating roles of new MRCs with respect to production and distribution of smear slides and improvement to the new database. He would like to invite the current MRC Curators.

The Panel feels the MRC project is a very useful and low-cost (but somewhat underutilized) asset of the Ocean Drilling Program. The panel supports the idea of a limited workshop to explore and implement methods to improve the utility of the MRCs. Along these lines, the Panel makes the following recommendation:

SCIMP RECOMMENDATION 99-1-8: ***SCIMP recommends that the JOI-USSAC support the travel of two U.S. Scientists to the proposed MRC meeting in Spring of 1999.***

Huber noted that he is stepping down as lead curator of the MRC. He recommended that Michael Knappertsbush (Basel MRC) become the new lead MRC curator. The Panel accepts Huber's suggestion for a new lead MRC curator and makes the following recommendation:

SCIMP RECOMMENDATION 99-1-9: ***SCIMP recommends that Michael Knappertsbush take over as lead curator of the Micropaleontological Research Centers.***

SCIMP CONSENSUS 99-1-1: ***SCIMP applauds the efforts of out-going lead MRC curator Brian Huber. His tireless efforts have insured that the MRC program continues to be an invaluable resource for the ODP community***

12) PUBLICATIONS

Ann Klaus updated the Panel on a variety of publications related issues (Appendix 99-1-11) and thoroughly discussed suggested revisions to the integrated publications, data, and sample policy (Appendix 99-1-12).

Outside literature extension policy:
Beginning with Leg 160, the same rules apply to both SR volume and Journal submissions.

Format of Leg summary chapter:
Deadlines and goals of chapters are now clearly defined. The format is standardized to that of scientific paper with a new "Hole Summary" table. Additional tables will be added as appropriate. Figures needed to illustrate site locations, lithologies, ages, and other pertinent information also will be added as appropriate.

Guidelines for plates and data submissions to electronic volumes
No new guidelines were suggested in order to encourage scientists to use the new electronic medium. Image size and quality will be reviewed by the ERB to make sure that they are

acceptable for print. Publication Services will monitor the number of large file or poor-quality plate submissions.

Mirror Sites
Texas A&M University, Bremen, Australia, United Kingdom are possible locations for Mirror Sites. Each is at a different level of readiness and the United Kingdom will not mirror JANUS. There is anecdotal evidence for slow electronic traffic in and out of Germany and thus Germany might not be an acceptable place for a mirror site that can support all of Europe.

UNIX/MAC/PC Compatibility
Since 1995, Publications has operated under a mandate that electronic publication products must be Mac, PC, and UNIX compatible. A September 1997 questionnaire found the following breakdown of ODP computer users: 11% Unix, 38% PC, and 52% Mac. Based upon this breakdown and some problems of spreadsheet compatibility (the UNIX PDF viewers do not display spreadsheet information completely), the panel was asked if Publication Services should continue supporting UNIX. In light of increasing LINUX usage by PC users, the panel agreed it was wise to continue with the current compatibility mandate.

Publications Policy
Ann Klaus reviewed comments/problems with the new integrated Publications and Sampling Policy that ODP-TAMU felt needed clarification, reorganization, streamlining, or correction. Many items concerned implementation or simple clarification and a sub-committee consisting of Rick Murray, Ann Klaus, Frank Rack, and Tom Janecek revised the Policy during the meeting, taking into account these concerns (See Appendix 99-1-12 for this new version. Appendix A of the new Policy summarizes the new rules of the Policy and when they go into effect).

Apparently during the evolution of the publications requirements during the past two years, some co-chief scientists perceived that a synthesis (in the SR volume) was no longer required. A lengthy discussion occurred concerning co-chief obligations to write a synthesis paper for the SR volume. Overall, the panel felt ***very strongly*** that co-chiefs from all legs should be required to produce or coordinate the production of synthesis papers for the SR volume. Some Panel members commented that for recent legs it would be difficult to require co-chiefs to write a synthesis paper at this late date (e.g., the 169 synthesis submission deadline would be 6 September, 1999). The following recommendation resulted from the discussion.

SCIMP RECOMMENDATION 99-1-10: ***SCIMP recommends that ODP-TAMU reiterate that it is the responsibility of the co-chief scientists to write or coordinate a leg synthesis paper for the SR booklet and CD-ROM as required by the co-chief agreement. The summary paper should provide an overview of the primary results of the leg. This recommendation does not preclude the submission of a separate synthesis to the outside literature, but should include, as minimum, a discussion of the results from various aspects of the leg based upon post-cruise science.***

In order to deal with the varying deadlines of upcoming legs the panel suggested the following implementation scenario for ODP-TAMU:

For Legs 169-174B: TAMU contact all co-chiefs, explain the situation, and ask if they would be willing to write/coordinate a synthesis paper. If they already plan on producing a synthesis paper for a journal or book, TAMU should work with them to try to get paper and electronic reprint permission. If they do not have plans to generate a synthesis paper, and refuse to consider doing so now, require that they write an "overview" of the leg that will be printed in the booklet along with the table of contents and front matter from the SR volume. This overview could be as simple as a one-to-two page summary of the postcruise research that was carried out related to the leg.

For 175 and beyond: TAMU contact all co-chiefs, explain the situation, and inform them that they will be required to write/coordinate a synthesis paper.

E) Calibration of paleomagnetic logging tools –Verosub (UC-Davis)

Dr. Verosub presented an interesting discussion of downhole magnetic measurements and his conclusion of the misuse of paleomagnetic data in recent publications. Versosub explained that certain researchers believe that by measuring the magnetic susceptibility and total magnetic field downhole it is possible to determine not only the magnetic polarity *in situ* but the paleointensity as well. Verosub believes the data need to be checked against paleomagnetic measurements from the cores as well. Versosub wanted Panel support (funding or a recommendation for funding) for proposed experiments to verify these measurements. The panel thanked him for his presentation but obviously could not provide funding support for his work. The panel also felt that the data/science that Versosub was presenting could not be considered an essential measurement to fulfillment of the LRP and thus did not make any recommendations to ODP-TAMU or BRG-LDEO to follow up with this work.

F) New Technologies for the future

Over the past year the JOIDES advisory structure has completed an overall program prioritization with two goals in mind:

- By the end of ODP, the program needs to be able to identify specific objectives of the Long Range plan that have been met.

- By the end of ODP, the Program needs to be positioned both from a scientific and technological standpoint, to justify and move into a new scientific drill program post-2003.

SCIMP has produced a laboratory and service prioritization this past year that helps the Program move effectively and efficiently towards the first goal. In addition, to the oversight of current

laboratories and services, SCIMP feels it should be evaluating potential new technologies, services, and partnerships that will help position the drilling community to be fully prepared both scientifically and technically to launch a new and exciting program post 2003. Towards this end, SCIMP, at this and future meetings, will begin to evaluate new technologies, measurements, and partnerships.

At this meeting, SCIMP heard about the potential of external beam XRF systems, Industry analyses of seismic data to investigate gas hydrates and bottom simulating reflectors, several new core imaging systems, and the potential use of ROV/AUVs for use in ODP science.

EXTERNAL BEAM XRF SYSTEM - Verosub (UC-Davis)

Ken Verosub gave a presentation on the use of an external-beam XRF for high-resolution geochemical analyses. He explained the feasibility of collecting high-resolution data on standard paleomagnetic U-channels for elements from sodium through lead. Such a system, has enormous potential for the geochemical community as it would allow investigators to "routinely" obtain elemental chemistry at a resolution not generally feasible at most labs.

The Panel felt that the idea is one to consider for post-2003 drilling, especially if a move is made to conduct more analyses on shore.

BOTTOM SIMULATING REFLECTOR ANALYSES - Laurent Meister (W.Geophysical)

Laurent Meister gave a presentation on the state of industry analytical techniques to investigate Bottom Simulating Reflectors (BSRs). BSRs often indicate the presence of gas hydrates beneath the sea floor. As industry moves into deeper and deeper water (e.g., >500 m in the Gulf of Mexico), it is coming into contact more with gas hydrates and is making great strides in modeling the BSRs.

A discussion ensued on how these industry seismic analyses can benefit ODP and how ODP can provide benefits to industry. Industry is looking for calibration of predicted measurements and ODP can assist through the integration of seismic and borehole data, particularly in the upper part of the sedimentary section where industry would not collect cores. Industry benefits to ODP include access to seismic data, models, and new technologies. Industry my be willing to share information from the upper 2 seconds of the seismic record as this data can often be released without compromising exploration.

Several Panel members are pursuing follow-up discussions with Laurent Meister.

NEW TECHNIQUES IN SEDIMENT IMAGING - Frank Rack (JOI)

Frank Rack presented a survey of current and emerging trends in non-destructive measurements on cores (His report is found in Appendix 99-1-13 and a full set of appendices for the report can be obtained by contacting Frank Rack or Tom Janecek).

It is important for SCIMP to keep abreast of the wide-variety of emerging 2D and 3D core scanning technologies. To assist the Panel in this matter, Rack presented a list of "strawman" topics as a place to start.(See Part III of report in Appendix 99-1-13). This list will allow SCIMP members to focus their ideas and efforts in determining what types of instrumentation and technologies will be essential for post-2003 core analyses.

ROV AND SUBMERSIBLE SUPPORT - G. Wheat (W.Coast &Polar Undersea Res Ctr)

Geoff Wheat, a new SCIMP member, outlined the National Undersea Research Program (NURP) including its funding capabilities, schedule, and the types of ROV and AUV support the program can provide in support of ODP science (See web page at www.wcnurc.uaf.edu:8000/).

The potential for collaborative science in many aspects of ODP science is enormous, including precruise (e.g., site surveys) , cruise, and post cruise (e.g., CORKS, observatories) projects.

Wheat explained that proposals for ROV and submersible support are due in September for external mail review. Excellent proposals go to a peer review panel with broad expertise (fisheries to geophysics). The highest ranked proposals are almost always geologic in nature (evidence of the nature of competition). Proposal acceptance rates are between 30-50% and funding levels run about $50K for science costs (exclusive of ship time). NURP typically provides ROV and tender ship support so these funds are not included in the requests. NURP funding generally supports field related costs but not laboratory or other analyses.

G Data Migration/Archival Dave Anderson/Joe Ortiz

Dave Anderson first gave the Panel an overview of the status of data archiving and migration.

With respect to the long-term archive, ODP-TAMU is doing an excellent job. The National Geophysical Data Center will provide the long-term archive and access to the data over the long-term (even after ODP expires -- see Section B of this report, SCIMP June 98 Recommendation 98-2-8 regarding the NGDC proposal). NGDC and ODP-TAMU have addressed the handoff of data. However, SCIMP must keep an eye on several issues, including data formats (ASCII, binary, not ORACLE binary), the transfer and input of metadata, and the evolving standards of databases.

The best model for data access and archiving seems to be that of distributed data centers with one permanent archive. ODP is moving toward such a model with mirror sites in member countries and a permanent archive at NGDC.

Migration of old DSDP and ODP shipboard data into JANUS is currently happening. At present one FTE at ODP-TAMU is dedicated to this job and is migrating data by data type as this method requires minimal retraining. SCIMP needs to prioritize data types for migration but first needs to know (1) what data have been migrated and (2) what are the most used or high-profile data (see TAMU responses to Panel queries at end of this section).

Finally, Anderson discussed the input of post-cruise data into the database. Often, post-cruise data is the most used, highest profile data. Anderson suggested looking at 300 or so recent publications to determine what types of data are currently being used in the data "universe". The SCIMP JANUS/Data migration LWG, in conjunction with NDGC, will attempt to define the data universe for post-cruise publications

Joe Ortiz next presented an overview of digital-image storage concepts and problems that ODP and SCIMP are going to have to grapple with as digital imaging becomes a reality on the *JOIDES Resolution*. Ortiz explained the life cycle of a digital image, from capture- addition of metadata-acquisition software-storage software-viewing software-and output hardware devices. Of immediate concern to ODP and SCIMP is how to store the enormous digital image data files. Ortiz explained the concepts of "lossless" and "lossy" compression techniques. Lossy Compression (80-90% compression) decreases storage requirements by removing high-frequency variability in the data. Lossless Compression decreases file size without loss of information but does not allow the data to be compressed as much.

SCIMP needs to provide ODP-TAMU with information about:
1) What are types of metadata to store
2) What types of image analyses might be done in the future, and
3) How much compression is acceptable.

Item number 3 in this list is time sensitive! Current ODP-TAMU storage capabilities will necessitate compression of digital images until such a time that sufficient storage capabilities are acquired. The alternative is to store uncompressed low -resolution files. The SCIMP and ODP JANUS LWG will produce tables of compression vs. format options to determine what is the acceptable storage format for ODP images (see additional TAMU comments below).

The following information (requested from Panel members) was delivered by ODP-TAMU after the meeting but before the meeting notes were finalized.

Bill Mills delivered a table of compression vs. format options to Dave Anderson. ODP currently has 36 Gb of active memory onboard. At 2 Mb/section (choosing either compressed high-resolution image [10 pixels/mm or 250 dpi] or uncompressed low-resolution image [3 pixels/mm or 75 dpi), this allows for storage in active memory of more core than we can recover (27 km). The next highest resolution uncompressed image, however, (5 pixels/mm or 125 dpi) requires 10 Mb of memory/section. This only allows for storage in active memory of images of 5400 m of core. This does not deal with trying to manipulate images on line over the network. Also, backup is done on 1.3 GB magneto-optical discs. Back-up and data transfer of this amount of data is not a trivial manpower issue.

Concern: Where does an interested scientist go to find an overview of data in JANUS?
Response: The first selection on the database webpage is an overview. This page presents statistics of what data types are archived. This format assumes the user is familiar with ODP style data. Jay Miller has requested that ODP put a "last updated" statement on JANUS overview webpage so that users will know when the last entry was made.

If any user wants a more detailed overview of the structure of the database, it is available from the ODP data Librarian (database@odp.tamu.edu). On the ship, the database structure is available from the Marine Computer Specialists.

Query-What is current migration priority list and what has been done so far?
Response: So far all core/curation information back to Leg 101 has been migrated. ODP has completed attribute mapping, design, and coding of the migration program for GRAPE and Magnetic Susceptibility data files that conform to the latest file format. ODP has completed migration of GRAPE data and Magnetic Susceptibility data from all sites back to Leg 169. The plan is to continue migration of MST data from Leg 169 backwards as instructed by the JANUS Steering Committee. ODP's preference is to continue migration based on data type.

Query- What is migration plan after MST data?
Response: Before ODP internally undertook the data migration activity RFPs had been issued. None were accepted due to excessive cost, but the timelines they included were accurate. It was estimated that just migrating MST data would take up to 2 years FTE. We concur, and since ODP just started this effort full time in October 1998, it will be in FY 2000 before this part of the migration will be complete. The migration plan will certainly evolve between now and then, and ODP/TAMU is open to any advice that might be offered on how to proceed.

Query- If ODP subcontract out parts of the data migration project (i.e. like the South Atlantic package being negotiated by JOI) won't this dictate our strategy must be on a leg-by-leg basis rather than data type?
Response: Negotiations are still underway so ODP cannot wait and are proceeding with their current strategy, but will coordinate their efforts with any outside migration subcontracts.

H) Core/log/seismic integration – Sverre Planke

Sverre Planke gave a presentation on the role of seismic data in ODP. He explained that seismic data are essential to achieve the goals of the LRP, particularly for deep (riser) holes. In addition, ODP has a unique data set on its cores that can be utilized to study seismic wave propagation phenomena. Planke discussed the four types of seismic data sets currently used in ODP, including physical property data on cores, wireline logging, downhole seismic experiments, and seismic reflection data (Appendix 99-1-14). Planke outlined a plan that would focus, strengthen, and coordinate activities related to seismic data acquisition, processing, and interpretation that would improve core/log/seismic integration and assure industry standard data quality.

The plan includes a seismic laboratory on the *JOIDES Resolution* for use and maintenance of hardware and software for seismic data acquisition, processing, and interpretation. Responsibilities for this lab would include aspects of multi-channel data processing and interpretation, downhole measurements (well seismic surveys and sonic logs) and physical property measurements. Staffing requirements would include a trained laboratory technician and a shipboard scientist whose main responsibility would be seismic data interpretation and integration.

The second aspect of this plan would be to have a contractor responsible for leg-specific seismic data interpretation and integration. Responsibilities would include time-depth conversions for each site and maintenance and upgrade of ship- and shore-based seismic laboratory. Finally, a shore-based facility would be needed for MCS data processing and interpretation. This facility would provide pre-cruise quality control and work in collaborations with other programs.

Discussion among the panel members suggested that many aspects of this proposal are in place but not tied together formally. This lack of formal integration often results in a "hit or miss" seismic integration during and after legs and, most-assuredly, an overall lack of quality control from leg to leg. In light of post-2003 activities, especially on a riser ship that could sit on site for months, such an integration of seismic/log/core facilities is essential.

The panel further discussed ways (in light of current fiscal and physical constraints) of making seismic/log/core integration a more routine action on the ship before 2003. The panel made the following recommendations:

SCIMP RECOMMENDATION 99-1-11: ***SCIMP recognizes the importance of maximizing the integration between core, log, and seismic data both on the JOIDES Resolution and in post-cruise research. Presently, there are limited formal resources available on the JOIDES Resolution to integrate these datasets. To this end, SCIMP recommends that the Borehole Research Group enable the seismic and sonic analysis software presently installed as part of the GeoFrame system both on the JOIDES Resolution and at the BRG at Lamont.***

SCIMP RECOMMENDATION 99-1-12: ***SCIMP recommends that BRG-LDEO should have as their baseline expertise the ability to do time-depth calibration (i.e., to tie depth data [core/log] to time data [seismic]). This capability should include the ability to integrate checkshot data with wireline sonic data and the ability to generate synthetic seismograms at sea.***

SCIMP RECOMMENDATION 99-1-13: ***SCIMP recommends Site seismic surveys in the vicinity of ODP sites (w/in 2 miles) be released in digital form to the general scientific community via a long-term data archive, within 3 years of drilling. "Digital Form" is considered at this point to be both the raw and the final stacked seismic data in SEGY format.***

The SCIMP and ODP-TAMU U/W Geophysics LWG will begin to investigate specific ways to increase the quality, usefulness, and availability of seismic data during Phase III and beyond.

I) Recording of Drilling Parameters - Bernard Celerier (Univ de Montpellier II)

Bernard Celerier gave the Panel a short presentation on how drilling parameter data can be extremely helpful in many aspects of core description and interpretation. Measurements of torque, weight on bit, penetration rate provide critical information on stress conditions and rock mechanical properties. Data on mud-flow rate is essential for interpreting temperature and heat flow estimates. Both types of measurements provide information on induced thermal stress.

That Panel agreed that these types of measurements should be part of the routine data sets used by scientists on the ship and felt that ODP-TAMU and ODP-LDEO should proceed forward with

current engineering efforts to make these types of data available to the shipboard scientific party at sea.

SCIMP RECOMMENDATION 99-1-14: ***SCIMP recommends to ODP-TAMU and ODP/LDEO that drilling parameters, including mud flow rate, torque, weight on bit and penetration rate be recorded and made available, in digital form, to the scientific party during the leg.***

J) Panel-PPG reports/updates/discussion -- ramifications for SCIMP

(See http://www.whoi.edu/joides/PPG_Reports.html for PPG reports in entirety)

LONG-TERM OBSERVATORIES - Roger Morin

Roger Morin reported that the panel is preparing its final report. There was some discussion by the PPG of partially reforming (with new members) as Hydrogeology PPG. Two specific recommendations from the LTO-PPG have direct concerns to SCIMP.

The first recommendation was:

1) Establishment of a clear process somewhat specific to observatory proposals, including early review of technological aspects. This recommendation will fall to some combination of the JOIDES office, SCICOM, SSEPs, ODP, and perhaps SCIMP and OPCOM.

Under this recommendation SCIMP sees the need for oversight of third-party tools deployed from the drillship. SCIMP has now developed a protocol among its members to look at the Active Proposal list within the JOIDES system and provide watchdogs to comment on technological and laboratory needs. Of concern to SCIMP, however, is the oversight of sensors, data recorders, interfaces, etc. not deployed from the drillship. These tools and developments do not fall under the ODP Third Party Tool Guidelines and thus not under SCIMP purview.

The second recommendation was:

2) Establishment of some sort of oversight group or function of legacy of holes, possibly falling to a subset of SCIMP and/or OPCOM

This recommendation would seem to include general guidelines for use of legacy holes, a check on ability to add or remove equipment, duration of experiments, repository of information on availability and status of holes resolve possible multi-user conflicts, etc.

SCIMP feels that as a first step to developing general guidelines for use, investigators need to know what holes exist and what are the characteristics of those holes. Along these lines SCIMP put forth the following recommendation:

SCIMP RECOMMENDATION 99-1-15: ***SCIMP recommends that TAMU develop and maintain a catalogue of the existence and characteristics of legacy holes and other holes***

potentially capable of being re-entered or equipped with instrumentation packages. This catalogue should be readily accessible to the scientific and engineering community.

SCIMP is concerned with use of the ODP boreholes from investigators outside the JOIDES system. In addition, many legacy holes are outside territorial waters, EEZs, etc. and open to anyone. SCIMP determined it was not in a position to deal with these "law of the sea" issues or with multi-user conflicts between parties not in the JOIDES system and leaves those discussions for more august advisory panels.

DEEP BIOSPHERE PPG - Rick Murray

Rick Murray brought SCIMP up to date on the status of the Deep Biosphere PPG and efforts by Leg 185 scientists to get a microbiology lab up and running on the *JOIDES Resolution.* A microbiology van has been purchased by ODP-TAMU for use on Leg 185. During Leg 185, a series of tests will be conducted to determine the extent of contamination downhole, on the rig floor and in the labs on the JOIDES Resolution. At the Fall 1998 AGU meeting, a group of interested parties (Tom Davies, Kate Moran, Terry Plank, Martin Fisk, Carlotta Escutia, and Rick Murray) met for preplanning of specific needs for Leg 185 relative to PPG requirements and came up with list (see Appendix 99-1-15). Murray again noted that there will be many ramifications, including more technical support and equipment, that could/will result from the Deep Biosphere program on board the ship (See also discussion in Section N, Technical Support).

Discussion ensued over how the evolving microbiology lab (whether a van or permanent facility) fits within the entire context of the scientific priorities of the LRP. SCIMP realizes that the construction of a permanent laboratory dedicated to the deep biosphere, gas hydrate, and other studies has been proposed. SCIMP is also aware that the most efficient time for this construction is during drydock but feels the results of Leg 185 (especially the contamination studies) need to be evaluated prior to the construction of any permanent facility on the *JOIDES Resolution.*

At this point in time SCIMP, however, believes it is necessary to keep moving forward with respect to the Deep Biosphere Program and makes the following recommendation with respect to the Deep Biosphere/Microbiology program:

SCIMP RECOMMENDATION 99-1-16: ***SCIMP recommends that the van recently acquired by ODP-TAMU be equipped for Leg 185 deep biosphere studies to as full an extent as financially and logistically possible in consultation with the Deep Biosphere PPG, Leg 185 scientists, SCIMP, and other interested parties.***

At some point, scientists will wish to use radioisotopes on board the ship. SCIMP does not have the expertise on the panel to make recommendations regarding isotopes. The SCIMP chemistry LWG will solicit information regarding protocols and requirements from interested parties (via the message boards).

Gas Hydrates - Rick Murray

Rick Murray informed the panel that the Gas Hydrates PPG basically stated: without a pressurized core retrieval system, there is no hydrate program. The PPG does not advocate one system or another (i.e., the PCS or HYACE), but for the hydrate program to be successful (and accomplish goals outlined in the LRP) they ***must*** have a viable sampling tool.

Murray presented information on the HYACE system (a gas hydrate autoclave equipment system- Appendix 99-1-16). The system is being developed through comprehensive research and development project sponsored by the European Union's Marine Science and Technology Program (MAST). The development plan is for a hardware test in May 1999, the completion of the basic system by December 1999, large scale on-shore tests in spring of 2000, and sea trials on Leg 191 (the ideal target). HYACE has the backing of ODP-Engineering, the Gas Hydrates PPG, and many interested scientists.

The current pressurized core barrel system has worked in a few instances. However, there are problems with it and the manifold needs to be redesigned. The HYACE system represents a healthy alternative to the current pressurized core barrel system but it should not replace development of the present system. SCIMP considers the continued development of the HYACE system a very important item and makes the following recommendation:

SCIMP RECOMMENDATION 99-1-17: ***SCIMP recommends that ODP-TAMU continue its working arrangements with the HYACE consortium for the development of a pressurized core retrieval system, while continuing with modifications of the extant PCS system. SCIMP acknowledges the essential importance of such systems for the Gas Hydrate and Deep Biosphere research programs.***

Murray also noted that the Hydrate PPG stressed the importance of maintaining the ability to collect both temperature measurements and water samples at the same time. SCIMP has also recognized that both measurements are essential to accomplishing LRP objectives (see SCIMP chemistry prioritization -- Appendix 98-2-6 in the June 98 SCIMP report). Along these lines SCIMP makes two recommendations:

SCIMP RECOMMENDATION 99-1-18: ***SCIMP recommends that ODP-TAMU continue efforts towards finalizing the DVTP as a mature tool according to the Third Party Tool guidelines.***

SCIMP RECOMMENDATION 99-1-19: ***SCIMP recommends that ODP-TAMU continue to maintain and develop the capacity to acquire simultaneous in-situ temperature data and interstitial water samples.***

OCEAN LITHOSPHERE - Chris MacLeod

Chris MacLeod reported on The Architecture of the Ocean Lithosphere PPG meeting of May 1998 and discussed the two major thrusts in drilling that the PPG identified. The first objective is to drill an intact section of the ocean crust. This objective will require three stages, including (1) pilot drilling, (2) a 3000- m hole using current technology and (3) a complete section using riser

drilling. The target would be a fast spreading, old crust (>10 Ma) in a simple tectonic setting north of south of 15° N or S (the latter requirement to aid in paleomagnetic measurements).

The second objective is drilling the plutonic foundation of the lithosphere, both in fast spreading (Hess Deep) and slow spreading (735B, 15°20'N, Kane/Atlantis) environments. Proposals in this category are not yet mature, and site survey cruises are underway.

The technical requirements to accomplish these objectives include (1) Active Heave Compensation, (2) Hammer drill-casing/casing hammers, (3) Measurement While Coring, and (4) riser drill ship and other post-2003 developments. At its previous meeting (See Appendix 98-2-6 from the June SCIMP meeting), SCIMP prioritized the first three of these technical requirements as essential to accomplishing the LRP. TEDCOM (see below) also made specific recommendations regarding these developments.

EXTREME CLIMATES

Nothing to report.

CLIMATE/TECTONIC LINKS - Dave Anderson

At this point in time there isn't anything requiring SCIMP input but Anderson noted that interest in MST tracks is high.

SHALLOW WATER DRILLING -Thomas Janecek

The Shallow Water PPG had its first meeting in December 1998. The PPG outlined the goals of shallow-water drilling, including (1) Determine sub-millenial records of climate in corals and (2) shallow-water stratigraphic records/sea level changes.

The PPG is sending out an RFP for shallow-water drilling proposals. This RFP will be guided by technical and white papers, yet to be submitted. The PPG is aiming for a March 15 deadline for proposals to allow SSEP review this spring.

Shallow water drilling will have many issues for SCIMP ranging from on-site curation, on-site measurements, data transfer, post-drilling curation, publication of results, etc. Until viable proposals are at the SSEP level, however, there is little need for SCIMP input.

TEDCOM - Thomas Janecek

TEDCOM met in November 1998 at College Station, TX. Of particular importance to SCIMP was the suggested restructuring of TEDCOM meetings to improve its scientific and technical oversight of the Engineering aspects of ODP (Appendix 99-1-4). SCIMP had made a particular recommendation regarding TEDCOM oversight at its previous meeting (see SCIMP June meeting report).

Five specific recommendations came out of the November TEDCOM meeting (Appendix 99-1-4), four of which were related to previous SCIMP prioritizations. SCIMP, at its June 1998 meeting had prioritized the FY99 ODP engineering projects. Those projects ranked essential to accomplishing the LRP included Active Heave Compensation, Measurement While Coring, and Diamond Coring. TEDCOM made specific recommendations at its November 1998 toward moving all of these projects forward.

K) Third Party Tools - Thomas Janecek/Jay Miller

The third party tool guidelines have been revised by ODP-TAMU in light of the new JOIDES advisory structure (Appendix 99-1-7). The guidelines have been modified to reflect the fact that the Science Operator (ODP-TAMU) and the Logging Contractor (BRG-LDEO) are now responsible for assisting with and monitoring third-party tool developments and reporting status to SCIMP.

In general, the Panel agreed with the changes made to the guidelines. Some members felt, however, there could be a perception of a conflict of interest with the Science Operator and Logging Contractor being responsible for monitoring these developments. The Panel finally agreed that as long as a SCIMP watchdog was assigned to monitor development of each tool (as prescribed in the guidelines) this perception would be minimized, if not eliminated.

The Panel suggested one addition to the guidelines with respect to data dissemination. The Panel added the following wording:

> Data acquired through third party tools are subject to the same data dissemination rules as any other data collected on board the ship.

The previous and new versions of the Third Party Tool guidelines will be posted on the SCIMP message board for Panel members to review and make suggestions for additional comments and/or changes. The panel will formally adopt the guidelines at its next meeting after this review period.

L) Whole Core X-ray - Thomas Janecek

Two recommendations were brought to the panel regarding whole core x-ray machines, both by Antarctic-based investigators (See Appendix 99-1-17). One proposal was submitted by Eugene Domack. Domack has asked ODP to purchase a "portable" x-ray unit that he had previously purchased to analyze some Leg 178 cores. The second proposal was submitted by Peter Barker. Barker has requested a SCIMP recommendation that ODP purchase a cabinet-type whole core x-ray unit.

In reviewing these requests the panel was reminded that at its previous meeting on laboratory/instrumentation prioritization it did ***not*** consider whole-core x-ray analyses. In light of

these two requests, the panel first needed to establish some priority for this type of analysis. Discussion ensued on whether the x-ray analyses were needed on board the *JOIDES Resolution*, and if so, were they deemed to be "essential" or "useful" (the same guidelines use to rate other instruments, labs, and services at the June, 1998 meeting).

After some discussion, the Panel consensus seemed to be that a shipboard whole-core X-ray is not essential to LRP objectives, although on some legs it could be essential to leg specific objectives. It could also be a useful post-cruise measurement for many cruises. The panel felt the under current fiscal and physical laboratory constraints acquisition of either system should not be a high priority for laboratory upgrades. However, if such measurements are deemed critical to leg specific objectives, the Principal Investigators should pursue independent means of acquisition (e.g. short-term lease) well before a leg sails. As part of SCIMP's purview, it will review the list of Active Proposals to identify legs where such measurements would be critical and contact proponents to make them aware that they need to pursue independent means of acquisition.

M) Policy on Legacy Drilling-Leg 187 - Tom Janecek/Jay Miller

There has been a longstanding policy in ODP on always coring at least one complete stratigraphic section before washing/drilling ahead in subsequent holes. This policy was, in part, a safety issue and, in part, a legacy issue. With proposals in the system to now drill without coring, it was brought to SCIMP's attention that perhaps it should make a policy statement (since this issue used to be under the purview of the old Information Handling Panel).

The Panel discussed the issue outlining pros and cons of the argument. One positive side of drilling without coring is that certain deeper targets are now obtainable given the time constraints of a two-month leg. Another side benefit is that a hole drilled without coring will often be of better quality for logging. The major negative aspect is one of safety.

Further Panel discussion indicated that with the new JOIDES panel structure, drilling without coring is an issue best suited for the other service panels (PPSP and SSP - [safety]), the SSEPs (science) and SCICOM/OPCOM (timing). However, the SCIMP should comment if they envision a potential for increasing the science return.

N) Technical Support on the JOIDES Resolution

This meeting highlighted several deficiencies in level of technical support on the ship. These deficiencies have been noted at many of the past meetings of SCIMP and the old SMP. Areas of limited or non-existent technical assistance include the need for a database administrator (JANUS support), increased software expertise (Applecore, PAL/PALEO, all shipboard data acquisition software), paleontology sample preparation, seismic laboratory, and the new microbiology lab.

The Panel is acutely aware of political, financial, and physical constraints (i.e., berthing) involved in the discussion of technical staffing. The Panel feels, however, that with the ever increasing need for software and database support (as well as other leg-specific needs such a microbiology, paleontology) it is time to take the necessary steps to address these problems.

With consideration of political, financial, and physical constraints in mind SCIMP makes the following recommendation:

SCIMP RECOMMENDATION 99-1-20: ***In the context of current staffing levels SCIMP recommends that ODP-TAMU re-structure its shipboard technical staff to include shipboard database administrator above and beyond the current computer/IS staff. In addition, TAMU should have a flexible system to deal with leg-specific technician needs (i.e., a seismic/log coordinator, paleontological sample preparation).***

As a starting point, the Panel suggests that ODP-TAMU compile information from the last few years of post-leg overviews from shipboard scientists to look for trends in technical shortages. This data may be of use in assisting ODP-TAMU in restructuring the technical staff.

O) Future Meeting Date and Place.

The Panel decided that the venue for its next two meeting should be sent forward for approval as a package. The past three SCIMP meetings have been at U.S. institutions and the Panel has not seen the ship in nearly two years. The next meeting site is proposed for Germany (either at the Bremen, the JOIDES office in Kiel, or at Aachen) during the last week of June (June 28-June 30, 1999). Should the Germany location not be approved for U.S. travel by JOI, the fallback meeting locations are Boulder, CO (NGDC), Tallahassee, FL (Antarctic Research Facility-FSU), or College Station (ODP-TAMU). This meeting would be followed by a January 2000 meeting to inspect the ship after drydock renovations. Currently the Fremantle portcall (Legs 187/188) is scheduled for January 2000.

P) Acknowledgements

Juergen Wohlenburg rotates off the panel after this meeting. The panel extends a heartfelt thanks to Juergen for all of his efforts toward bettering the Ocean Drilling Program. We wish him a very happy "retirement".

The panel also wishes to thank Sandy Samford for her organizational efforts before and during this meeting. The meeting went off without a hitch….in large part due to Sandy's efforts.