

Date: Tue, 19 Jul 94 09:23:51 PDT  
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Subject: Re: SMP back minutes

#### SMP Meeting 10

I. The chair welcomed all members and liaison. Janet Pariso, a new member replacing John King, was introduced.

#### II. Changes/clarifications to meeting 9 minutes

Allan asked for clarification of the equipment priority list. Moran informed the panel that the list had been modified after the previous meeting with the IHP and DMP chairs, the lists from each panel were compiled together, resulting in the final priority list that went to BCOM.

#### III. Changes to agenda no. 10

Moran added three items to the draft agenda; (1) discussion of the proposed ECR collection move; (2) gas hydrate proposal which is in the prospectus; and (3) review of proposed sampling tools developments.

#### IV. Business arising

##### Paleomagnetism

Valet reported that the new paleomagnetism laboratory manual was in very good shape. ACTION: Pariso to review and comment where required.

Allan reported that the spinner magnetometer software is now complete. Mills reported that the lab technician has been compiling a list of all of the paleomagnetism software programs and how they are linked. This task is in preparation for the development of Labview\* programs for the lab. The intent is to save all data as text files so that they will be compatible with any new computing developments.

An upgrade to the cryo-mag was completed in St. JohnUs. AF de-magnetization can now go up to 35 mT maximum field. The Kappabridge instrument which measures anisotropic magnetic susceptibility was not functioning during Leg 151. This instrument is scheduled for repair at the 152 port call in Reykjavik.

E. Thomas asked whether the whole core Bartington magnetic susceptibility instrument on the MST could be improved for higher sensitivity. This is of particular importance for the objectives of paleoceanographic legs.

##### Physical Properties

The Bremen discrete resistivity instrument was purchased and will likely be ready by Leg 156. The instrument measures resistivity in non-indurated sediment.

Mills and Blum have been working on significant improvements to the discrete measurement of index properties. Mills has been developing Labview\* code for acquiring data directly from the balance and the pycnometer. With further development and the addition of a bar code reader, the labour intensive aspects of these measurements will be greatly reduced. The panel is very pleased to see this development and encourages TAMU to make every effort to assist the technical staff in accomplishing this task. P. Blum has developed a 4D\* data acquisition package for discrete index property measurement. The package, when finalized, will provide consistent data entry, calculations, and data archiving of this very basic data set.

The implementation of the natural gamma instrument has occurred very rapidly. SMP first saw the large (and impressive) instrument at its last meeting in College Station in February. Since that time, the instrument has been transported to the ship, physically installed, and the software has been modified to incorporate it into the normal core flow of the MST. The natural gamma was used, on a trial basis, for three full legs. After initial concern over its precision, based on results from Leg 149, the instrument has proven to have good potential for core-log data integration. Now that the instrument has proved to be very promising, standard procedures and system quality assurance checks must be established. For example, data should be collected within 5 energy windows to match the data collection on the Schlumberger tool. ACTION: Brereton review natural gamma for development of user guidelines.

A new GRAPE source/detector was installed for Leg 151. The stepping motor was moved to the other end of the core track. The P-wave logger on the MST has not been collecting reliable and consistent data - this requires some investigation.

**ACTION:** Chaney review data from Leg 150 and make recommendations to the panel on direction to take for improvements.

Brereton reported on the imaging resistivity instrument under development by Peter Jackson. The instrument requires only 6-12 more months of time for completion at a cost of \$75k. The panel has some questions about the instrument which should be resolved before purchase: (1) how will the electrodes be routinely cleaned to eliminate contamination? and (2) what is the impact of this potentially large data set on ODP data management?

**ACTION:** Brereton and Allan to answer these questions.

Mills reported that the thermal conductivity boxes are difficult to maintain and require re-building. The panel agrees.

### Paleontology

The data acquisition software in this lab has not progressed very far, even though it is on the top of software development priority list. Bugware went out for Leg 150/151 and the shipboard parties did not use it. John Coyne is still developing the 4D program Rawhide.

SMP is concerned that there is still no software package available for input of micropaleontological data onboard ship, although SMP gave this item high priority in all of our meetings since October 1990. Since that time, TAMU has put large sums of (> \$100) into the development of this software without obtaining a useful product. Shipboard input of data in a consistent format, compatible with the database, is necessary for inclusion in the ODP micropaleontological database, which contains no data. This will lead to high costs in the future, when the very large database (now + 50 legs) needs to be incorporated into the database. Therefore, SMP recommends again that the operator proceed immediately with the development of the 4D-based Rawhide paleontological software package (93-8). The panel re-states that the ease of data input and production of range charts for shipboard use are of the utmost importance. SMP strongly suggests that TAMU interact with SMP and IHP panel members on this development by utilizing the members for software prototype trials.

Reference collections are moving forward with the development of image banks. SMP endorses IHPUs recommendations to proceed with the development of image-based computerized reference collections.

There have been examples recently where legs have not been staffed with paleontologists with the appropriate specialty. IHP has raised this concern and E. Thomas will work with IHP members in reviewing the requirements for paleontological staffing for upcoming legs. It is likely that this review will occur via communication by email, rather than by formally meeting. **ACTION:** Thomas to report on further developments.

### Petrology

Leg 151 saw heavy use of the XRF using pressed pellets on sediment samples. Garry Brass was the shipboard scientist. **ACTION:** Rhodes request a summary from Brass and review for the panel. As SMP has stated in the past, the use of pressed pellets for sediment samples can provide useful results, but these should be used cautiously.

The XRF is now 10 years old. If required, replacement will be a large capital expense.

**ACTION:** Allan to investigate the potential for TAMU to develop a capital replacement plan for large capital items like the XRF.

There have been informal recommendations from the science community to replace the XRF with an ICP because it potentially has a wider range of elements and better detection than the XRF. SMP has previously discussed the ICP and are reluctant to recommend the ICP over the XRF for the following reasons:

(a) sample preparation requires two solutions: for majors, you fuse it with flux and then for the minors, you need to dissolve to get the elements you are seeking;

(b) sample preparation requires much more skill; and

(c) an ICP is even more fragile than an XRF and not conducive to the vibration environment on the ship.

HRTHIN/HARVI replacement software, Rocky is scheduled to be completed by 153. SMP reiterates its concern about the emphasis on the development of Rocky over Rawhide. Rocky development should in no way impact the development of the Rawhide.

SMP should review the data fields from Rocky at the next SMP meeting. ACTION: Allan prepare copies of the Rocky data fields for panel members at the next meeting.

Rhodes reviewed HerbertUs EDS-XRF which is basically a conventional X-Ray tube and detector on a split core track where the core moves along a track beneath the tube. Rhodes reported that the proposal takes most things into account. For example, focussing the beam at a fixed distance using a video camera and using the intensity of the wavelength to assess the amount of water in the sample. There are no plans in the proposal for flushing the system with He to get to lower wavelength elements. Some tests were done that showed good Si peak, but it was using pure silicon. In air, detection is good to Ca, but with better tubes, detectors and flushing, may be able to get down to Al.

Rhodes reported on Spectrace. This is a US company that develops and sells X-Ray equipment for industrial monitoring. They have developed equipment for continuous scanning of liquids run through a cell with an XRF detector. This is presently a prototype for monitoring photographic film which uses a water-cooled X-Ray tube and Pelletier-type detector mounted on a frame. It is designed to run 54S wide film continuously for detection of silver content as a quality control. The rate of flow is 300U/min. This is useful for elements with wavelengths shorter than calcium. There could be a system devised that is flushed with He. Spectrace may be interested in pursuing this.

Thurrow reported on the system developed by Jansen. It measures split cores of 5 m length and is currently in use for detection of CaCO<sub>3</sub>. Thurrow will visit Jansen this winter and report on the status of this equipment.

ACTION: Rhodes to contact Spectrace about their potential interest in developing a piece of equipment appropriate for ODP shipboard use and Thurrow will report on JansenUs system.

A new furnace is required for the XRF lab. The current system uses propane and there is some concern about safety. Mills reported that there are now electric top-loading furnaces with a rack that can hold 6 crucibles.

ACTION: Allan to report on more details for the next meeting.

#### Sedimentology/Visual Core Description

Allan reported that TAMU agree with our recommendation to replace the program VCD, which is actually a barrel sheet program, with a true core description data capture software utility. John Olsen at TAMU is taking the lead in this development. ACTION: SMP monitor developments by Olsen and provide feedback.

The colour scanner is not being utilized on every leg as the standard tool for determination of colour on cores. SMP restates that the spectrophotometer is now the routine tool for measurement of core colour and completely replaces visual comparison using the Munsell colour charts. No other colour measurement should be considered as prime data.

#### Geochemistry

The carbonate autosampler is still not available commercially. ACTION: Thomas to check with the manufacturer and report to the panel.

Rockeval- Geofina comparison is still ongoing. ACTION: Gieskes to report on the status at the next meeting.

Training of the chemistry lab technical staff is up to date. The major problem in the lab is Chemdb. It is still difficult to transfer data and to add depths.

#### Underway Geophysics

Real time navigation is onboard and working satisfactorily. Workstations have been purchased for the lab. Randy Current and Adam Klaus are reviewing available software from 45 different institutions for seismic data acquisition/processing. The current plan is to run the new computers in parallel with the Masscomp until Leg 157 when the Masscomp will be removed.

ACTION: Allan report on status of the new software.

Seismic boom upgrade for improving the towing configuration is a significant change to the fantail. Mills reported that it may not be feasible to improve seismic data acquisition by changing the towing configuration because of this constraint.

### Shipboard Computing

Moran reported on the status of the new computing system. The contractor selection has not been made and contract award is on hold because of budget concerns. SMP is concerned that the new computing system is competing with other high cost developments in the project without fair assessment of its true scientific value. As compared with some engineering developments, the upgrade of the computing system has an excellent chance for success and, consequently, for scientific payback. Presently, the shipboard and shorebased (database) computing systems are impeding scientific advance. For example, core-log data integration cannot occur without this upgrade. SMP re-states many previous recommendations on this topic by recommending that computing upgrades move to the top of the development list, including the engineering development list, so that the program provides the most powerful tools available for the advancement of our science, under all themes (93-11).

### V. PCOM Report

Fox reported on highlights from the summer PCOM meeting. Of concern to SMP is the competition for funds for the DCS versus a new computing system. PCOM are reluctant to give up on DCS. This means that funds may not be available for the computing system. Consequently, SMP must consider recommendations for improving computing issues in a step-wise fashion.

Fox reviewed the history of the new repository in Germany.

PCOM endorsed the following concerning the new repository: (1) the importance of internationalization to the program; (2) importance of establishing a European repository; and (3) unless it can be shown that 73 km of core would not be subjected to needless degradation, PCOM recommended that the existing cores remain at LDEO. Because of endorsement #3, PCOM asked SMP (and the other panels) to comment on the document RMove ECR Cores to BremenS.

Fox also reported on MESH, Marine aspects of Earth Science History. MESH has a new budget item for global change. MESH met in September and some of their study topics overlap with ODP. Their program is 10 years with a budget of several million dollars and includes refurbishing of 1 US vessel for piston coring.

BCOM discussed the impact of budget cuts. The priority would first be to reduce the size of Vol A and Vol B and perhaps charge for these publications.

### VI. Bremen Core Repository

SMP does not endorse moving the valuable ECR collection to Bremen. However, as requested by PCOM, SMP reviewed the document RMove ECR Cores to BremenS.

This document does not describe procedures which would provide reasonable protection of the core collection. SMP unanimously agrees that this move places an unnecessary risk on the collection. The primary risk factor is vibration. Vibration can cause serious damage to any fine-grained material that has experienced significant drying and to all sedimentary sequences that are silt-sized and coarser. SMP recommends that a test be run prior which assesses the damage that could occur to the collection (93-9). This test is best performed by subjecting older, dry cores from a multiple hole site to vibration using a shaker table set at similar amplitudes and frequencies which the collection would experience, if moved.

### VII. ODP ROportunities for Scientific ResearchS Booklet

SMP reviewed the booklet and recommend some modifications prior to the next printing. The three recommendations are: (1) add windows with more detail on typical data collected; (2) include a description of the roles of each of the scientific staff onboard; and (3) include the data/samples that are also available to scientists, even if they do not sail on the ship. ACTION: SMP should meet with Karen Riedel to discuss these potential modifications.

## VIII. Development/Upgrades of New Sampling Tools

SMP reviewed the two TAMU proposed developments. SMP supports the development/upgrades of the Vibro-Percussive Corer (VPC) and the Push-In Pressure Core Sampler (PPCS) (93-10). The VPC should be given priority so that it can be used on Leg 155, Amazon Fan. The PPCS is required if the gas hydrate leg is scheduled in FY95.

## IX. Shipboard Operations

SMP reviewed the status of the technical staff. Its with dismay that after arguing for an increased level of technical support in 1990, the technical staff have once again been cut. After considerable discussion, the panel agrees that the program must provide an effective working environment for the technical staff. Presently, technical staff are managed under logistics. This is in contrast to most other institutions and university systems where the technical staff are linked with the scientists. SMP agrees that improvements to the labs and to the operations in the labs would occur more effectively if the technical staff were managed under science operations. SMP recommends to PCOM that they request TAMU investigate the possibility and implications of moving the management of the technical staff to science operations (93-12).

A discussion on modifications to the lab stack during refit was tabled until the next meeting. ACTION: Gieskes include refit modifications in the agenda of the next meeting.

## X. Upcoming Legs

On the next DCS engineering leg, SMP recommends only very limited scientific staffing so that improvements/changes/calibrations and technician cross-training can take place (93-13).

SMP reviewed the 95 prospectus. Proposal 423 has seven objectives for investigation of the in situ characteristics of gas hydrates. The first, to determine the amount of gas trapped in extensively hydrated sediments, could be met if the PPCS were available for the leg. The objectives which address the physical characteristics of gas hydrates requires testing of recovered hydrates. These objectives cannot be met with the existing shipboard equipment. SMP recommends that the objectives could be met in one of two ways: (1) develop a sophisticated pressure test system for shipboard use which would include temperature and pressure control of a sealed sample; or (2) develop a sample storage and transportation system which would maintain recovered hydrate at a specified temperature in sealed containers so that all measurements could be performed at shore-based laboratories (93-14).

## XI. Priorities

### Equipment

1. Bar code readers
2. Paleo microscopes w/ imaging & phase contrast
3. Imaging resistivity (requires additional review - see Business Arising)
4. Thermal conductivity heater box
5. Spinner magnetometer replacement

### Software

1. Micropaleo
2. VCD (a real one!)
3. Corelog - so that depths are easily updated in all labs
4. Discrete physical properties (velocity and vane)
5. Paleomag software
6. Rocky
7. Mudlog (aka SAM) replacement
8. Chemistry

## Panel Membership

SMP requires a structural geologist to assist in defining procedures and methods for description and measurement. The new chairperson (Gieskes) will review and recommend an individual to PCOM for membership on SMP.