Executive Summary of the 11th Meeting of the Shipboard Measurements Panel

College Station, Texas, March 28-30, 1994

SMP met for its eleventh meeting in College Station, Texas on March 28-30. There was successful interaction between SMP and ODP/TAMU. In addition a brief preliminary meeting was held of the CLI-AN committee (partial membership) together with the SMP.

Below the highlights and resulting recommendations are summarised.

I. Paleontology

Ellen Thomas, during her summary of the discussions of IHP, emphasized some of the basic needs for improvements in the Paleontology/Paleoceanography program on board JOIDES Resolution.

From this discussion a comprehensive recommendation was constructed, as follows:

Recommendation 94-1:

1. SMP strongly recommends that ODP rewrites the job description of shipboard paleontologist, so that shipboard data are required to be collected in computerized spreadsheet format, instead of on paper forms.

2. SMP recommends that ODP continue efforts to finish the paleo data acquisition module (FossiList) as soon as possible, and to that effect to sail a 4D programmer with the alpha version of the program.

3. SMP recommends that ODP provides software for the shipboard preparation of age-depth plots, so that a consistent format will be used from leg to leg.

4. SMP recommends that the ODP-shipboard technician who writes the report on the paleo-lab at the end of the cruise check the laboratory inventory.

As to item 1: Ellen Thomas has prepared this job description and wishes PCOM to endorse the communication with TAMU in this matter.

II. Core-Log Integration Advisory Network - CLI-AN

Joris Gieskes informed the panel on the establishment of the CLI-AN working group, whose primary mission is to advise PCOM on the program CLIP, which is being produced by the Lamont borehole research group for core-log integration purposes.

The membership of CLIP-AN is:
Joris Gieskes, Chair
Andy Fisher
Mike Williams
Christopher MacLeod
Terri King Hagelberg

Peter deMenocal, ex-officio LDEO/ODP
Peter Blum, ex-officio TAMU/ODP

The first discussions of the CLI-AN group were held during the SMP meeting, mainly with the purpose of informing the SMP with the mandate of PCOM to this group and to obtain any input of the panel.

Christopher MacLeod presented an overview on "Further Techniques for Core Orientation by Core-Log Integration: Application to Structural Studies of the Lower Crust in Hess Deep". He gave a convincing analysis of the problem and the advantage of using core-log integration for the purpose of core orientation.

Peter Blum elaborated further on the extension of ideas originally contained in the document produced by Andrew Fisher and Peter Blum on "A Data Integration System for the Ocean Drilling Program: Conceptual Plan and Present Status". In his presentation Peter Blum presented a detailed analysis of depth-scales which must be considered to provide a consistent pathway to merge all depth scales. Such a program is considered necessary prior to the potential extensions of core-log correlations that are aimed at scientific applications as proposed by the LDEO CLIP program. SMP concurs on this as did the present CLI-AN members as well as some of the corresponding members.

With the addition of the new natural gamma-ray tool to the MST array and the successes during the recent Leg 154 the future of CLIP was assessed to be excellent., especially if attention is given to shipboard data integration (SDI) and the subsequent core-log integration (CLIP).

The SMP agrees that the work of CLI-AN will aid in establishing goals in the CLIP program. The CLI-AN group, after dispersal of additional materials among its membership and the exchange of experiences during Leg 154 in particular, proposes to meet in August of 1994. At that time a contractor for the upgrade of the TAMU computer system may have been identified and the implementation of CLIP can then be discussed in greater detail.

SMP also discussed a statement on Core-log Integration prepared by Robin Brereton in response to an action item arising from the minutes of the 10 th meeting of SMP. A modified version is presented here.

Core-log Data Integration and the Natural Gamma Instrument

"The prime purpose of the natural gamma instrument is to collect information from the core for direct comparison with natural gamma derived from downhole logging tools. These two gamma logs are then correlated to provide means of integrating core derived data with the wireline logging data and subsequently with underway geophysics data. The operation of the natural gamma instrument is, therefore, fundamental to the success of any core-log data integration excercise. As such, it is regarded by both the Shipboard Measurements Panel and the Downhole Meaurements Panel as a necessary measurement that must be carried out on all recovered core. If a shipboard scientist wishes to carry out more detailed measurements or processing, over and above the minimum requirement, then that is at the discretion of the shipboard party."

SMP endorses this statement and urges inclusion in the job descriptions of the Physical Properties and Shipboard Logging Specialist.

III. Gashydrates:

Joris Gieskes has been contacted by the chair of SGPP with regards the use of the Pressure Core Barrel System (PCS) during the future hydrate leg.

The PCS should be ready for the gashydrate leg and SMP recommends that TAMU will be given the go-ahead with the upgrading of the present apparatus.

Recommendation 94-2:

SMP recommends to PCOM that ODP/TAMU be encouraged to use available funds for the further upgrading of the PCS system for future use on the gashydrate leg.

The real problem is still that no solid attempts have been made for the development of apparatus appropriate for the measurement of the physical characteristics of the gashydrates recovered under in situ P-T conditions (c.f., SMP Recommendation 93-14). A brief interaction between the chairs of SMP and SGPP established that it is the opinion of SGPP that many of the objectives for using the PCS (e.g., gas analyses) can be met with the present upgraded apparatus. Nonetheless the need for a further development by a third party for the study of the physical characteristics of hydrates remains. Movement in this direction is presently going on.

IV. Software displays

A visit to the various offices in which software is being developed at TAMU was arranged:

FossiList, i.e., paleontogy oriented software, is rapidly advancing. Interaction with SMP member Ellen Thomas is considered of prime importance for this software.

Rocky is developing rapidly and SMP urges interaction with panel members of the appropriate disciplines as well as with other members of the community.

Etch-a-Sketch will serve as a future replacement of presently available VCD software. This software is still in the early stages of development.

SMP will monitor closely this software development.

SMP recommends:

Recommendation 94-3:

SMP recommends that whenever new software is placed on the ship the principal programmer will go out to sea with this software, so that problems arising can be solved by direct interaction with the shipboard scientific party.

V. Color measurements

SMP discussed the spectrophotometric measurement of color in detail and reiterates its satisfaction with the significant improvement in the recording of color data by means of the Color Scanner.

SMP recommends:

Recommendation 94-4:

The SMP restates that the color scanner spectrophotometer is now the routine tool for the measurement of core color and that this manner of color measurement should completely replace visual comparison using Munsell color charts. In addition the color measurements should be made as soon as possible after splitting of the core so as to minimize deterioration of color.

VI. Multi Sensor Track (MST)

Core-log integration has become an increasingly important topic for discussion and this project constitutes one of the major advances in shipboard science, useful to the entire shipboard scientific party. The MST data are of central importance for this purpose. This became evident from a memo received after completion of Leg 154 (Nick Shacleton, Terri Hagelberg, and Tim Herbert). Attention was given to the necessary improvements on the MST. At the same time the Panel was also informed on proposed upgrades of the MST by Peter Blum. His document was essentially similar to that of the Shipboard Leg 154 staff. This demonstrates community interest and a willingness of ODP to work on this. Peter Blum has agreed to rewrite his draft note to incorporate some of the points raised by the Leg 154 party. This document will be made available to PCOM (through SMP) as soon as possible. However, SMP wishes to go on record that the upgrade of the SMP is a very high priority item. Proper core-log integration is bound to be one of the success stories of the program.

Associated with the MST is the Natural Gamma Ray Sensor. This device was first used during Leg 149 and subsequently during Legs 150, 151, 152, and 154. Documentation on the instrument is now available. This topic will be discussed in greater detail during the CLI-AN meetings in August 1994.

Further discussion followed on the use of the available channels on the Natural Gamma Ray Logger. Using and storing all 1000+ channels will cause problems with counting statistics. Originally the use of the same windows as are being used in the Schlumberger logger was advocated, but this item became debatable after the use of different windows during Leg 151. This again will be the topic for further debate during the CLI-AN meeting.

Staffing with a scientist dedicated to core-log integration during legs that are anticipated to make extensive use of this opportunity is considered of importance.

Recommendation 94-5:

The SMP suggests that, especially on legs dedicated to core-log integration efforts (e.g., paleo-legs), the shipboard party include a Core-Log Integration Specialist, who is well versed in the MST device.

VII. Shipboard Operations

SMP has previously expressed its dismay with the gradual atrition in ODP Technical Staff on board JOIDES Resolution (e.g., minutes of the 10th meeting of SMP, September 1993). Meantime another cut of two persons per leg has been announced. This has caused great concern

among ODP personnel, but also among the membership of SMP. The panel is concerned that this further curtailment in staff will seriously affect the shipboard scientific program. The personnel with experience in the use of special equipment (XRF, MST, Paleomag, Chemistry) may have to be used for other purposes. This may, in turn, lead to a deterioration in data quality and data generation. SMP has long worked on the outfitting of the JOIDES Resolution's laboratory with the best available equipment. For these reasons SMP expresses its concern about a potential ill-effect on the scientific output. This concern is expressed in the recommendation presented below. SMP urges PCOM to act on this matter - the success of the shipboard science program is the quid-pro-quo for attracting participation of the best available persons in the shipboard science program.

Recommendation 94-6:

SMP has previously expressed its dismay with cuts in technical staff (e.g., minutes of the 10th SMP meeting). In the meantime SMP has learned that further cuts in shipboard technical personnel are planned. SMP is strongly concerned that this further diminishment in staff will lead to problems with the maintenance and operation of valuable shipboard equipment. Any potential cuts in the important array of shipboard measurements will lead to a deterioration of the productivity as well as of the quality of shipboard science operations. SMP fears that, as a result of this situation, scientific objectives may be compromised. For these reasons SMP strongly recommends that PCOM consider this critical situation and urges PCOM/BCOM to seek alternate ways of funding in order to remedy this critical situation.

VIII. Other items

SMP discussed many other items which will be dealt with in the Minutes of the meeting. However the SMP wishes to stress several priorities in funding:

Of special importance is the upgrade of the MST ($125 K), which is increasingly important particularly with respect to its central function in core-log integration. It is the opinion of SMP that this should be one of the primary items for future funding.

Equipment:

1. Update MST
2. Paleontology Miscroscope
3. Thermal Conductivity Boxes
4. Replacement for XRF fluxer
5. Replacement of Spinner Magnetometer

Software:

1. Core-log integration
2. Barcode reader for SAM
3. Fossilith, Rocky, Etch-a-Sketch
4. Discrete Physical Properties
5. Paleo mag software update
6. Data aquisition for Atomic Absorption Instrumentation

IX. Membership

SMP recognizes the need for a structural geologist on the Panel. SMP would like to request that ODP France consider the appointment of a panel member with this expertise as a potential future replacement of the French Member of the SMP, who will rotate off probably in the near future.

X. Next meeting.

SMP wishes to hold its Fall Meeting in connection with the port visit of JOIDES Resolution in the Canary Islands.

SMP wishes to stress that the hospitality of ODP/TAMU and the healthy interaction with TAMU personnel is very much appreciated.

Minutes of the 11th Meeting of the Shipboard Measurements Panel

College Station, Texas, March 28-30, 1994

Members present

Robin Brereton
Ronald Chaney
Joris Gieskes, Chair
Satoru Nakashima
Michael Rhodes
Ellen Thomas
Juergen Thurow
Dominique Weis

Members absent

Kate Moran
Janet Pariso
Jean-Pierre Valet

Guests

Bernie Hamlin ODP/TAMU
Randy Current ODP/TAMU

Liaisons

Jamie Allan, ODP/TAMU - Host
Jeff Fox, PCOM
Bill Mills/Bernie Hamlin, ODP/TAMU
Peter Blum, ODP/TAMU

Core-Log Integration Advisory Network (CLI-AN)

Members present

Peter Blum
Joris Gieskes, Chair
Christopher MacLeod
Michael Williams

Members absent

Peter deMenocal
Andrew Fisher
Kate Moran
Terri Hagelberg

I. The chair welcomed all members and guests. Dr. Satoru Nakashima received a warm welcome to the SMP, as the new representative for Japan.

II. Information Handling Panel (IHP)

Ellen Thomas reported on SMP related matters discussed during the recent meeting of IHP in College Station (March, 1994).

During the discussions of the informal Paleontologists Working Group (consisting of representatives of SMP, IHP and OHP; immediately preceeding IHP) a new job description for shipboard paleontologists was drafted (see attachment 1), and the ODP Prime Data for paleontology were reviewed (see attachment 2).

The essence of the IHP discussions is summarized below:

Shipboard paleontologists are required to collect data on quadruple paper forms, which after the cruise are

sent to the three core laboratories; the scientist keeps the usually illegible 4th copy. In DSDP times the information was then keyed into the computerized database at Scripps. Since ODP started, no information from the paper forms has been put in the computerized database, which until recently did not contain any paleo data. Recently, however, computer personnel at ODP have started to key in paleo data in the database, using only data from the range charts (i.e., in spreadsheet format) from the Scientific Results volumes. IHP, at its March 1994 meeting, recommended that after completion of data input from range charts in Scientific Results volumes, data are keyed in from the range charts in the Initial Report volumes, followed by the data from the text of the Scientific Results, followed in turn by data in the text of the Initial Reports. Only range chart data can be keyed in by personnel without paleo knowledge. The information on the paper forms will thus in no way be used in the foreseeable future, so that all shipboard prime data are not transfered into computerized database. Presently, much shipboard work is not superseded by shorebased work. Many shipboard scientists use spreadsheets (dominantly EXCEL) to prepare range charts, so that this request is not an additional burden; to the contrary, it relieves scientists from the duty to fill out forms. Therefore, to ensure capture of the maximum amount of shipboard collected prime data in the ODP database, SMP recommends that ODP rewrites the job description of the shipboard paleontologist, so that shipboard data are required to be collected in computerized spreadsheet format, instead of on paper forms. This change in policy should be considered only as a stopgap measure, trying to prevent loss of data from the database until the data acquisition software for paleo data will finally be in place. Therefore, SMP recommends that ODP continue efforts to finish the paleo data acquisition module (FossiList) as soon as possible, and to that effect to sail a 4D programmer with the alpha version of the program. In addition, the job description should ensure that the shipboard paleontologists realize that it is part of their duty to appoint one person to combine all paleo data for a site into the biostratigraphic summary, on legs where there is no special "lead stratigrapher" sailing. Different paleontologists can take on these duties at different sites. This biostratigraphic summary must contain a biostratigraphic summary chart, in which zones of all fossil groups are shown next to core depths. This is absolutely necessary because zones are no longer recorded on the barrel sheets (NOTE: not on any legs; there is no place for them in the barrel sheet format). The paleontologist in charge of making the summary must also co-operate with the paleomagnetist to prepare the age-depth plots to derive sedimentation rates. Presently, no software is available to prepare range charts; most scientists write their own, resulting in very inconsistent sedimentation rate plots from leg to leg. Therefore, SMP recommends that ODP provides software for the shipboard preparation of age-depth plots, so that a consistent format will be used from leg to leg.

Furthermore Ellen Thomas reported that paleontologists of all legs during the last 12 months complained about the lack of simple, cheap supplies (e.g., sieves, cardboard slides with the correct aluminum holders, thin brushes, picking trays). For these reasons SMP recommends that the ODP-shipboard technician who writes the report on the paleo-lab at the end of the cruise check the laboratory inventory.

The above recommendations are summarized below.

Recommendation 94-1:

1. SMP strongly recommends that ODP rewrites the job description of shipboard paleontologist, so that shipboard data are required to be collected in computerized spreadsheet format, instead of on paper forms.

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3. SMP recommends that ODP provides software for the shipboard preparation of age-depth plots, so that a consistent format will be used from leg to leg.

4. SMP recommends that the ODP-shipboard technician who writes the report on the

paleo-lab at the end of the cruise check the laboratory inventory.

Another suggestion (made at the IHP meeting by the PCOM representative, Will Sager) was that shipboard parties always take an additonial mudline core, especially when only one APC Hole is drilled at a site; the mudline core tends to be very heavily sampled. SMP agrees that this constitutes sound policy.

IHP has requested SMP for evaluations of:

1. The Rocky soft-ware package (see later)

2. The natural gamma MST log with regards to core log integration (see later); specifically, for evaluation of existing data, to assess whether the natural gamma spectrometer can be expected to be of use in core-log integration.

The paleo working group noticed that changes to the list or Prime Data (Paleontology) as suggested by IHP at the july 1993 meeting were not made in the listing of prime data at ODP. They reviewed the list again, and ask SMP to attach a copy of the revised prime data definitions to their minutes.

III. ODP/TAMU Report

Jamie Allan presented some general comments on the relationship between ODP and SMP and noted the healthy relationship that has existed. SMP suggestions have mostly been implemented whenever possible and indeed the array of potential shipboard measutrements has been expanded during SMP's existence.

A suggestion by SMP that TAMU investigate the possibility of moving management of the Technical Staff to Science Operations (Recommendation SMP 93-12) has been met partially. Though no shift in management as such has been instituted, new "ODP Science Operations-Logistics/Technical Support Laboratory Groups" have been formed for the following disciplines: XRF/XRD; Chemistry; Paleomagnetics; Physical Properties; Sediment Description; Downhole Tools; Underway Geophysics; Paleontology/Miscroscopes/Thin Sections; Library; Computer Equipment. The SMP emphasizes the strong need to draw in the Technical Staff especially into the scientific aspects of the problems arising within these disciplines. SMP hopes that this increased interaction will lead to greater involvement of the Technical Staff when on shore at TAMU.

Jamie Allan noted that in the past large amounts of equipment have been obtained from year-end funds, but that under the present mandate these funds will be diverted towards the Computer Upgrade project. The last purchase of such equipment has been the Bremen Resistivity Device. Though this device was scheduled for use during Leg 156, TAMU has been informed that this tool will not be delivered before mid-June, 1994.

Jamie Allan noted his concern about planned further diminishment in the Technical Support Staff. This item will be discussed more extensively later in this report.

Further input from TAMU will be dispersed throughout this report.

IV. PCOM Report

Jeff Fox reported on the last PCOM meeting (December, 1993) and informed the SMP on the present budget priorities:

1. Review of the Engineering Development Plan;
2. Logging, while drilling (Leg 156).

As to the 1995 budget the PCOM has established the following priorities:

1. Computer and data base upgrade;
2. Testing of the DCS through 1995;
3. Strategy and detection of shallow water gas hazards;
4. Downhole measurements laboratory reconfiguration;
5. Exploration of better borehole televiewer system;
6. SMP equipment list.

Below we shall argue for some reconsideration, especially with regards the upgrade of the MST system. SMP appreciates the interest of PCOM in the MST, but SMP urges this to become a primary item.

Jeff Fox expressed, also in the name of PCOM, the gratitude to Kate Moran for her services to the community as the past SMP Chairperson.

V. XRF/XRD Laboratory

During a recent cruise (ODP Leg 152) several petrologists expressed some concern with regards the operation of the X-Ray laboratory, especially with regards the strict guidelines for sample preparation and analysis. Recognizing that setting high standards is of importance, the concern was expressed that for many purposes there may not be a need for a complete suit of analyses, especially when XRF is used as an exploratory tool for proper sample selection and drilling strategy.

Jamie Allan, in response to these observations, provided the ODP Mission Statement for Shipboard XRF Analysis of Igneous Rock Samples:

1. The shipboard XRF is used primarily to aid in mapping and sampling of the core. The XRF data should be used in conjunction with other shipboard data sets in making drilling decisions. Like other shipboard data sets, it should never be used in isolation for these purposes.

2. The shipboard XRF data set produced must be of consistently high archive quality, comparable leg to leg, as has been repeatedly endorsed by SMP. Historically, the shipboard XRF data set is not reproduced by shore base studies on a one to one basis; instead, the shipboard data set has generally proved to be the foundation of subsequent geochemical studies, with shore based studies most often serving as supplements to the original data set. This data set is of the greatest value to the community when it includes a full set of major and trace element determinations; therefore, the policy of ODP is that all submitted igneous samples for XRF analyses be analyzed for both major and trace element compositions.

3. To ensure a consistent and historically valuable data set, the sample preparation procedures and analytical methods must be consistent leg to leg, recognizing that standards and calibration curves used may vary leg to leg depending on the materials analyzed.

4. Due to the labor intensive needs of this analytical method and the hostile operating environments, scientific parties should expect on the order of 80-120 major and trace element determinations per leg. If the XRF undergoes a cold start or a complete recalibration at the beginning of the leg is warranted, scientific parties should understand that analyses will not become available until at least two weeks into the cruise. Sample turnaround times will be improved if members of the scientific party assist in the sample preparation.

In addition to the above mission statement of ODP, Jamie Allan discussed some of TAMU's responses to the leveled criticisms:

1. Like other shipboard data sets, the SMP has stressed the need for the shipboard XRF data set to be complete in nature, consistent in archive quality, and to be obtained through consistent and careful analytical means.

The SMP has historically stressed that the XRF data set is collected as a legacy for the entire community; therefore, its quality and completeness should not be compromised.

2. The XRF analytical procedures have been developed in conjunction with the SMP to ensure consistent, high quality analyses in a physically and environmentally challenging analytical environment.

3. ODP is examining the initial rock preparation procedures to see if other preparation techniques can be instituted without sacrificing consistent data quality. ODP notices that speeding up will not appreciably affect the total number of analyses available per cruise, as machine calibration, weighing of samples, preparation of beads, and sample counting time constitute the great majority of overall analysis time.

4. All three of the ODP XRF technicians have undergone training at ARL in the use of the new XRF software. Although the new XRF automation software was first installed on Leg 149, Leg 152 represented the first use of the software routines concerning dual goniometer rather than single goniometer data reduction. As of Leg 153, all XRF data reduction is done on line using the ARL automation software.

A lively discussion followed on the above items and, notwithstanding a sympathy with some of the concerns of the Leg 152 petrologists, it was decided that present procedures should be maintained. In essence the issue is a philosophical one, in that XRF specialists will desire to rerun samples, whereas many other scientists wish to use the shipboard information in a direct manner. The SMP endorses the proper use of the XRF by the technical staff, with the aim of continuing the collection of high quality major and minor element data, comparable with most competent shore-based laboratories. If, on the other hand, experienced XRF scientists sail, then these scientists should assume responsibility for the operation of the XRF, get thoroughly involved in the analyses, and provide guidance and training for the technicians. In addition there should be a guarantee in that case that follow-up work of at least the same quality as the shipboard program will appear in the data base. For most legs, however, the established procedures should be stricly adhered to. SMP proposes further discussion of this item during the next meeting of SMP.

The SMP wishes to stress that the important quid-pro-quo for a the rigorous maintenance of the XRF program is the maintenance of a dedicated, well trained XRF technician, who should spend most of his/her time on the maintenance, standardization, and running of the XRF equipment, particularly during hard rock oriented legs.

A brief discussion was held on the XRF analysis of sediments. Here the powder method is used for major element determination. Though this methodology may not be as accurate as the glass bead method, further work should establish potential descrepancies. At the same time the development of sediment chloride standards must be encouraged, thus allowing corrections for salts in the powdered sample analyses.

VI. Paleontology Laboratory

Ellen Thomas pointed out that there exists a common feeling that this laboratory is "much improved".

The laboratory could do well with an additional improved microscope, oriented towards paleontology. Jamie Allan pointed out that an appropriate microscope has been identified (Zeiss Axioplan with Normanski and phase contrast attachments and magnification up to 2000X). Attempts are being made to identify funding.

Ellen Thomas reiterated the need for timely inventorization in this laboratory. TAMU has agreed to do this.

VII. Core-Log Integration Advisory Network - CLI-AN

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for core-log integration purposes.

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The SMP agreed that the work of CLI-AN will aid in establishing goals in the CLIP program. The CLI-AN group, after dispersal of additional materials among its membership and the exchange of experiences during Leg 154 in particular, proposes to meet in early August of 1994. At that time a contractor for the upgrade of the TAMU computer system may have been identified and the implementation of CLIP can then be discussed in greater detail.

VIII. Review of previous minutes

The minutes of the tenth meeting of SMP were accepted. Several action items were considered.

Robin Brereton communicated a guideline for inclusion in the shipboard manual to the previous chair of SMP - Kate Moran. Below follows a slightly modified version:

Core-log Data Integration and the Natural Gamma Instrument

"The prime purpose of the natural gamma instrument is to collect information from the core for direct comparison with natural gamma derived from downhole logging tools. These two gamma logs are then correlated to provide means of integrating core derived data with the wireline logging data and subsequently with underway geophysics data. The operation of the natural gamma instrument is, therefore, fundamental to the success of any core-log data integration excercise. As such, it is regarded by both the Shipboard Measurements Panel and the

Downhole Meaurements Panel as a necessary measurement that must be carried out on all recovered core. If a shipboard scientist wishes to carry out more detailed measurements or processing, over and above the minimum requirement, then that is at the discretion of the shipboard party."

SMP endorses this statement and urges inclusion in the job descriptions of the Physical Properties and Shipboard Logging Specialist.

Software development has progressed and demonstrations of their status have been arranged during the meeting (Rocky, Fossilith, Etch-a-Sketch).

Discussions of Spectrace has been postponed. Joris Gieskes will attempt to visit a central California site during July. There the prototype is being used.

During the Fall Meeting of SMP the Jansen XRF system will be demonstrated and discussed in greater detail with a expert on the system in attendance.

Thermal Conductivity:

Jamie Allan reported on the state of the thermal conductivity apparatus and indicated that the probes are working satisfactorily.

One of the principal problems with thermal conductivity measurements is associated with standards. An investigation of commercial standards was not satisfactory. Ron Chaney discussed the possible use of an ASTM standard used by the Nuclear Regulatory Commission.

The need for new thermal conductivity control boxes remains a primary item for consideration. Jamie Allan stated that TAMU is attempting to identify funds for this purpose.

There is a need for a new software package which will be useful to the "average user". Ron Chaney will help out with the software writing.

Reiner Villinger of Bremen communicated information on a "poor man's version" thermal conductivity apparatus. ODP has obtained this pamphlet for possible study.

Gashydrates:

Joris Gieskes has been contacted by the chair of SGPP with regards the use of the Pressure Core Barrel System (PCS) during the future hydrate leg.

The PCS should be ready for the gashydrate leg and SMP recommends that TAMU will be given the go-ahead with the upgrading of the present apparatus.

Recommendation 94-2:

SMP recommends to PCOM that ODP/TAMU be encouraged to use available funds for the further upgrading of the PCS system for future use on the gashydrate leg.

The real problem is still that no solid attempts have been made for the development of apparatus appropriate for the measurement of the physical characteristics of the gashydrates recovered under in situ P-T conditions (c.f.,

SMP Recommendation 93-14). A brief interaction between the chairs of SMP and SGPP established that it is the opinion of SGPP that many of the objectives for using the PCS (e.g., gas analyses) can be met with the present upgraded apparatus. Nonetheless the need for a further development of equipment by a third party geared towards the study of the physical characteristics of hydrates remains.

Imaging Resistivity Apparatus

The potential use of the electrical imaging apparatus was further discussed. In principle this equipment could be useful in core-log integration efforts, but the SMP agreed that, considering the costs of this equipment and the necessary technical support requirements, the apparatus should be considered as a "third party" tool. The potential lease of the equipment should be explored.

The need to formulate a Third Party Tool policy was considered. This will be a discussion topic during the next panel meeting.

IX. Role of SMP

In his report on the TAMU activities Jamie Allan emphasized that, especially with the lessening of available funds for equipment purchases, SMP could be most helpful in the following items:

1. Assistance in the identification and prioritization of key shipboard measurements;

2. Standardization of measurement techniques;

3. Development of effective and thorough laboratory manuals.

ODP/TAMU will co-ordinate a library of existing procedures and laboratory manuals (Ms. Linda Heatherton) and ODP has requested SMP for assistance in reviewing these materials and in assisting in the writing of the manuals. It was agreed that TAMU/ODP will compile a list of manuals ("library contents") and to distribute this list to the membership for action in their appropriate areas of expertise. Progress can then be discussed during the SMP Fall Meeting.

X. Software displays

A visit to the various offices in which software is being developed at TAMU was arranged:

PaleoList, i.e., paleontogy oriented software, is rapidly advancing. Interaction with SMP member Ellen Thomas is considered of prime importance for this software.

Rocky is developing rapidly and SMP urges interaction with panel members of the appropriate disciplines as well as with other members of the community.

Etch-a-Sketch will serve as a future replacement of presently available VCD software. This software is still in the early stages of development.

SMP will monitor closely this software development.

SMP recommends:

Recommendation 94-3:

SMP recommends that whenever new software is placed on the ship the principal programmer will go out to sea with this software, so that problems arising can be solved by direct interaction with the shipboard scientific party.

XI. Color measurements

The new member from Japan, Dr. Satoru Nakashima, introduced his expertise in color measurements and its applications. The use of color in the study of core mineralogy and sediment/rock alteration was emphasized.

The SMP reiterates the significant improvement in the recording of color data by means of the Color Scanner. SMP recommends:

Recommendation 94-4:

The SMP restates that the color scanner spectrophotometer is now the routine tool for the measurement of core color and that this manner of color measurement should completely replace visual comparison using Munsell color charts. In addition the color measurements should be made as soon as possible after splitting of the core so as to minimize deterioration of color.

XII. Multi Sensor Track (MST) discussion

Core-log integration has become an increasingly important topic for discussion and this project constitutes one of the major advances in shipboard science, useful to the entire shipboard scientific party. The MST data are of central importance for this purpose. This became evident from a memo received after completion of Leg 154 (Nick Shackleton, Terri Hagelberg, and Tim Herbert). Attention was given to the necessary improvements on the MST. At the same time the Panel was also informed on proposed upgrades of the MST by Peter Blum. His document was essentially similar to that of the Shipboard Leg 154 staff. This demonstrates community interest and a willingness of ODP to work on this. Peter Blum agreed to rewrite his draft note to incorporate some of the points raised by the Leg 154 party. This document will be made available to PCOM as soon as possible. However, SMP would like to go the record that the upgrade of the SMP is a very high priority item. Proper core-log integration is bound to be one of the success stories of the program.

Associated with the MST is the Natural Gamma Ray Sensor. This device was first used during Leg 149 and subsequently during Legs 150, 151, 152, and 154. The equipment has received uniform praise, but because it was put on board quickly the availability of a manual was uncertain during Leg 151. This situation has since been remedied and proper documentation is now available. This topic will be discussed in greater detail during the CLI-AN meetings in August 1994.

Further discussion followed on the use of the available channels on the Natural Gamma Ray Logger. Using and storing all 1000+ channels will cause problems with counting statistics. Originally the use of the same windows as are being used in the Schlumberger logger was advocated, but this item became debatable after the use of different windows during Leg 151. This again will be the topic for further debate during the CLI-AN meeting.

Staffing with a scientist dedicated to core-log integration during legs that are anticipated to make extensive use of this opportunity is considered of importance.

SMP recommends:

Recommendation 94-5:

The SMP suggests that, especially, on legs dedicated to core-log integration efforts (e.g., paleo-legs), that the shipboard party include a Core-Log Integration Specialist, who is well versed in the MST device.

XIII. Shipboard Operations

SMP has previously expressed its dismay with the gradual attrition in ODP Technical Staff on board JOIDES Resolution (e.g., minutes of the 10th meeting of SMP, September 1993). Meantime another cut of two persons per leg has been announced. This has caused great concern not only among ODP personnel, but also among the membership of SMP. The panel is concerned that this further curtailment in staff will seriously affect the shipboard scientific program. The personnel with experience in the use of special equipment (XRF, MST, Paleomag, Chemistry) may have to be used for other purposes. This may, in turn, lead to a deterioration in data quality and data generation. SMP has long worked on the outfitting of the JOIDES Resolution's laboratory with the best available equipment. For these reasons SMP expresses its concern about a potential ill-effect on the scientific output. This concern is expressed in the recommendation presented below. SMP urges PCOM to act on this matter - the success of the shipboard science program is the quid-pro-quo for attracting participation of the best available persons in the shipboard science program.

Recommendation 94-6:

SMP has previously expressed its dismay with cuts in technical staff (e.g., minutes of the 10th SMP meeting). In the meantime SMP has learned that further cuts in shipboard technical personnel are planned. SMP is strongly concerned that this further diminishment in staff will lead to problems with the maintenance and operation of valuable shipboard equipment. Any potential cuts in the important array of shipboard measurements will lead to a deterioration of the productivity as well as of the quality of shipboard science operations. SMP fears that as a result of this situation scientific objectives may be compromised. For these reasons SMP strongly recommends that PCOM consider this critical situation and urges PCOM/BCOM to seek alternate ways of funding in order to remedy this critical situation.

XIV. Job descriptions

SMP discussed the job descriptions for shipboard scientists. It was proposed that these descriptions first give a generalised statement of scientist responsibilities, followed by special descriptions for each job. The main concern will always be that these job descriptions are received by the participants of a cruise and are agreed upon between the scientist, the co-chief scientists, and the TAMU staff scientist. In this manner there will be a clear understanding among parties that responsibilies have indeed been agreed upon.

XV. Priorities

A discussion of equipment priorities was held under the awareness that funds for these purposes may be to some extent be limited. However, it was agreed that the update of the MST device, especially because of the importance of the MST with respect to the Core-Log integration program, is absolutely essential. The other equipment listed below is also considered of primary importance, but the first item is an absolute requirement for better shipboard science.

1. Update MST (~ $125,000)

2. Paleontology Microscope (~ $60,000)

3. Thermal conductivity boxes (~ $50,000)

New items:

4. Replacement of XRF fluxer

5. Replacement of spinner magnetometer

For software the SMP considers the further development of CLIP software as important, but this topic will be discussed in greater detail by the CLI-AN group. Of equal importance, however, are the developments on software presently underway at TAMU: FossiList, Rocky, Etch-a-Sketch. This software should be developed as soon as possible and double checked with appropriate members of the ODP science community. Therefore items 1 and 2 listed below should receive equal urgent attention.

1. Core-log integration

2. FossiList, Rocky, Etch-a-Sketch

3. Bar Code Reader for SAM

4. Discrete Physical Properties

5. Paleo Mag software

6. Data aquisition for Atomic Absorption Instrumentation

XVI. Membership

SMP discussed the need for a structural geologist on the Panel. SMP would like to request ODP France to consider the appointment of a panel member with this expertise as a potential future replacement of the Franch memeber of SMP, who will probably rotate off the panel in the near future.

XVII. Next Meeting

SMP plans it's next Fall meeting during the Canary Islands Portcall of JOIDES Resolution. This will allow the opportunity to visit the ship.

The meeting adjourned at 1 pm on March 30, 1994

Special thanks go to the TAMU/ODP personnel who made this visit fruitful. Special thanks go to Jamie Allan and Peter Blum, who were very helpful in their responses to questions. The new Chair of SMP underwent his baptism in a pleasant environment. Good co-operation between SMP and ODP-TAMU is essential for a good science program on JOIDES Resolution.

Attachment 1

Job description: ODP Shipboard Paleontologist

The primary responsibility of the shipboard paleontologist is to determine the age of drilled sediments as soon as possible after each core is recovered, so as to guide drilling strategy, compare actual with predicted drilling results, and give all shipboard scientists information on the age and sedimentation rates of recovered materials.

Paleontologists who sail on ODP cruises range in level of expertise from graduate students well advanced in their doctoral research to senior research scientists with many years of research and teaching experience. Each paleontologist must be able to commit a considerable amount of time to cruise-related research before and after the cruise, in addition to the daily twelve hours shift aboard ship.

Pre-Cruise Responsibilities:

* Two months before the cruise, complete and submit the sample request form, giving details about the nature of the studies that you wish to pursue post-cruise, and the number and type of samples needed to complete these studies.

* Review the "Introduction to the Ocean Drilling Program" technical note.

* Read the cruise prospectus, when necessary, to evaluate the expected age and environment of deposition of the sediments to be recovered. Select reprints of papers expected to be needed for species determination and zonation, and take these onboard ship. Consider needs of equipment and supplies for sample processing; check with ODP personnel whether such supplies are indeed available onboard.

Cruise responsibilities:

* Before arrival at the first site: develop a biostratigraphic framework for the cruise, in cooperation with the other paleontologists and paleomagnetists. The framework should be included in the Explanatory Notes chapter of the Initial Reports Volume of the Proceedings of the Ocean Drilling Program; it should include the definition of the biostratigraphic zones, a correlation between all zones and the geomagnetic polarity timescale (see example), and tables of estimated numerical ages of biostratigraphic datum levels. In this chapter should be included the approximate numeric ranges of relative abundance classes for all fossil groups (for example: R means rare, 1-10%; U means uncommon, 10-30%, etc.).

* At all sites: collect, analyze and compile high-quality data in a manner conformable with ODP standards and format. You are to collect and prepare for publication the following minimum information for each sample: sample preparation; abundance and preservation of the fossil group; abundance (relative or numerical) and preservation of important taxa, including biostratigraphic marker species; presence of reworked specimens; zonal assignment and geological age.

* The ages from core catcher samples should be obtained as soon as possible after recovery of each core, so that the age estimates can be used to guide drilling strategy. Additional samples may be studied if there is time; this is especially useful for definition of hiatuses, or precise definition of important zonal boundaries (e.g., K/T boundary), for which special rules govern sampling. The ages for core catcher samples should be put on the white board in the core entry lab as soon as they become available.

* Become familiar with the shipboard computer facilities and with the software that you will be using. Enter all information listed above in spreadsheet format (spreadsheet of your choice), for preparation of range charts (tabulations of occurrences of each species found in each sample examined from the site).

* At the completion of drilling at each site, write reports for inclusion in the "Biostratigraphy" section of the Hole Summaries, including a range chart. At each site, one paleontologist should take responsibility for combining the reports for the separate microfossil groups into one chapter, and preparing a "Biostratigraphic Summary Chart", in which zonal information for all groups is given versus depth and core-number and recovery (see example). This paleontologist should also cooperate with the paleomagnetist(s) to prepare the sedimentation rate figure for the site, using the age information on datum levels as given in the Explanatory Notes.

* Take part in the routine shipboard sampling program for your own and others' post-cruise studies, as outlined in the cruise sampling program.

* Assist co-chief scientists in preparing preliminary cruise-synthesis articles for submission to Nature, EOS, Geotimes and other journals.

* Pursue your own scientific interests, only if time permits: onboard ship, personal research activities should not come at the expense of the performance of shipboard duties necessary to achieve the scientific objectives of the leg.

* At the end of the cruise, complete the "cruise evaluation form", and return it to the ODP Science Operations Office via the Staff Scientist, or mail it later. Remarks on the functioning of shipboard laboratories and suggestions for improvement of facilties should also be sent to the chairman of the Shipboard Measurements Panel (SMP; see JOIDES Journal for recent name and address).

<u>Post-cruise Responsibilities:</u>

* Review and, where necessary, correct your reports for the Hole Summaries as written onboard ship, and send all corrections and modifications to the designated shipboard scientist before the first post-cruise meeting (usually 4-5 months post-cruise). If you are designated to attend the first post-cruise meeting, you should assemble all suggested corrections to the sections of the site reports for which you are responsible, and finalize these sections.

* Attend the scientific post-cruise meeting (usually 10-12 months post-cruise), where results of post-cruise scientific studies are presented and discussed, and the table of contents for the Scientific Results Volume of the Proceedings of the Ocean Drilling Program is formalized.

* Analyze your samples and data, and report scientific results in a paper submitted no later than 18 months post-cruise, for publication in the Scientific Results Volume of the Proceedings of the Ocean Drilling Program, as explained in the ODP Sample Distribution Policy. This will also result in inclusion of your data in the ODP database. Revise your submitted manuscript based on peer-review in a timely manner.

* Cooperate with the other paleontologists, the paleomagnetist(s), and where applicable, stable isotope scientists and sedimentologists to submit a "Biostratigraphic Synthesis" chapter to the Scientific Results volume of the ODP Proceedings, including revised biostratigraphic summary charts and sedimentation rate figures.

Attachment 2

PRIME DATA DEFINITIONS: PALEONTOLOGY

IHP/SMP Prime data definitions, first defined during joint panel meeting on 24 february 1993, College Station

Modified july 1993, IHP Meeting, Halifax

Sample ID Fields (Leg, Site, Hole, Core, Type, Section, top interval, bottom interval, marker)

Observer ID

Fossil group (alpha numeric, 15 positions)

Fossil group abundance

relative abundance, choice of:

1. abundant
2. common
3. uncommon
4. rare
5. trace
6. barren

Fossil group preservation, choice of:

1.very good
2. good
3. moderate
4. poor

Taxa Information:

genus (30 letters)
subgenus (30 letters)
open nomenclature (10 letters)
species (30 letters)
subspecies (30 letters)
original author (20 letters)
original year (4 letters)
author concept (text, about 200 words)
year concept (4 letters)

Taxa abundance

numeric (4 positions)
relative abundance, choice of:

1. abundant, >60%
2. common, 30-60%
3. uncommon, 10-30%
4. rare, 1-20%
5. trace, <1%
6. barren

presence/absence

Taxa preservation, choice of:

1. very good
2. good
3. moderate
4. poor

Zone (45 letters)

- abbreviated zone (8 letters)
- author (20 letters)
- year (4 letters)
- genus (30 letters)
- subgenus (30 letters)
- species (30 letters)
- subspecies (30 letters)
- author (20 letters)
- year (4 letters)
- author concept (text, about 200 words)

Subzone (45 letters)

- abbreviated zone (8 letters)
- author (20 letters)
- year (4 letters)
- genus (30 letters)
- subgenus (30 letters)
- species (30 letters)
- subspecies (30 letters)
- author (20 letters)
- year (4 letters)
- author concept (text, about 200 words)