

APPENDIX 98-2-1

ODP STATUS REPORT

June 10, 1998

EXECUTIVE SUMMARY

The last six months have been challenging for science operations at ODP/TAMU for a variety of reasons. Although both Leg 177 and 178 were a great success, the hostile weather conditions in the far reaches of the Southern Ocean resulted in a loss of drilling time due to high winds, rough seas, and/or proximal icebergs. In addition, the inclement sea states contributed to the partial loss of the Lower Guide Horn which resulted in the curtailment of the Leg 177 science plan, restricted operating parameters during Leg 178, and an extended port call prior to the beginning of Leg 179 to effect repairs. More recently, we experienced logistic problems associated with supporting operations in a distant ocean when two containers bound for Cape Town and Leg 179 were misdirected by our shipping company to La Spezia, Italy, prompting a major adjustment in the engineering and scientific activities scheduled for that leg. Moreover, continued high seas on Leg 179 compromised the hammer drill engineering experiment and reduced operational efficiencies during the drilling/casing of a hole at the NERO Ion site. Although the NERO operation was a success, the hole was not completed with sufficient time remaining to conduct a two ship seismic experiment that had been scheduled with the *Sonne*.

Other issues of interest that have been a focus of attention are referred to below and organized under the appropriate functional department.

Management: Although a draft of the contract extension for the operation of the *JOIDES Resolution* for the next five years was completed last November with Overseas Drilling Limited (ODL), the ODL Board of Directors chose to request small, but substantive, modifications to the draft at their meeting in March. A revised document is now waiting final approval.

Working with ODL, the workscope for the scheduled FY99 dry dock has been defined. NSF is contributing 6 million dollars (3 million in FY98 and 3 million in FY99) for ship repairs and refurbishments. In addition, approximately 300 thousand dollars will be spent by the Program for lab stack refurbishments.

Drilling Services: The hammer drill tests were badly compromised by excessive ship heaving which caused large fluctuations in loading at the drill bit/rock interface, and by the loss of equipment and time caused by the shipping problems experienced prior to Leg 179. Nevertheless, the hammer drill with a crown drilling bit did achieve impressive penetration rates (8 m in 1.6 hours), even when operated at less than optimal pressures. The hammer drill engineering results must be fully evaluated and digested before a plan for further testing and development can be defined, but the high penetration rates in gabbro suggest that the system is as capable in the marine realm as it has been shown to be in subaerial environments.

Information Services: ODP/TAMU has taken over the responsibility for all the JANUS source and object code. The product that Tracor delivered has proven to be robust and the transition of responsibility to ODP from Tracor has gone well. The JANUS application continues to have corrections made to small problems as they are encountered. Overall the system continues to function well and future enhancements will be made to improve the user interface. Although the funds to support a major project to migrate the historical ODP data are not available, reallocation of resources within IS permits the commitment of 1 FTE and a student worker to begin to migrate important data types with priorities established by SCIMP.

Publication Services: The transition from printed to electronic publication formats is well underway with products available for testing in CD-ROM and WWW formats. A beta group, consisting of members of the scientific community, has been established to provide feedback on design components. As the transition to

electronic publication continues, a trend is developing that, if extrapolated into the future, suggests the *Scientific Results* volume for a given leg will shrink by as much as 75%. If this extrapolation is substantiated over the next six months to a year, we recommend the elimination of the *Scientific Results* volume and the creation of a WWW-based journal for data reports, synthesis papers and technical notes. The great advantage of this product is that papers would be accepted for peer review at any time after the cruise ended and would be published on the WWW after final acceptance (instead of four years postcruise) and the distribution of leg-related postcruise science would be expedited and widely disseminated.

MANAGEMENT

Status of Contract Extension with ODL

In November 1998, negotiations were completed with Overseas Drilling Limited (ODL) relative to the contract extension through September 2003. A draft contract modification was provided to the ODL Board of Directors in March 1998 for review and approval. The ODL Board requested that modifications be considered and two additional changes were made.

ODL and TAMRF have started the contract modification on their respective paths of approval. JOI has concurred with the modification and forwarded it to NSF. ODL provided the modification to their parent organization, SEDCO/Forex, requesting Board approval. We anticipate receiving decisions from NSF and SEDCO/Forex before the end of June.

Dry Dock

Maintaining the *JOIDES Resolution's* current American Bureau of Shipping (ABS) classification dictates that the vessel should undergo a major dry dock and hull inspection every five years. The process of classification must be satisfactorily completed for safety, operational, and insurance purposes.

During the basic dry dock/classification process (planned for autumn 1999), essential repairs and upgrades will also be performed.

Ship Modifications

NSF is contributing 6 million dollars (3 million in FY98 and 3 million in FY99) for ship repairs and refurbishments. The costing of these tasks can only be estimated at this time because, until bids for major pieces of new equipment are received (i.e. ASK, DMS) or until a given project is started and the equipment in question opened up, the actual costs are impossible to predict. Therefore, the costs associated with these dry dock projects have been projected at the high end of the spectrum. If some major projects turn out to be less expensive than forecast (i.e. ASK, DMS), all of the projected workscope could be achieved. Alternatively, if projects are as expensive as forecast, then lower priority tasks will not be undertaken. In an effort to minimize the costs associated with dry dock activities, ODL will carry out as many workscope projects as possible utilizing the ship's crew prior to the dry dock.

Identified dry dock projects with cost estimates:

| | |
|---------------------------------------|-------------|
| New Automatic Station Keeping Station | \$1,560,000 |
|---------------------------------------|-------------|

| | | |
|---|-----------|-------------|
| New Data Management System | 998,000 | |
| Thrusters/Propulsion/Steering/Mooring | 569,000 | |
| Environmental Equipment/Installation | 50,000 | |
| Hull, Piping, and Shipboard Services | 1,054,000 | |
| Drilling and Electrical Equipment | 339,000 | |
| Classification | | |
| | 80,000 | |
| Lifesaving and Firefighting | | 110,000 |
| Electrical Switchgear/Motors/Generators | 154,000 | |
| Cranes | | 305,000 |
| Shipyards Services and Supervision | 540,000 | |
| Living Quarters | | |
| | 626,000 | |
| Radio Equipment | | |
| | 78,000 | |
| Lab Stack | | |
| | 21,000 | |
| Total | | \$6,484,000 |

Automatic Station Keeping - The ASK system is the brain of the dynamic positioning system. While the present system remains functional, it is obsolete by today's standards. In order to maximize our chances for reliable operations for another five years, it is important to replace the old unit with a new system that will be more reliable and will operate much more efficiently, saving fuel and reducing wear on equipment.

Data Management System - The DMS monitors and controls the distribution of power to the vital pieces of equipment on the vessel (i.e., propulsion equipment, thrusters, drilling equipment, etc.). The *JOIDES Resolution* is equipped with a DMS that is obsolete by today's standards and is neither effective, nor reliable. In order to ensure continued operation of the system and gain improved reliability for another five years, a new DMS will be required. A new DMS, used in conjunction with a new ASK system, will translate into much better reliability and in some situations improved fuel economy.

Thruster, Propulsion and Steering - In order to maintain the ability to dynamically position the vessel, the thrusters must be thoroughly inspected and serviced to ensure their continued service.

Environmental Equipment/Installation - These are costs associated with acquiring and installing environmentally compatible equipment required by regulations for vessels operating in environmentally sensitive areas (i.e. Antarctic). In this regard, a new garbage disposal system has been installed which exceeds environmental requirements for all marine operations.

Hull, Piping, and Shipboard Services - The hull of the *JOIDES Resolution* is still in good condition after 20 years of service and, if properly maintained, another 15 to 20 years' life expectancy is reasonable. It is inevitable, however, that some corrosion will occur on various sections of the hull, tanks, and pipework. It will be very important to thoroughly inspect, repair, and protect all sections of the ship exposed to the elements so that further corrosion does not reduce the life of the vessel.

Drilling and Electrical Equipment - The equipment directly associated with the drilling function will be inspected, serviced, and maintained as required to ensure that it will be functional for another five-year contract.

Cranes - The vessel has three cranes that will be 20 years old and require servicing, repair, and replacement of various components to ensure that they can continue to be operated safely.

Shipyard Services - These costs are associated with utilizing the services of the shipyard that are not directly associated with any one project but are associated with all of the work performed.

Living Quarters - Improvement to the living quarters will concentrate on noise reduction, room upgrades, improvements/replacement to the ventilation and air conditioning systems, and replacement of the fire detection system.

Science Modifications

ODP is responsible for all laboratory stack maintenance and modifications in its FY99 budget and has set aside \$309,042 for this purpose.

ODP's Marine Laboratory Technicians will be carrying out as many projects as possible during the dry dock and associated transits under the project management of a Laboratory Officer.

The following lab stack projects have been proposed by Science Services:

- Refurbish the sonar dome and replace the defective 12-kHz transducer.
- Maintenance of aft transducers.
- Lab stack foundation access to allow visual inspection and possible foundation bolt replacement to the lab stack. The access panels will also allow for future foundation strengthening.
- Installation of a riser hold lift to increase the speed, efficiency, and safety of loading and unloading core and other materials from the riser hold.
- Modification of the core laboratory to increase the speed and efficiency of core and to provide adequate ventilation allowing for the safe degassing of potentially hazardous cores in the core lab.
- Blasting and repainting the fantail winches.
- Fume hood replacement in the chemistry laboratory.
- New cabinets and countertops in the chemistry lab.
- Conversion of the second core reefer, currently used to store supplies including chemicals, batteries, and photographic supplies, back to a core-only storage area. Alternative storage for the chemicals can be arranged in the second look lab. The photoshop requires roughly 130 cubic feet of refrigerated storage, which can be supplied by the acquisition of two refrigeration cabinets, which could also be housed in the second look lab.
- Refurbish the Sea Horse hydraulic motors for the seismic streamers.
- Removal of the Doppler sonar.
- Addition of mezzanine decks in the riser hold.
- Reconfiguration of the riser hold mezzanine decks to increase and centralize storage areas on the *JOIDES Resolution*. All mezzanine decks would be directly accessible by the riser hold lift, thereby minimizing the manhandling of science supplies and cores by the Marine Laboratory Technicians.
- Strengthen lab stack roof to receive van for microbiological work.
- Strengthen drill collar pipe racks.
- Convert lab to entirely potable water.

It is currently estimated that the *JOIDES Resolution* will be in dry dock for 40 to 45 days. An additional seven days will be required for sea trials.

Operations Schedule

The table below outlines the operations schedule of the *JOIDES Resolution* through December 1999.

ODP Operations Schedule: April 1998 - December 1999

| Leg | Area | Ports | Cruise Dates | Co-Chief Scientists | Staff Scientist | Staffing | Territorial Permission |
|-----|-------------------------------------|----------------------|-----------------------------|--|------------------|------------------|------------------------|
| 179 | NERO/Hammer Drilling | Cape Town-Darwin | April-May 1998 | Dr. John F. Casey | Dr. Jay Miller | Completed | |
| 180 | Woodlark Basin | Darwin-Sydney | June-July 1998 | Dr. Philippe Huchon Dr. Brian Taylor | Dr. Adam Klaus | Completed | Papua New Guinea |
| 181 | SW Pacific Gateways | Sydney-Wellington | August-September 1998 | Dr. I.N. McCave Dr. Robert M. Carter | Dr. Carl Richter | Near Completion | New Zealand |
| 182 | Great Australian Bight | Wellington-Fremantle | October-November 1998 | Dr. Albert C. Hine Dr. David A. Feary | Dr. Mitch Malone | Near Completion | Australia |
| 183 | Kerguelen | Fremantle-Fremantle | December 1998-February 1999 | Dr. Millard F. Coffin Dr. Frederick A. Frey | Dr. Paul Wallace | Underway | Australia, France |
| 184 | East Asia Monsoon | Fremantle-Hong Kong | February-April 1999 | Dr. Warren Prell Dr. Pinxian Wang | Dr. Peter Blum | Underway | Multiple |
| 185 | Izu-Mariana | Hong Kong-Tokyo | April-June 1999 | Dr. John Ludden Dr. Terry Plank | Dr. Jay Miller | Underway | Japan |
| 186 | W. Pacific Seismic Net-Japan Trench | Tokyo-TBN | June-August 1999 | Dr. Kiyoshi Suyehiro TBN | Dr. Gary Acton | To be determined | Japan |
| | Dry dock | TBN | August-October 1999 | N/A | N/A | N/A | N/A |
| 187 | Australia-Antarctic Discordance | TBN-Fremantle | October-December 1999 | Dr. David Christie TBN | TBN | To be determined | |

SCIENCE SERVICES

Staffing Information

We are currently in the process of recruiting for another Staff Scientist to fill the vacancy created by Jamie Allan's move to NSF. Phil Rumford has moved into the position of Superintendent of the Gulf Coast Repository.

Shipboard Science Staffing for Legs 181-183 is essentially complete, with just one or two places remaining to be filled on Leg 183. Co-chief scientists for Legs 184 and 185 have been appointed. Staffing for Leg 184 is in progress, and is just commencing for Leg 185. Leg 184 will be the first leg with significant involvement of China, so staffing presents some new opportunities.

With the continued help of all partners, we have been able to maintain a reasonable overall balance of scientists from participating countries on ODP, although occasionally the balance varies on individual legs in response to applicants' needs and interests of a given participating country.

Shipboard Lab Status

Jay Miller and Bill Mills were both on Leg 179, which just ended, and will be able to give verbal reports on the status of the shipboard labs at the meeting. In particular, Jay has compiled some data on past and projected lab usage, and Bill will be able to report on the status of the split-core MTS system (also referred to as the Archive MST), which appears to be working well except for the core-imaging system.

Repositories

The Bremen Repository has recently been extremely busy due to unusually large sample requests from Leg 177.

Construction of additional repository space at ODP continues, with completion scheduled for January 1999. This will add a further 11,000 sq. ft of repository space to the ODP College Station facilities, enough for about 20 legs worth of cores.

DRILLING SERVICES

Operations

Leg 177 - Southern Ocean

Introduction

A transect of 38 holes at 7 sites were cored across the Antarctic Circumpolar Current. A total of 4046 m of core (81.1%) was recovered despite large swells (to 30 ft), high heave (to 12 ft), and rolls to 15 degrees. The butyrate core liners failed on 46.8% of the cores; therefore, liner samples were returned for evaluation. An engineering review and assessment of the APC tool with environment and sediment interaction is underway.

Core Liner Failures

Core Liners have experienced many types of failures in the past, but the failures of Leg 177 were varied and persistent, with the consequences of either disturbing and losing core material or impeding core removal on the rig floor, resulting in poor recovery. About 80% of liner failures were oval shaped 'windows' in the uppermost two meters of the liner that are caused by differential fluid pressure across the liner. These failures were similar to those experienced with the APC before the integrated upper and lower seals were incorporated.

Shattered liners were brittle in nature and presumed to have resulted from lower than usual temperature. However, physical property measurements of failed liners were found to be within specification. It is

suspected that liners were shattered from shock loading. Shock loading is an environmental condition that has led to core liner shattering in the past due to the sudden deceleration resulting from impact with drop stones.

Some wear was measured inside the Seal Bore Drill Collar but this condition did not retard core barrels from landing. Potential seal venting of pump fluid around core barrels should not have contributed to liner collapse.

Another possible explanation for the upper liner failures related to APC coring in higher latitudes is the action of the APC piston rapidly heaving up and down inside the liner after the tool has been fired. The APC utilizes a mechanism that was developed to lock the tool in the scoped-out position to facilitate the drill-over procedure that is sometimes necessary with APC coring. However, this device is time consuming to reset and has been found to be unnecessary for nominal heave conditions in warmer latitudes. It was not employed on Leg 177.

Guide Horn Failure

On 20 January while enroute to the last site and in rough seas, the aft lower-guide-horn pin broke and the bottom 16 ft of the port lower-guide-horn broke off and was trapped in the moonpool. Special operational limits of 4° pitch and roll were imposed for the partial guidehorn. Four holes were cored at the last site, but coring was halted on 23 January due to high seas (12-14 ft seas combined with 16-18 ft swells), which caused the special operating limits of 4° roll to be exceeded along with a forecast of deteriorating weather. An I-beam frame was secured in the moonpool to hold the broken LGH, but it started moving in the moonpool during transit and was dropped. The ship proceeded to Puntas Arenas early for the Leg 178 port call. Plans were made to shorten the starboard LGH to 16 ft (to match the port LGH) and conduct Leg 178 (Antarctic Peninsula) with revised special operational limits to protect the drill string.

The upper section of the Lower Guide Horn was repaired and replaced at the Cape Town port call, except for the bottom 4 feet that extends below the external support structure to the bottom of the ship. Legs 178 through 186 will sail without this bottom section. The necessity for eventual replacement of the bottom section will be evaluated and deferred to Dry Dock in August 1999.

Leg 178 - Antarctic Peninsula

Introduction

Leg 178 recovered 1.8 km of sediment and sedimentary rock from 9 sites drilled off the West Antarctic Peninsula. The drilling systems used throughout the leg—the advanced piston corer (APC), extended core barrel (XCB), and the rotary core barrel (RCB)—are those most commonly used by ODP, and each performed within normal operating parameters. For example, recovery of soft sediment with the APC system typically exceeded 90% and core quality was generally excellent. For slightly more indurated sediment, the XCB system typically gave recovery of 40% to 90% (averaging 76.8% for the leg) and the core typically consisted of pieces of sediment and sedimentary rock undisturbed by drilling (biscuits) surrounded by slurry. For the glacial deposits on the continental shelf, the RCB system gave recovery that averaged only 11.6%. The diamict (granule, gravel, and boulder clasts supported by a poorly indurated matrix of sand and mud) encountered on the shelf proved to be difficult to spud into and is one of the most difficult lithologies to recover as shown on prior legs (e.g., Leg 152 in the East Greenland Margin). As the matrix became more indurated, and the diamicts graded into diamictites, recovery and hole conditions improved. Even though Leg 178 was a fairly standard ODP leg from an operations view point, there were a few exceptions related mainly to drilling in high latitudes. An ice support vessel was contracted to aid in monitoring icebergs and weather conditions and to provide emergency assistance. An ice observer was also added to the SEDCO crew, which is now a standard requirement on high-latitude legs.

The occurrence of drop stones and diamicts made establishing holes difficult, slowed the rate of penetration (particularly when large felsic igneous rocks were encountered), reduced core recovery, and clogged the nozzles on the RCB bit. Icebergs, though only a minor distraction for the most part, did force the ship off site several times during coring operations. The swell on the continental shelf often exceeded 2 m resulting in 62 hours of standby time and additional delays related to tripping the pipe in and out of the hole. Although the pipe was stuck several times, no Bottom Hole Assemblages (BHAs) or pipe were lost while coring in the glacial deposits on the shelf. Liner failures were not a significant problem on Leg 178, perhaps because the Coring Technicians used the locking-latch mechanism with the APC.

Sea Swell and Ship Heave

Even when weather conditions were excellent on site, a swell from the northwest produced ship heave that often exceeded 2 m at the shelf sites. The 2-m limit is an ODP safety guideline for drilling in 300-650 m water depth, but also proved to be a limit in terms of core quality and risk to equipment. Several times the heave was large enough to place the drill string under compression and displace the pipe several inches upward at the drill floor elevators while connecting pipe joints. The swell, while frustrating, was not unexpected. Operations during Leg 113 and GEOSAT wave height measurements suggested that swells of 3-4 m could be expected roughly 30% of the time.

Lower Guide Horn

The lower section of the guidehorn was damaged during Leg 177, which resulted in a new set of operating constraints for Leg 178. Fortunately, weather conditions were very good during Leg 178 and we never exceeded the pitch and roll limitations while coring. Thus, the loss of the lower guidehorn did not impact our leg.

Coring Operations

Nozzles on the XCB bit became clogged with clay and small dropstones during coring in Hole 1096B, which reduced recovery and eventually forced us to clean the bit and proceed to a new hole. Similarly, the RCB bit became clogged in Hole 1097A. In this case, a "swab cup" was used to drain water from the top 300 m of the pipe, which reduced the pressure at the bit and forced fluid back up the bit nozzles, clearing the blockage.

Dropstones and rocks within the diamicts reduced core recovery by blocking the entry of softer sediment at the core catchers and at the throat of the bit.

Leg 179 - Hammer Drill System Test and NERO ION Site

Two of the three containers shipped to Cape Town for this heavy equipment leg were diverted by the shipping line, and when this error was discovered these containers could not meet the ship in Cape Town. The errant cargo was located in La Spezia, Italy, off-loaded, air freighted to Reunion Island and shipped by boat to the *JOIDES Resolution* on station on the Southwest Indian Ridge. Due to heavy weather, only a partial transfer was made and the remainder returned to Reunion for forwarding to the Leg 180 Port Call in Darwin.

Results of the hammer drill tests are described below under "Hard Rock Reentry System". In addition to hammer drill tests, Leg 179, drilling in the same area on the Southwest Indian Ridge as Site 735, recovered a nearly complete (118 m) section of gabbros, olivine gabbros and abundant oxide gabbros out of the 143 m section cored at Site 1105A. This raises the possibility of both reconstructing a detailed oceanic cumulate section and making detailed correlations with Hole 735B 1.3 km away. We also obtained the first high quality FMS logging data in a gabbroic borehole that appears to show significant structure and layering. Drilling and casing at the NERO site for

future emplacement of a seismic station was accomplished successfully, despite inclement weather and sea conditions.

Jay Miller will be able to give a verbal report on activities on Leg 179 at the meeting.

Technology Development

Hard Rock Reentry System (HRRS)

Sea trials of a percussion hammer, various types of bits, a casing suspension system, and a casing shoe were to be conducted on Leg 179 on the Southwest Indian Ridge near Site 735B. Due to the missing freight, the hammer tests were phased to allow the freight with extra hammer bits to arrive at the ship. An offset hole was cored at 735B while waiting for the equipment to arrive at the ship. The hammer performed well, but the heave effects of the ship on the hammer will require the valve body to be redesigned to eliminate a failure mode in the hammer due to probable pressure transients created by the heave. The bits used during this initial test were a retractable bit design that allows a large diameter hole to be drilled when casing is used. The retractable bits are a relatively new design that had been tested on a fixed platform in igneous rock, but performed poorly in the heavy seas at 735B and their failure mode needs to be assessed. After successfully transferring three additional bits, the hammer and a proven crown drilling bit achieved 8 m of penetration in 1.6 hrs even though the hammer was being operated at 1600 vs 2200 psi, due to excessive heave. While correcting a standpipe leak, with the hammer and bit pulled off bottom, a crossover sub below the drill collars failed, and the hammer and bit were lost in the hole on the last test. The premature failure of the retractable bits, the failure of a valve within the hammer, and the failure of a crossover sub can all be attributed to the severe heave conditions experienced by the *JOIDES Resolution* during the hammer tests, with the hammer rising off bottom and then banging into the bottom on a regular basis. The results from Leg 179 will be interpreted to evaluate the system for service readiness in preparation for additional operational tests in FY99.

Active Heave Compensation (AHC)

As reported to EXCOM in January 1998, RETSCO was identified as the preferred bidder to upgrade the passive heave compensation system on board the *JOIDES Resolution* to an active heave system based on bid documents submitted in the Fall of 1997. In January of this year, questions about the technical robustness of their plan to activate the *JOIDES Resolution*'s passive heave compensation system, as well as a question about the propriety of the software that drives the RETSCO active heave system, resulted in a request to RETSCO to respond to technical and software patent questions. RETSCO failed to respond to this request in a timely fashion and the AHC will be rebid. The target for system installation will be at the FY99 August drydock.

INFORMATION SERVICES

Recruiting is presently underway for a new Manager of Information Services, to fill the vacancy created by Russ Merrill's departure.

Status of JANUS operations and operational challenges and solutions

The JANUS system continues to work well and the operational aspects are becoming smoother with each leg as the shipboard MCSs gain experience. Early in FY98 the shore based test bed was established. This capability permits each new JANUS build, as well as beginning of leg/end of leg installations, to be rehearsed on shore before port call. As a result, the processing has been going well at the beginning of each leg and fewer problems are being encountered with the various scripts which are being used.

The last remaining major JANUS application is the Visual Core Description (VCD) module and it is scheduled for completion in FY98. This module consists of a modified AppleCORE software package that will assist petrologists and structural geologists to describe freshly opened cores. In addition, the completion of the Image Capture System by the end of FY98 will provide digital core images that can be imported for display in AppleCORE. (Bill Mills will be able to give a status report on the Image Capture System which was first tested in the Core Lab on Leg 179.)

Additional operational improvements include upgrading satellite communication speeds between the ship and shore with the installation of the Inmarsat "B" equipment in December, and two new servers to improve on board system reliability, performance and memory capacity. The first server installation was at the Leg 179 port call and the second at the Leg 180 port call.

Information Services of ODP/TAMU has taken over the responsibility for all of the JANUS source and object code. This transition of responsibility to ODP from Tracor has gone well. Procedures have been established for the delivery of each JANUS build to the ship at the beginning of each leg. Prior to being sent to the ship, each build is tested by personnel on shore.

The JANUS application itself continues to have corrections made to small problems as they are encountered. Overall the system continues to function well and future enhancements will be made to improve the user interface. One of the major activities being undertaken at this time is to migrate all of the JANUS reports to the web environment as part of the total JANUSWeb application. While many of the science reports have already been migrated, the efforts will now focus on the Operations and Curation reports. Additional queries and enhancements continue to be made to the JANUSWeb application based on user feedback from the ship as well as improvements to the user interface.

The problems created by the Paleo application, which have made some shipboard scientists reluctant to use it, have been mitigated by bringing one of the paleontologists from each upcoming leg to ODP for several days prior to sailing in order to become thoroughly familiar with the application. This is a temporary measure, pending further consideration of ways to improve the user interface.

Additional JANUS applications have been added by the IS/Applications Development group. The most recent applications to be completed are the Adara tool data load and edit, and the sedimentary smear slides application. While there is more testing to be done on these applications prior to deployment for production usage, it is anticipated that these will be put into production use on Leg 181. In the near future the capability for thin sections will be added to this application along with the ability to export and import comma delimited ASCII files.

Data Migration Plan

With the successful completion of the JANUS project in FY98 we now have an up-to-date data model and application to capture most of the ODP prime data that is collected on the ship into the JANUS database. In the

third quarter of FY98 we plan to utilize in-house resources (1 FTE and a graduate assistant) to begin the migration of the legacy data of the program. Our current data migration priorities are: GRAPE, P-wave, magnetic susceptibility, natural gamma, moisture and density, color reflectance and paleomagnetic data. In addition, the paleontology range charts from the Scientific Results volumes starting with Leg 149 will be entered directly into the JANUS database. The paleodata entry for previous legs (Legs 101-148) are available in Excel spreadsheets.

PUBLICATION SERVICES

Volume Production

From January to May 1998 the following *ODP Proceedings* volumes were printed and distributed:

Initial Reports

Book and CD-ROM (PDF version): 169S, 169, 171A, 171B

WWW (PDF version): 167, 168, 169, 169S, 170

Scientific Results

Book and CD-ROM (PDF version): 152, 158

WWW (PDF version): 155, 158

From June to December 1998 the following *ODP Proceedings* volumes are expected to be printed and distributed:

Initial Reports

Book and CD-ROM (PDF version): 172, 173, 174A, 174AX, 174B

WWW (PDF version): 171A, 171B, 172, 173

Scientific Results

Book and CD-ROM (PDF version): 157, 159, 159T, 160

WWW (PDF version): 156, 150X, 157, 159T, 159, 160

Transition to Electronic Publications

Efforts are underway to notify ODP's long-term users (librarians and researchers) about the move from printed to electronic publication formats. All volumes printed and distributed this year contain a letter announcing the change and include the ODP WWW URL and the ISSN numbers for the CD-ROM and WWW formats of the volume. Information about the change and where to find the volumes has also been distributed to list servers and other information sources including the Joint Geophysical Association, University Science and Technology Librarians, Serial Librarians, Reference Librarians, International Council for Scientific and Technical Information, and New Journal and Newsletter Announcement List for New Serials on the Internet. The U.S. Depository Library Program has announced that they will add a link from their resource site called "Browse Electronic Titles" to our on-line publications. We have also been contacted by a number of libraries that want to ensure that they will continue to receive the *Proceedings* volumes after the format changes. The Project Manager for the Electronic Publication SOE has been invited to give a talk at the GSA fall meeting at the Database Forum of the Geoscience Information Society. This meeting will be an opportunity to present and discuss our new format and plans for publication. We will also highlight ODP electronic publications at the ODP booth at AGU.

PDF versions of five *Initial Reports* and two *Scientific Results* volumes were published on the WWW between January and May 1998 (<<http://www-odp.tamu.edu/publications/>>). A list of volumes now available on the WWW (replicas of the printed volume in PDF format) can be seen above. In addition, color core images from the volumes have been linked to the JANUS WWW site via the JANUS Power Query page (<<http://www-odp.tamu.edu/database/>>). Evaluation of software to analyze web-site usage is almost complete. Preliminary findings indicate that the ODP community is already accessing the volumes posted on the WWW in PDF format. The following table shows the number of hits to specific ODP site URLs relating to Publication Services (note this table only gives figures for sites that ranked in the top 100 of all sites accessed on the ODP site in a given month). Hits made from inside ODP to the web site have been deleted from the count.

| | January 1998 | February 1998 | March 1998 | April 1998 | May 1998* |
|------------------------|--------------|---------------|------------|------------|-----------|
| ODP main page | 3,130 | 4,280 | 4,010 | 3,981 | 3,694 |
| Publications main page | 533 | 717 | 705 | 957 | 704 |
| 154 SR first page | 180 | 231 | 217 | 233 | 112 |
| 166 IR first page | 111 | 144 | * | 111 | * |

*No data because this site did not rank in the top 100 sites with the highest hits on the ODP web site for the month of March.

The design phase of the *Initial Reports* booklet and CD-ROM product is underway, while work continues on the transition volumes (volumes which are being published in print, CD-ROM, and on the WWW). The Publication Services staff is continuing work on the development of the ODP web site and *Proceedings* volume interface. The new interface will contain a directory of all leg-related publication products, including a list of all papers published in the outside literature.

During the first five months of 1998, the Publication Services Department worked on the prototype design for the new *Initial Reports* (IR) volume format. A design has been developed for the listing of volume contents, and formats created for chapters and prime data material. As directed by JOI, all material will be prepared in the PDF format. The page layout has been designed for easy on-screen reading, but also fits onto the printed page. This was done because research shows that when on-line documents are longer than 2 pages the majority of adult readers print documents and read them in the hard-copy format. The first two volumes that will be produced in this format are 176 and 177. The postcruise meetings for these two legs are scheduled for June 15-19 and May 25-29, respectively. During these two meetings, the scientific participants will meet with Publication Services staff to provide feedback on the basic design.

A beta group, consisting of members of the scientific community, is being established to provide feedback on design components. The WWW site for the beta group is located at:

< <http://www-odp.tamu.edu/publications/Isis> >.

If you are interested in being on the beta group list server, contact Jennifer Rumford, Project Manager. You can view the prototype IR volume design at:

< <http://www-odp.tamu.edu/publications/Isis/BOOK.PDF>>

After Legs 176, 177, and 178 were completed, two modifications were made to the format of the booklet that will accompany the IR CD-ROM. Neither affects the booklet content. First, because of the similarities between the science section of the Preliminary Report and the Leg Summary chapter of the IR volume, it was decided

that it would be more efficient to create a single document that answered both needs. After each cruise the first draft of this report will be published, about one month postcruise, as the science section of the Preliminary Report. The report will then be reviewed at the first postcruise meeting (3-5 months postcruise) and published as the Leg Summary chapter in the *Initial Reports* (IR) volume. In order to streamline the production process of this information, Publication Services now coordinates the production of the Preliminary Report with assistance from the Leg Project Manager.

Originally, the IR booklet was to contain two chapters that summarized the leg science—a Leg Summary chapter that outlined the cruise objectives and a Site Abstract chapter that described the principal results from the leg. After testing out this model during Legs 176–178, it was determined that, from a scientific viewpoint, it was better to incorporate the information in these two chapters into a single chapter.

In summary, the IR booklet will contain a CD-ROM user guide and one science chapter called the Leg Summary chapter. The Leg Summary chapter will be written in the format of a scientific paper. The IR CD-ROM will contain all the information printed in the booklet plus the other “standard” sections of the *Initial Reports* volume (explanatory notes, site chapters, and prime data).

Print on demand is being researched. It should be noted, however, that if print on demand is offered to the scientific community the publication product will not be the same as the current archive-quality, case-bound books. The product will be a 600-dpi laser print product. Halftones (photographs) will not hold the crispness and detail that are seen in the professionally printed books, and the material will be softbound (glued spines) or presented in binders.

Distribution of ODP Proceedings Volumes

The Publication Services Department continued its drive to increase volume distribution. Eight institutions received full sets of *ODP Proceedings* volumes for the cost of shipping and were added to the gratis distribution list. As long as supplies last, we will continue this offer to any institution or lab that does not have easy access to the ODP and DSDP volumes. A letter of request should be submitted to Ann Klaus, Publication Services Manager.

Combined Publication and Curation Policy

In February, under recommendation from JOI, the Manager of Publication Services and the ODP Curator reworked the Publication and Curation policies into one document. The rationale behind the work was to provide the user community with one policy that outlined all the rules relating to sample receipt. A draft of the policy was reviewed at the February SciMP meeting and endorsed. The Manager of Publication Services and the ODP Curator are revising the policy based on comments from SciMP, and will present the revision to SciMP at the June 1998 meeting.

Future of the Scientific Results Volume Publication

Between FY95 and FY97, in an effort to reduce the Publication Services budget by 30%–50%, two major changes were made to the Publication Policy that would lead to a reduction in the department’s annual operational budget of approximately \$400,000 between FY97 and FY02.

The two policy changes were:

1. Beginning with Leg 160, allow scientists the option of publishing postcruise results in either the *Scientific Results* volume, or in any peer-reviewed scientific journal that publishes in English.
2. Beginning with the Leg 176 *Initial Reports* volume and the Leg 169 *Scientific Results* volume, only publish *Proceedings of the Ocean Drilling Program* volumes in electronic formats (CD-ROM and World Wide Web).

The first policy change has been well received by the ODP scientific community because they are thrilled to have the freedom to publish in the outside literature. The downside of the change is that there will no longer be a leg-related collection of scientific papers available to future researchers (or a printed legacy to the Program). The second policy change has received negative reviews. Many scientists with an interest in publishing in the *Scientific Results* volume, whose careers are judged on the basis of their publications, have decided not to take the risk of publishing in an all-electronic publication. Though this medium is gaining rapid popularity in many scientific arenas, most ODP scientists are unwilling to put their careers on the line to be the first ones to publish electronically. Thus, the unpopularity of the all-electronic format and the new opportunity to publish postcruise research in geoscience journals have led to a significant decline in contributions to the *Scientific Results* volume. There does seem to be an interest in publishing Data Reports (especially those with high volumes of data) in the electronic format.

At the end of every leg, a preliminary publication list is generated with proposed titles and publication venues. At the postcruise meeting (held 12–24 months after each leg), the leg participants review their postcruise research results and refine their plans for publishing their results. By 33.5 months postcruise, ODP has a final listing of all publications that have been submitted to the *Scientific Results* volume and the outside literature.

Currently, we have preliminary publication lists for Legs 167 and 171B–177, refined publication lists for Legs 164–166 and 168–171A, and final publication lists for Legs 101–163. Table 1 summarizes the data.

Table 1. Number of proposed titles and published papers in the *Scientific Results* volume.

| Legs | <i>Scientific Results</i> format (policy) | Average number titles per leg proposed for SR* | Average number papers published in SR |
|-----------------|--|---|--|
| 101-159 | Book (contains all postcruise science results). | 55 | 41 |
| 160-169S | Book (postcruise science results may be submitted to the printed SR or a geoscience journal). | 29 | NA** |
| 169-177 | CD-ROM/WWW (postcruise science results may be submitted to the electronic SR or a geoscience journal). | 10 | NA** |

*Leg is defined as a 2-month period. Figures for split legs (e.g. 171A and B) are combined.

**Volumes contents not finalized.

These data show that because of these two policy changes, the average number of contributions to the *Scientific Results* volumes will drop by as much as 75%; 50% with the advent of publication in outside literature, and a further 25% when book production ends (Table 1).

ODP is responsible for tracking citation information for all leg-related papers that are published in the outside literature (Table 2). We expect to continue to see contributions to the outside literature increase after FY99.

Citations for these publications will be recorded on the leg-related citation list on the Publication Services WWW site.

Table 2. Number of proposed titles slated for publication in outside journals.

| | FY95 | FY96 | FY97 | FY98 | FY99 |
|-----------------------|------|------|------|------|------|
| Number of manuscripts | NA | NA | NA | 28 | 240 |

NA = not applicable (before policy changed).

Historically, two Productions Coordinator have each handled work associated with an average of 115 manuscripts per year. In FY99 we expect to receive approximately 103 manuscripts (Table 3), and in FY00 even less.

Table 3. Number of *Scientific Results* manuscripts processed per year.

| | FY95 | FY96 | FY97 | FY98 | FY99 |
|-----------------------|------|------|------|------|------|
| Number of manuscripts | 235 | 226 | 169 | 114* | 100* |

*Proposed manuscripts.

Based on these data, ODP/TAMU will reduce staffing because of the decrease in contributions to the *Scientific Results* volume. In FY99 payroll savings will equal \$26,827.

The expected decline in contributions to the *Scientific Results* volume appears to be so severe that ODP/TAMU recently met to discuss the value of continuing to produce this publication. After analyzing the data, ODP/TAMU formulated a recommendation to eliminate the *Scientific Results* volume and to create a WWW-based journal for data reports, synthesis papers, and technical notes. Papers would be accepted for peer review at any time after a cruise ended and would be published on the WWW after final acceptance (instead of at 4-years postcruise). This system would expedite the distribution of leg-related postcruise science information into the community and increase Program visibility. A reprint collection would be published on CD-ROM annually and distributed to libraries. There is concern in the community that a significant number of authors who intend to submit their postcruise science results to the outside literature will not do so. By establishing an open-ended submission policy, ODP/TAMU hopes to capture papers that would otherwise potentially be lost forever. The ODP/TAMU staff is preparing a proposal to outline this recommended plan. It will be presented at EXCOM and SciMP in June 1998.

ODP/TAMU WWW Site Update

In addition to the regular development and maintenance tasks, the following projects have been addressed since January 1998. The Micropaleontology Reference Center pages (under Curation) have been revised. The lab pages (under Science Services) have been updated. Interfacing between the lab pages and other ship information (under Public Information) has been improved. The FY99 Science Program Summary has been published. Photos and commentary from Legs 176 and 178 were published during the cruises. Core images were linked from the ODP volumes to the JANUS WWW page and can now be accessed through the JANUS Power Query. WWW pages are been created for SCIMP panel subgroups.

APPENDIX 98-2-2

LDEO/BRG STATUS REPORT

I. Summary

Cruise Highlights:

Leg 176 - SW Indian Ridge: The upper 595 m of Hole 735 were logged during Leg 176 (above lost drill string), extending the Leg 118 log dataset 95 m deeper and adding FMS images. Digital scanning of the whole round cores using the DMT (German) scanning system was successfully completed during the leg. The FMS and scan images enable orientation of structural features observed in the core. The scan images have been translated to JPEG format and distributed to the Leg 176 participants on two CD-ROMs.

Leg 177 - Benguela current: Standard logging operations were completed at Hole 1093D. The natural gamma log shows cyclicity and initial comparisons with MST data show promise to resolve orbital to suborbital variability in these diatom-rich sediments. Magnetic susceptibility data is also promising as a core/log integration tool throughout the hole.

Leg 178 - Antarctic Peninsula: Standard and magnetic field logs were acquired at three sites on the Pacific Margin of Antarctica. A preliminary polarity stratigraphy was derived onboard the *JOIDES Resolution* from the total magnetic field log which filled gaps in, and extended paleomagnetic results from core. This was especially useful for age determination in the lower intervals where biscuit cores were recovered.

Leg 179 - NERO/Hammer Drilling: Seismic-While-Drilling pilot sensor experiment was conducted both at Site 735 and at NERO. Preliminary data analysis shows considerable success in recording the drill pipe acceleration signal under various drilling conditions. Post-cruise analysis of the data will be done to correlate with seafloor OBS data.

Engineering and Software Developments:

The NSF-funded Seismic-While Drilling (SWD) pilot system which measures drill bit vibrations was completed on schedule and deployed on Leg 179. The SWD system and other downhole tools will be used to measure accelerations of the drill string. Plans for evaluation of heave compensation effectiveness and for future technology innovations have been coordinated with TAMU engineering and are scheduled for initial testing in late FY98.

The Inmarsat-B system that has been on loan to ODP/LDEO from the SEANET consortium since October 1996 was removed from the *JOIDES Resolution*. The unit was replaced with equipment purchased jointly and used by both TAMU and LDEO to transmit email and log data files.

A wireline cross-over device that facilitates fast and secure connection of a third-party logging tools to the Schlumberger cable head was manufactured for use on Leg 179.

CLIP development efforts during this period focused the core-log depth integration software module -- Sagan -- which can manage up to 10 holes of core data, 5 data types, and a (practically) infinite number of cores and data points.

As of the end of May, all conventional ODP log data has been migrated to the on-line log data base.

ODP Logging Services drydock plans include general maintenance and enhancements of shipboard facilities and equipment, an upgrade of existing space in the Downhole Measurements Lab, and the replacement of the Schlumberger Maxis unit with a state-of-the-art, modular, PC-based data acquisition unit.

II. STANDARD LOGGING OPERATIONS

The FY 98 standard list of tools will be maintained in FY 99, with the Dipole Sonic Imager (DSI) replacing the lost sonic tool (Leg 175).

Leg 176 - Return to Hole 735B

The *JOIDES Resolution* arrived in Cape Town on December 10, 1997 after successfully logging the upper 595 m of Hole 735B in the open hole section above the lost drill string. These data extend the Leg 118 log dataset 95 m deeper and add FMS images and better porosity, sonic, and gamma ray data quality. The Hole 735B FMS data quality was excellent after preliminary post-cruise data processing, although initial assessment of the FMS data was difficult due to the extreme resistivity contrasts between the Fe-Ti oxide gabbros (10 Ω m) and the olivine gabbros (10,000 Ω m) which exceeded the Maxis display range. Quality control in similar high-resistivity environments may be improved in the future by filled the hole with fresh water fluids.

| | Hole 735B | |
|------------------------------|------------------|------------|
| | First Run | Second Run |
| Triple Combo w/DLL (mbsf) | 120-501 | 79-595 |
| FMS/DSI (mbsf) | 293-502 | 49-595 |
| DLL/GPIT (mbsf) | - | 49-595 |
| VSP (mbsf) | - | 94-587 |

Digital scanning of the whole round cores using the DMT (German) scanning system was successfully completed during the leg. The FMS and scan images enable orientation of structural features observed in the core. The scan images have been translated to JPEG format and distributed to the Leg 176 participants on two CD-ROMs.

Leg 177 - Southern Ocean Paleoceanography

Site 1093 is located north of Shona Ridge near the present-day position of the Polar Front, north of the average winter sea ice edge. The region is marked by thick, moderately laminated pelagic sediments that were deposited at very high sedimentation rates within the circum-Antarctic biogenic silica belt. The purpose of Site 1094 was to obtain a high-resolution record of biosiliceous sediments south of the present-day position of the Polar Front. Together with Sites 1089, 1091, and 1093, Site 1094 represents the southernmost site across the ACC needed to reconstruct past changes in frontal boundaries and sea ice distribution during glacial-interglacial cycles of the Pleistocene. Logging operations were completed at Site 1093, Hole D.

Hole 1093D

| Tool String | Logged Interval (mbsf) |
|-------------|------------------------|
|-------------|------------------------|

| | |
|--------------|--------|
| Triple Combo | 67-583 |
| GHMT | 67-568 |

Despite the large hole, the natural gamma log shows clear cyclicity and initial comparisons with MST data show promise for core-log integrations. The sediments at Site 1093 are composed predominantly of diatoms with sedimentation rates of 25-50 cm/kyr range. Thus, gamma ray counts are fairly low due to clay dilution by biosilicious material and it was difficult to estimate the mudline through the pipe. However, the high sedimentation rates will allow the logs to resolve orbital to suborbital variability. Magnetic susceptibility data looks promising as a possible core/log integration tool despite its low signal. Porosity was very high, and resistivity was very low throughout the hole.

Leg 178 - Antarctic Peninsula

Standard and magnetic field logs were acquired at three sites on the Pacific Margin of Antarctica. Three sites were logged out of a planned seven. The number and depth of planned sites/holes was compromised by difficulties in coring stable holes in diamictite shelf sediment.

| | Tool String | Logged Interval (mbsf) |
|-------------------|--------------------|-------------------------------|
| Hole 1095B | Triple Combo | 570-0 |
| | GHMT | 570-0 |
| | WST | 12 stations |
| Hole 1096C | IPLT | 556-0 |
| | GHMT | 556-0 |
| Hole 1103A | Triple Combo | 242-92 |
| | GHMT | 242-92 |
| | FMS-Sonic | 242-92 |

Sites 1095 and 1096 lie on a sediment drift on the continental rise, and are aimed at sampling sediments that originated at the glaciated Antarctic Peninsula margin and contain a record of ice sheet advance and retreat. Site 1095 lies on the lower, distal flank of the drift, and Site 1096 on its crest. Site 1095 was chosen to sample the older part of the drift sedimentary succession, more accessible beneath a much thinner younger sequence than the more proximal, hemipelagic sediment drift at Site 1096.

The 570 m deep Hole 1095B was logged with the Triple Combo and GHMT toolstrings, and we carried out a WST check-shot survey with 12 stations. The natural gamma and magnetic susceptibility logs both yielded information about the sediment's silt content. A preliminary polarity stratigraphy was derived onboard the *JOIDES Resolution* from the total magnetic field log which filled in gaps, and extended paleomagnetic results from core. The check-shots were processed on the CSU by Schlumberger and reflectors were identified within and below the cored interval.

After Hole 1096C had been cored to 607 mbsf, it was logged under unstable hole conditions. The logs were used to characterize the intervals of unrecovered core, and to complement the core data, especially in the lower part, where the logs were cyclic and characterful, but the lithology of the biscuity XCB core itself showed only subtle variation. From comparison with smear-slide data, K feldspars and micas contribute significantly to the natural gamma log, which therefore cannot be interpreted in terms of clays alone.

Hole 1103A was logged with the Triple Combination, GHMT, and FMS-Sonic tool strings over a 150 m interval where there was no core recovery (apart from a few pebbles). Porosity varied between 30 and 50% (lower than at the rise sites), showing a change to higher porosity only at the base of the log below 225 mbsf, below which the sediment changes to the lithified diamictite seen in the core. Resistivity, sonic velocity and susceptibility show broad peaks and troughs, and individual clasts can be seen in FMS images. Distinct zones of spikes in the GHMT magnetic field log probably indicate clast-rich intervals.

Leg 179 - NERO/Hammer Drilling

Leg 179 revisited the SWIR Site 735 to conduct experiments with the Hammer-In drill casing and other operations as time permitted. With several additional days on site, Hole 1105A was able to be drilled and logged. After reaching a depth of 158 meters below seafloor at Hole 1105A, four toolstrings were deployed. Prior to logging, the hole was filled with fresh-water gel mud to decrease the resistivity contrast between the borehole fluid and the formation. The four deployed toolstrings included, the Digital Sonic Array Tool (SDT) and Dual Induction tool (DIT), the Formation Micro Scanner (FMS), the Accelerator Porosity Sonde (APS) and Hostile Lithodensity Sonde (HLDS), and the Borehole Compensated Sonic (BHC). During the first run, the SDT produced noisy data likely resulting from the excessive energy generated as the tool slid on the hard formation. The FMS acquired exceptionally high quality data. FMS images of Hole 1105A show layers of resistive rock with 1 to 6 m thick conductive material occurring at irregular intervals. Furthermore, resistive zones are intersected by a number of thin conductive features whose dip and approximated azimuth can be determined. The conductive areas correlate quite well with the oxide and olivine oxide gabbro lithologic units defined in the core description. Conversely, the resistive intervals correspond to gabbro and olivine-bearing gabbro.

Porosity and density log data are quite valuable at this site due to the less frequent physical property sampling and poor recovery in increased porosity zones. Log and core porosity and density match quite well except in a couple isolated intervals. Additionally, the photoelectric effect and sigma formation measurements respond predictably in intervals where oxide gabbros exist. The BHC was run as a result of the poor SDT acquired. The delta-T data delivered by the BHC was free of cycle skipping and generally appeared to be of good quality. Temperature measurements obtained with the Lamont-Temperature Tool (TLT) indicate an increasing hydrothermal gradient of 1°C/100 m. Perturbations in the hydrothermal gradient, seen as rapid increases in borehole fluid temperature are clearly observed. These easily distinguishable perturbations likely occur as a result of pumping the homogenous fresh water gel mud into the borehole and the subsequent borehole equilibration. As the borehole equilibrated to hydrostatic pressure and normalized temperature, water flowing from zones of secondary porosity may have altered the temperature of the borehole fluid. The most notable example occurs at 102-104 mbsf which represents a 0.6°C increase in borehole fluid temperature. Other in-situ measurements at this interval confirm the existence of an enlarged borehole, increased porosity, lower velocity zone and the FMS log indicates features that may be interpreted as fractures. Furthermore, core recovery in this interval was low, only pebble or gravel-sized material was recovered. Drilling notes indicate that rate of penetration increased and Seismic-While-Drilling signal dropped sharply as well. A similar response by all indicators may be seen at 96 m.

Leg 179 also occupied the NERO site to drill and establish a long term borehole observatory. Time constraints precluded logging or other downhole experiments before leaving the site for Darwin. However, Seismic-While-Drilling pilot sensor experiment was conducted both at Site 735 and at NERO. Preliminary data analysis shows considerable success in recording the drill pipe acceleration signal under various drilling conditions. Post-cruise analysis of the data will be done to correlate with the seafloor OBS data recorded at both sites.

Portcall Operations

During the Leg 178 portcall in Punta Arenas, the Schlumberger airfreight shipment and TAMU's shipment of acetone were delayed and did not arrive before the ship's departure. Transport and transfer was arranged using the RV *Gould* which was also working in the area to the *Polar Duke* ice support ship to the *JOIDES Resolution*. This transfer was done without additional cost to the program with excellent cooperation between the various NSF-sponsored parties.

III. SPECIALTY TOOLS AND ENGINEERING DEVELOPMENTS

Temperature and Acceleration Pressure Tool (TAP)

The TAP tool replaces Lamont temperature tool and in addition to measuring temperature and pressure it measures acceleration in the z-axis. The purpose of the TAP tool is to test downhole efficiency of the WHC, speed correct and smooth downhole log data, and test downhole efficiency of the wireline and drillstring compensators. Continued mechanical design of telemetry and battery chassis and testing of the telemetry on the ship wireline was completed during the Leg 179 portcall in Cape Town. Anticipated deployment of the TAP system is on Leg 181.

Third-Party Cross-Over

The third-party cross-over is a device that will facilitate fast and secure connection of a third-party logging tool to a Schlumberger cable head. It replaces the current connection where the Gearhart-Owen cable head is utilized and will significantly reduce the time and safety problems encountered when deploying a third party tool. Drawings were generated for the cross-over which were also sent to Woods Hole Oceanographic Institution (WHOI) for the fabrication of parts needed to adapt to their third party VSP tool. The cross-over is planned to be deployed on Leg 179.

SWD

The Seismic-While Drilling (SWD) system is a NSF-funded development in conjunction with WHOI to measure drill bit vibration on sea-bottom OBS's deployed during on Leg 179. The SWD system will also be used to measure drill string vibrations for evaluation of heave compensation effectiveness and for future drilling innovations. Manufacturing, testing, and demonstration of the system were completed on schedule during the Leg 179 Portcall in Cape Town.

Acceleration-at-Bit

Existing downhole and data acquisition equipment have been redesigned to measure accelerations of the drill string to evaluate heave compensation effectiveness and implement future MWD technologies. Plans have been coordinated with TAMU engineering and are scheduled for initial testing in late FY98.

Drydock Operations

ODP Logging Services drydock plans include general maintenance and enhancements of shipboard facilities and equipment, an upgrade of existing space in the Downhole Measurements Lab, and the replacement of the Schlumberger Maxis unit with a state-of-the-art modular PC-based data acquisition unit.

IV. SHIPBOARD LOG ANALYSIS

Inmarsat-B

The Inmarsat-B system on loan to BRG since October 1996 was removed from the ship at the Capetown II portcall and returned to the SeaNet consortium via sea freight. The unit was replaced with equipment purchased jointly between TAMU and LDEO-BRG. LDEO's satellite data transmission capabilities entered into the production phase during the reporting period. Log data and graphic files have been routinely sent between the ship and shorebased processing center at LDEO. Transfer rates have been a fairly constant 6.5 kb/sec. Procedure manuals have been assembled to ensure the continued success of this joint initiative with TAMU.

Core/Log Image Correlation Project

Digital scanning of the whole round cores using the DMT (German) scanning system was successfully completed during Leg 176. The DMT core scanning equipment was shipped from Cape Town to Germany following extensive use on the leg where approximately 92% of the recovered core was scanned. A total of 14 GB of data was stored on CD-ROM in bitmap format (BMP).

Transformation of BMP files to JPEG format has been completed and the data distributed to the Leg 176 shipboard participants. The conversion includes a more than 50% compression of the data files (originally about 14 GB); the data now fit on two CD-ROMs. Ten shipboard party scientists have requested the core and log image data to date which will enable orientation of structural features observed in the core.

Core Log Integration Platform (CLIP)

Splicer v.2.0 has now sailed on Legs 167, 172, 174, 175, and 177. Splicer v.1.0 or 2.0 has been deployed on a total of twelve legs thus far. On-line help has been partially updated to reflect V2.0 improvements, but more text needs to be added to reflect the many new features.

Splicer v.2.0 was distributed to the following scientists over this period:

Dr. Sara Harris (OSU)

Dr. Michael Schaff (Shell Oil)

Dr. Sean Higgins (LDEO)

Oracle client-server formats, codes, and passwords to the Janus database were received from Layne Westover at ODP. These files will allow us to begin implementation of the Oracle query module to access Janus data directly from within Splicer.

Coding efforts during this period focused on development of the core-log depth integration software product Sagan. The main research strategy of Sagan is to provide the research tool for linking core and log depths at decimeter resolution. We have completed a skeleton version of Sagan which performs the essential core-log depth matching procedures. The user can read in core and log data and perform smooth, decimate, and culling procedures to modify data. For the core data, Sagan can manage up to 10 holes of core data, 5 data types, and a (practically) infinite number of cores and data points. For the log data the user can read in a single log reference curve, and up to three ancillary log curves, such as logging speed, cable tension, and hole caliper.

New Sagan code developments include successful implementation of the “autocorrelation” routine which defines a 2-D correlation map for variable stretch/compression of core depths (mcd) and full DC offsets of log data. An optimal correlation can be defined using multiple datasets from multiple holes. The result is a color coded “map” showing stretch/compression and log offset values where the core-log correlations are highest. Application of this initial adjustment allows the user to then perform non-linear feature-by-feature correlations within cores. Core-log timelines developed for one core can then be applied across all equivalent mcd depths, of just for individual cores.

Current development plans provide for release of Sagan v1.0 for use on Leg 181, the SW Pacific Gateway.

V. SHOREBASED LOG ANALYSIS

ODP Conventional Data:

The following holes were processed and prepared for inclusion in the database at LDEO-BRG:

Leg 176: Hole 735B
Leg 177: Hole 1093D
Leg 178: Hole 1095B
Leg 178: Hole 1096C
Leg 178: Hole 1103A
Leg 179: Hole 1105A

FMS processing:

The following holes were processed at the Aix-en Provence (France) processing center:

Leg 174B: Hole 395A
Leg 175: Hole 1081A
Leg 175: Hole 1082A
Leg 175: Hole 1084A
Leg 175: Hole 1085A
Leg 176: Hole 735B
Leg 178: Hole 1103A

GHMT processing:

The following holes were processed at the Aix-en Provence (France) processing center:

Leg 175: Hole 1081A
Leg 175: Hole 1082A
Leg 175: Hole 1084A
Leg 175: Hole 1085A
Leg 177: Hole 1093D
Leg 178: Hole 1095B, processed for the first time in near real time.

Historic data processing

The following 23 historical ODP holes were processed or revised at LDEO-BRG during the reporting period:

Leg 110: Holes 671C, 672A, 676A
Leg 111: Hole 504B
Leg 112: Holes 679E, 685A
Leg 115: Holes 707C, 715A
Leg 117: Holes 720A, 722B, 723B, 728A
Leg 119: Holes 737B, 738C
Leg 121: Holes 752B, 754B
Leg 125: Hole 782B
Leg 129: Holes 800A and 802A
Leg 130: Holes 803D, 805C, 806B, 807A

The revision/processing of conventional data from all holes logged by ODP is now completed.

Temperature Data

Leg 173 temperature data were processed at LDEO-BRG.

VI. DATABASE

The ODP Log Database has been updated through Leg 178, including Schlumberger original and processed data (conventional, geochemical, and FMS), specialty tools (borehole televiewer, multichannel sonic, and temperature), borehole images, and sonic waveforms.

On-line Database Development Project

On-line conventional data for both wireline and Logging-While-Drilling (LWD) now exists for all legs, along with any available *Initial Reports* plots, processing documentation, and file dictionary relative to each hole. Proprietary data now include Legs 173 through 178.

Post-Cruise Distribution of Log Data

Composite logs of the processed data of Leg 176 were mailed to the members of the shipboard party who requested them. Leg 174A-B material to be included in the IR volumes was provided to TAMU prior to the post-cruise meetings.

Database Development

As of the end of May, all conventional log data has been migrated to the on-line log data base.

At the completion of this work our attention turns to archival of the FMS image data. A program has been developed to convert images from Portable Bit Map (PBM) format (currently used on the log data CD-ROM) to GIF. When this conversion is completed, the ODP scientific community will have easy, on-line access to the FMS images collected since Leg 143.

APPENDIX 98-2-3

Paleo Application Report for SCIMP

June 16, 1998

John Firth, ODP

The Janus Paleontology Application has been in use on the ship since Leg 171B. It has met with criticisms from the shipboard paleontologists on a number of legs (Leg 172, 173, 174, 175, 177), resulting in some legs not using this application or only using it for part of a leg. Specific comments from different paleontologists have been collected, and are attached. To summarize, they point to a program that is 'too complicated' and too slow. Although a quick user guide was created for Leg 177 to guide the paleontologists through its use, the Leg 177 paleontologists decided not to use the program. One co-chief, Rainer Gersonde, spent a couple days testing the program at the beginning of Leg 177 and decided against using it. When in College Station in May for the 177 post cruise meeting, he went over in detail the problems with the program, and showed how slow it was, and how many additional steps (windows, dialogue boxes) were needed to do some simple, repetitive functions like adding new species, or selecting new samples to work on. Although the Paleo application allows one to enter all paleo data and output it according to the specifications of the Janus Paleo User Group, it does not do these things in the most efficient way. Thus the problem with the program is NOT training, because those who used or tested it on the ship were well aware of how to enter and export data. Rather the problem is that scientists don't like it, for much the same reason that scientists didn't like some of the older database programs on the ship such as HRTHIN, HARVI, SLIDES, and also VCD. A more detailed outline of the problems with the current Paleo application is attached. Also attached is a set of notes I sent to Paul Albright of Tracor, to Russ Merrill, and to Phil Weaver (head of the Janus Paleo User Group) 2 years ago, outlining many of the problems which are now the source of complaints by the users. Many of my comments were not heeded by Tracor in the development of the Janus application.

The current application has an interface where one enters species abundance data one sample at a time. A missing part of the application, though, is a way to view and edit the data in 'range chart' mode, where data can be viewed as a summary of a hole, and corrections can be made. In addition, the range chart mode would allow scientists to quickly enter abundance data on just one or a couple index taxa to tie down a datum level, without having to open a separate window for each sample. The range chart window was asked for in the Janus project but not produced as it was low priority.

ODP proposes to address the problems of the Janus Paleo application in two different ways:

1) We have determined that the existing application can be speeded up as follows:

"The SQL behind the Paleo Sample List screen Pal07 can be optimized to retrieve the data for an entire hole in 10-15 seconds versus the 7 minutes it takes for some variations of the current query. Retrieving a first sample for a new investigation takes 5-10 seconds. The SQL is optimal. Second and subsequent new sample/new investigation edits result consistently in General Protection Violations on the debug version of Janus I'm working with. Since the error is consistent and repeatable, this issue will be straightforward to further clarify and resolve."

This work can be done for Leg 181.

2) replace the existing application in two steps: (a) produce a simple spreadsheet/rangechart interface modeled on the Smear Slide application already being developed by ODP. (b) add to the spreadsheet interface the ability to open up windows for data entry into each sample - basically taking the existing sample data entry window and tying it to the spreadsheet interface.

Step (a) can be ready for Leg 181. A description of this program and how it would work is attached. As the model for this was taken from another application, much of this new spreadsheet interface is already working. This application would allow the user to choose existing zones and taxa to put in their sample records, but it will not yet

allow them to enter new zones, taxa, or select datums, or a geologic timescale, or to edit any of these. Such functions would still be accessed through the current Janus Paleo application for Leg 181. Secondly, this spreadsheet interface would allow users to enter either relative abundance, numeric abundance or percent abundance in the abundance cells, but it could only display one of these in any one cell. If a user wanted to enter more than one type of abundance for any species in a sample, they would have to use the current Janus application to do so. However, on ship most people enter only one of these abundance types. In addition, on Leg 181, the users would have to use the current Janus application to define datums, calculate datum depths, use the Age Profile feature and define a geologic timescale. Routine species data entry, which takes up most of a shipboard paleontologists time, could be done using the new spreadsheet interface. Finally, the spreadsheet interface has a direct link to the ODP webpage, so a user on ship could open up the ODP web range chart query directly from the new application, and view a printable/savable range chart or other paleo query as they enter/edit data.

Step (b) could possibly be completed for Leg 182, if a programmer is dedicated to this task this summer. If not completed for Leg 182, it would be by 183. This step would involve adding the capability of editing or adding new taxa, zones, datums, and geologic timescales, adding the Age Profile function and calculating datum depths, importing and exporting data in Ascii format to/from spreadsheets, and linking a sample specific data entry window for adding additional data that cannot be easily displayed in a range chart, such as comments on individual species in a sample, and multiple abundance types. A sample data entry window would be accessed by double clicking on a sample id on the spreadsheet screen. A user could have both the spreadsheet and an individual sample screen open at the same time. The final application will also allow you to save multiple default taxa lists or zone lists, as the current Janus application does.

Leg 173

Subject: My impression of the JANUS Paleo application

From: JRS Sherwood Wise

Date: 6/15/97 12:28 AM

I've been asked by several of you for my impressions of the JANUS Paleontology application. I used it for calcareous nannofossils on Leg 173 where I was the only nannofossil specialist. The only other paleontologist did planktonic and benthic forams. This was supposed to be a "basement" drilling leg, but often acoustical basement turned out to be sediments of one type or another. The sediments ranged in age from Jurassic to Miocene, and we were quite busy in the paleo lab from the get go. I'll give in this email msg my overall impressions, and will be glad to follow it with more specific suggestions on how the program can be improved. I think this overview is necessary first.

Traditionally, the main function of the nannofossil specialist is to provide age dates on the cores and, in conjunction with the other paleontologists and the paleomagneticists, to provide age/depth plots to facilitate sedimentation rate studies, etc. Beyond that, it is important to give the relative abundance and state of preservation for the overall assemblage for each sample. It has not been a traditional function of the nannofossil specialist to provide complete assemblage data (species distribution or "range" charts) on each sample (you don't normally see these in the nannofossil portions of the Initial Reports volumes). Beyond establishing the ages of the core catchers during drilling, his or her time is best spent examining samples within the cores to narrow down the occurrence of zonal boundaries. At least that has been my understanding of the job over the past 2 1/2 decades. I expected JANUS to assist me in these functions and to assist ODP by entering the critical information into the data base.

Perhaps my impressions as stated above are wrong, because the only thing I found JANUS useful for was the last function mentioned, i.e., to enter the age dates and sample abundance/preservation information into the database. However, to give JANUS a fair test, I did use it to produce a range chart for one to two samples per core at one site (although that is not a traditional or important shipboard function for the nannofossil specialist), and I explored the "Age Profile" function to see if it could be of use. Basically, it wasn't because the "Age Profile" can only be used if one has done a complete distribution chart before hand. Such charts traditionally are done onshore after the cruise, and take a couple of years to complete.

I was surprised to find that certain routine functions (such as "dup" functions to call up the composition of the previous sample) found in similar commercial programs for constructing range charts were not incorporated in the program, thus rendering it cumbersome and time consuming for data entry. I was also surprised to find that only one standard zonation (Martini's 1971 Cenozoic scheme) had been entered into the system. I was expecting to use the Okada & Bukry 1980 scheme. In the end, I spent 4-5 days learning how to enter zonal schemes and entering them. This was frustrating since the Leg 171B nannofossil team had previously entered the Okada & Bukry scheme, but it has been deleted from the system shortly before I came on board IAW

standing operating procedures. It seemed a waste of time to have to reinvent that wheel.

Last, I found the documentation for using various aspects of the program somewhere between inadequate and nonexistent. The documentation that has been written tells you what the program is supposed to do and what the function of some of the buttons and screens are, but falls far short of telling you how to actually accomplish each task. There are few guideposts to tell you how to get from point A to point B to accomplish a function (like entering a zonal scheme, printing out your sample list, etc.). The scary thing is that on future legs, the nanno people won't have the advantage that we had, i.e., 3 days of tutoring from the author of the program, Paul Albright, plus the onboard assistance of a JANUS specialist, Craig Kerr. Both did an excellent job of trying to help us learn the system, and we were fortunate to have a couple of extra days in port before sailing to allow them to do that. Most legs won't have that luxury.

Basically, I think that effort should be spent to stream line the program and to make it as compatible as possible with assisting the nannofossil specialist to accomplish his three basic missions:

- 1) to render age dates;
- 2) to enter them into the database;
- 2) to construct age-depth plots.

Dave Lazarus (now in Berlin) has developed age-depth routines that should be adaptable for the latter function.

I sorry to sound negative on the program because I believe the programmer tried hard to respond to what he was asked to do by whatever advisory panel gave him instructions. It has turned out to be a rather complicated application. I think the project needs to think hard about what it wants paleontologists to accomplish aboard the ship and to consider what is really feasible and desirable. They should then gear the JANUS paleo program to those goals and perhaps not worry so much about all the bells and whistles at this point. If on the other hand they actually want nannofossil range charts constructed on board, they need to reconsider the shipboard staffing level for that position.

Leg 175

Comments on JANUS paleo from Leg 175 paleontologists:

From Beth Christensen:

Below you will find some comments on the JANUS data base:

Frankly I don't think you will ever get a system that people like when you have an older generation sailing. Hate to say it, but it's true. They don't like computers. Plus, it really is difficult to convince yourself to go through the irritation of entering data when there is no reward. Micropaleo is not a science that lends itself to database development because we don't actually measure anything. And it is difficult to do rapid quantitative study. In fact it's impossible to do rapidly. Plus stratigraphic studies are notoriously flexible on-ship

and we are generally hesitant to write anything in stone (at least until we talk to the p-mag!). Nor can you forget that paleontologists are inherently LOW TECH. We fear change. So I would not worry. We will hate everything.

Sure.

I liked the program bc I was able to keep a running tally of my bugs. This was also bc I worked adjacent to the Mac. The one really bad thing, though, is that I was trying to make accurate estimates of abundance without counting every bug. Thus I would count the specimens in a trayful and enter that data, which I then used to assess abundance (rare, common, few, etc). I did not count enough for a statistically accurate measurement. I counted in order to make better visual estimates! I checked my meager counts (usually 100 specimens or less) against my visual estimate and assessed abundance using both methods. This worked to eliminate subjectivity BUT, and this is a big BUT, I generated a database with statistically inaccurate data to make these estimates! I didn't realize I would be leaving a permanent record, and couldn't leave a permanent note, so future users will not understand how the data was generated, or how it should be used. This is very bad.

Jacques hated it because he couldn't enter his nannos as he was working and so had to enter them later. He found this too time consuming because of our high recovery rate so he didn't keep up the work. Otto had a similar problem. He didn't have the time to enter the data twice. Carina, I don't believe, ever quite figured it out. Moto used it but he didn't have many radiolarians and so time wasn't as great a factor.

The thing all of us hated, and the primary reason people stopped entering the data, was the lack of output possibilities. As I recall (and it is a foggy recollection after so many months), if we wanted to make plots, we were restricted to the options JANUS gave us. I think these were range charts. Anyway, whatever the options were, they were not appropriate to the study we were doing. We weren't working over long enough time periods to make use of range charts- we needed abundance charts. Because of this very major flaw, we had to enter the data a second time, into Excel. I think we were able to dump some of the data from Janus and import it into Excel but we were never able to dump abundance data (or maybe it was presence/absence data, I can't recall). I was able to retrieve the data from JANUS late in the cruise, but this involved an entire afternoon working with computer Dave and Erin. Because we couldn't output it as we needed, there really was no reason to input into JANUS, other than ODP requested it.

Also, I suspect you have some old timers on this 177, so they probably don't see the need to bother since the old way worked so well. For these reasons, I am sure, you are seeing rebellion. (Plus the fact that there aren't enough computers in there for everyone to enter data directly as you work unless you use Macs. Moto and I used the Mac and had no problems but we each remembered to shut down every once in a while. I suspect also that there may be some computer impaired paleontologists on board).

I hope this answers your Q. If not, call me. 864-294-3361. Beth

Comments on the JANUS Data Base (Otto Hermelin):

Note: This has been written down as I have been using the program during Leg 175. This is said as an explanation for the comments lack of structure.

1. One should be able to add new taxon already in the [Scientist Defaults - pal01] box when you are creating your Taxon Subset.
2. When in Sample box and you are adding a new taxon this should prompt you whether or not you would update your current Taxon Subset, so that it appears for the next sample. Later I realized that you will have the new Taxon Subset for the next sample if you press <New>, but it will not update the Taxon Subset (see 7).
3. When working with benthics sometimes there are specimens that you can't allocate to a specific species and you give it a numerical or letter designator instead, i.e. Cibicidoides sp. 1. Since Cibicidoides sp. 1 will change from scientist to scientist the author "unknown" is not a good idea. Eventually you will end up with numerous of records of Cibicidoides sp. 1, recordings which all have different characteristics and in fact are very different bugs. I suggest that one should try to use the "Leg XXX" as author, since the Cibicidoides sp. 1 hopefully will be the same species throughout the Leg.=20
4. A useful tool would when entering the number of specimens for a species in [Edit Paleontology Sample - pal09] menu it automatically calculates the percentage. Also, if entering percentage there should be somewhere to enter the number of counted specimens upon which the calculation is based.
5. When you are entering percent abundance the program only recognize integer. If the percent abundance is less than 1% and I would like to record its presence it's a little awkward to put in a P in the P/A column. It would be much easier to enter + from the numerical keypad. I later found that entering =D8 gives the desired result - but that should then be explained in the manual.
6. I believe that in the long run a development toward compatibility with other programs is a MUST, and you would be able to just "cut and past" from other applications. In the future I could see a feature where you select your Taxon Subset, copy it to a spreadsheet program (e.g. EXCEL), in table format with space to put in actual counts, counting your bugs, and export it back to JANUS. Calculations of relative abundances can be either be done in JANUS or in a Spreadsheet application.
7. After entering your data in the [Edit Paleontology Sample - pal09] menu you would like to process a new sample, you press <New> and after a while you get a [Select New Paleontology Sample - pal10] which contain much more samples than you asked for when you selected your Sample Subset. It's much faster, but not so straight forward to <Close> and select the sample in the [Paleontology Sample List - pal07] which contain the list you actually selected.
8. An helpful option would be to be able to select a Taxon Subset, modify it (delete and add species) and then save it under a new name.

These are more comments that can be made. - the main disadvantage during Leg 175 was that there was just not time enough to enter the data into the JANUS. One has to remember that entering data into the JANUS data base have a very low priority (at least to me). More important is to analyze the samples, preparing the Site reports (with spreadsheets presenting the data - it would be so much easier if these EXCEL files could be entered directly into JANUS), doing figures, and all that. There is just no time to spend on

JANUS - not on a intense leg like 175.

All the best, and do not hesitate to contact me if you need more comments

Otto Hermelin

Subject: Re: 175 JANUS
From: giraudeau@geocean.u-bordeaux.fr (Jacques Giraudeau) at
#Internet Date: 1/15/98 7:40 AM

Hi Carl,
About Janus.

I did not encounter any problem in using the Janus software for paleo data. BUT 2 facts must be mentionned: (1) the software is running very slowly on MacIntosh computers.

(2) During LEG 175, I (and most of my paleo colleagues) had to stop entering the micropal data on the Janus database due to a shortage of time. Due to the amount of samples examined on the microscope and the amount of sites (13) during Leg 175, I stopped entering data from the 5 or 6th site. Feeding the Janus database with the micropal data (although I only entered data in terms of presence/absence of stratigraphically-usefull species) was taking me around two hours a day. Impossible to achieve without delaying routine work on the coming sites.

Otherwise the software is very effective and easy to use (even for someone - myself - who is not friend with computers in a general sense).

Cheers,
Jacques
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Analysis of the Janus Paleontology Application (by J. Firth)

Some more detailed comments on Janus Paleo are as follows:

- 1) When you first enter the Paleo application you have a blank screen (see attached figure #1). A blank window with menu bars does not help guide a user to do the next step, and so is a wasted window, and a wasted step for the user.
- 2) Following the quick user guide, a user is directed to select the Data menu and select the Paleontologist Defaults menu. This at first brings up figure #2, where to add a fossil group you must then click on another button to choose the fossil group, then click on a pulldown menu to select the fossil group, then click on the OK button to get back to fig. 2. It takes 5 steps to add a fossil group name, something which could be streamlined to a couple steps without an additional window to go to.
- 3) In Scientist defaults, you MUST select a taxa dictionary filter first and then click the Save button before you can pull up the taxa dictionary to create your own subset. Before you can create your own subset, you MUST give the subset a name first. This functionality is rigid, and mandates that users enter their data in one way. This is what I mean by resembling a DOS type program. Instead users should be able to do these functions in whatever order they want, just like a Windows or Mac program operates. This is a good example of what people call 'too complicated'.
- 4) The Taxa dictionary window (fig. 4) could be improved by showing many more taxa in the list, instead of just 10. The computer screen is not being utilized to its full extent which results in more unnecessary scrolling through long lists.
- 5) Fig. 6 shows that you have to open a separate dialogue box to add a new zone name, author, year etc. rather than being able to enter these things in blank spaces in the Zone List window. Every additional window to add some new text is a wasted step for the user and a cause for complaints.
- 6) To get to the taxa dictionary from the main Paleo menu, you need to go through a small dialogue box. Again, an additional unnecessary step to get to Fig. 8. The program should remember who you are, by your login ID and which fossil group you last worked on, which in most cases is just one fossil group for an entire leg, and immediately pull up the dictionary for that group. Changing to another fossil group should be done by a pull down menu in Fig. 8 which automatically refreshes the screen with the new data.
- 7) Figs. 9 and 10 show that adding and editing taxa from a list of names requires two separate dialogue boxes. It should be done directly in the Taxa dictionary window, much like editing or adding to a spreadsheet.
- 8) Figs. 11, 12 and 13 show additional windows that have unnecessary steps to do simple things like adding or editing names of zones, taxa, datums, etc.
- 9) Fig. 14 shows the window to select samples from, but requires additional steps (Select Subset button) to open the query to pick the samples you want (Figs. 15 and 16). The Window in fig. 14 should act as the query window itself, rather than a window that only leads to other windows.
- 10) Figures 17 and 18 show the Sample Data Entry window, which no-one has complained about, but does not allow you to enter new taxa directly into the taxa list, as the old FossilList program allowed you to do. Rather, you have to select the Dictionary button, then decide whether the taxa to be added is in the taxa dictionary already or not, and if not, to click the Add Taxon button to add a new species name in, then click OK, then click Done to have the new name added to the sample. Instead, the user should be able to type in a new name directly into the Sample Data Entry window in a blank row, and have the database check it versus the dictionary to see if it already exists. If it exists in the dictionary, it uses that name from the dictionary. If there is more than one concept for that name, it shows the user the various choices which the user clicks on to add. If the name is not in the dictionary, it adds it as a new name. This would streamline the addition of new names to samples, something which shipboard paleontologists do all the time.

This is not an exhaustive analysis, but one that shows the many ways that the current application is not streamlined and efficient.

Analysis of Janus Paleo application by J. Firth in July, 1996

Russ: here are my notes about the paleo application for Janus. Please give copies to Paul Albright and Phil Weaver.

Paul: Okay I have done some more testing of the program. I want to tell you what looks good, but I want to reiterate a point from my last message: I have seen many people on ship get upset because of 'little things' in software that drives them mad, such as being directed to add data in only one order, not in any order they want, and having to access many (or even a few) extra windows to add or edit something, instead of being able to do it in the main window they are working in. If you think my criticism of too many screens and extra steps is nitpicky, just wait till you hear the complaints from the actual users of the program, on a leg like 167. Simplicity and streamlined flexibility are crucial, since the paleontologists will be physically adding by hand/mouse/keyboard more data into the database than any other shipboard application, except for maybe core description.

Now for some more comments on the program: From the point of entering the Paleo application, you can enter directly the Geologic Age List, Datum List, Catwalk Samples, Scientist List, and Sample List, all under Data menu. This is good. When you move the Global Taxa Replace under the Data menu the accessibility will be complete. You can also go directly from the Scientist List to the Sample List and back, and have them both open at the same time. This is also good.

The Scientist Defaults Window layout looks good, but consider moving the Add/Edit Zones and Taxa buttons next to (right of) the Zone Scheme and Taxon Subset pull down menus, instead of the bottom of the window. Also, The Add Fossil Group Button is unnecessary. Currently, to add a new fossil group, you have to move from the Default window to the Scientist List window to the Add Scientist window, then back thru the Scientist List, to the Scientist Defaults window. This is too many steps, and is an example of DOS rearing its ugly head again. Instead, to add a new fossil group, you should simply select one from the Fossil Group pull down menu at the top of the window, which would clear all the other default selections; then you fill in your defaults for that fossil group, and Save with the Save button. Then you can change fossil group again, etc., and move back to see other, already saved defaults for different fossil groups. The main thing about the Scientist Defaults Window is that it should be moved to be accessed from the Scientist List window, not from under the File menu. Put a button called Edit Defaults at bottom of Scientist List window, and highlight a scientist/fossil group, then hit the button. Currently when I try to add a new fossil group through the Add Fossil Group button, and go through all the steps, it does not save the new fossil group - a bug.

The Scientist List window looks good, but delete the Add Scientist button and the window that comes with it. Have a New Default button instead, which brings up a blank Scientist Defaults window, where you fill in your name, fossil group, and defaults. Then you Save it. When you Edit a default selection, you can move around the different defaults by changing fossil group in the pull down menu.

The Catwalk Sample window looks and works good! However, If I add a smear slide sample, its sample interval is only a millimeter, but I cant put that in - I have to put at least 1 cm interval, which is not correct. This impacts sediment smear slides as well. Having the Sample List window display sample depths immediately after entering them in the catwalk window is great!

The Geologic Age window is okay, but you need to put the ages on one row each, and show at least 30 rows in the window, not 10 as you have it now. Also, why do you have to bring up a new small window, to add a new age? WHY cant you just have the fields at the bottom of the Geologic Age window to fill in? Again, this needs more streamlined functionality.

The Define Taxa Subset window is okay, but again, the taxa names nee dot be on one row each, not two, and should show at least 30 rows (names), not 10. I find an example of narrow DOS functionality in this window, as you HAVE to choose a subset name or type in a new subset name before you can start adding names. Why? I want to be able to add names right away to a blank list, then give the list a subset name, in that order. I think other paleontologists will too. I should be able to do this in any order, actually. Again, I dont see

why adding a new subset name necessitates a button and a new screen to fill in. Why cant a new name be typed directly in the main Define Taxa Subset window? It should. Also, the Taxa Subset name is limited to 20 characters - expand to 40 characters.

The Sample List window is quite good, as you can choose a different fossil group to work on, on each sample. However, you have allowed each scientist/fossil group combination to have multiple taxa subsets and multiple zonal schemes (which is great!), but these need to be accessed also from the Sample List window. Add two more pull down menus: one for Taxa Subset, and one for Zonal Scheme. If a user selects a different fossil group to work on, then the menu selections under the other two pulldown menus should change to those default subsets defined for that scientist/fossil group. If you do this, then you dont have to access these from the Sample Edit window as I said in my last message. Also, the Sample List should show at least 25-30 samples, not just 15 as it does now.

I tried again to do a New Investigation with a different fossil group, and this time it worked (in my last message I said it didnt work - I guess its still buggy).

Currently, the functionality of adding a new datum, zone, or taxon into a sample, requires going through the ODP Dictionary first, and adding the taxa names to it, then adding the rest of the data for the zone, datum, etc. This is not right, and is the reverse of what it should be. The ODP Dictionary is a repository, NOT a filter through which you have to go to do anything. A user MUST be able to add a new taxa name directly in a Sample Edit window, a Datum List window, or a Zone Scheme window, and have that name automatically added to the ODP Dictionary as well as to the sample, datum or zone. The program should also check to see if the new taxon name typed in matches one in the dictionary. If it does, it uses the dictionary name, if not it adds the new name to the dictionary.

Range Chart: currently it is missing columns for Geologic Age From and To, Group Abundance, Preservation, Overgrowth, Dissolution, Bathymetry. Zone From column should be to the left of Zone To column. Currently the range chart will print relative abundance values, but not % or absolute number values. These other two options need to be added to the Range Chart window. Unfortunately, the First Occurrence and Last Occurrence sorting of the range chart do not seem to work properly. When I did the Last Occurrence sort, as you suggested, then sorted in Excel by depth, I got the species in order of first occurrence instead. When I did the same with First Occurrence, and sorted by depth, I got no order at all - a few species were out of order altogether.

Age Profile Table: pretty good layout. However, we need to be able to Edit events as well as Add/Remove them. The Table works well, so far.

The Sample Edit window - I added some % abundance values to some species, saved and closed the sample, and came back later and opened the sample - the % values had moved into the Counts column - a bug.

Thats all for now.

Regards, John

Janus Paleo Notes - John Firth 7/5/96

Paul: here are my comments so far. Dont take them personally. WHEN I get to this point, I focus on what needs to be fixed or improved. If I dont think it needs improvement or fixing, it doesnt get mentioned. It is definitely getting there, but it could use some rearranging. I'm assuming bugs I find you already know about, but I've listed them anyway.

Sorry you had to work on the 4th.

More later.

John

One of the general things I noticed, which you already pointed out to me, is that there are many, many screens or windows in this program. I think there are too many, in fact, and the user interface needs to be streamlined as much as possible (see specifics below). Some users have complained that FossilList has 'too many screens', and it only has four main windows and much fewer dialogue boxes than Janus.

I have not yet tried printing a range chart as I dont have hardly any samples entered - cant save a zone scheme or a new taxon name yet (see below). Will try your suggestion on sorting the range chart when I get to that point.

The Sample edit window looks pretty good, but more things need to be accessible from it (see below). I dont care for the blue background on the tools bar or the other field entry windows. They should be light gray and have some clearer defined box around them. My bias is towards the Mac OS, which isnt surprising since all the paleontologists on ship use Macs to enter their data. The Windows interface is something I have never cared for. So please make the paleo application look and function as much like a Mac as possible, since that is what will be used for paleo entry.

Get rid of Tools menu and put Global Replace Taxa under Data menu. This function affects data, and a pull down menu with one selection is a poor design.

User Defaults should not be under the file menu. It should be accessed by a button from the Scientist List and called Scientist Defaults. You select the scientist/fossil group combo, then hit the button to edit your defaults. Like FossilList, you should combine the scientist name and fossil group to the scientist defaults window. Either you fill in a new blank window with all the information, or you edit an already created one. No need to have a separate window for typing in your name and fossil group, and another for typing in your defaults. From your scientist defaults, you should also be able to access the zone schemes and datum lists and taxa subsets.

I dont understand why Zone lists and datum lists are being treated and accessed differently. Each user or pair of users will use the same set of zones and same set of datums for each fossil group - they have to.

Both Zone Lists and Datum Lists should be accessible from the Data menu. When typing in a new datum based on a new taxon that isnt in the ODP Dictionary, currently you have to go through about 8 different screens to create it!: Datum List window -> Add Datum window -> Dictionary List window -> Add new taxon window -> Dictionary List window -> Add datum window -> Datum list window. Sorry, but this works like a DOS program, which is NOT what we want. We trashed Checklist, Bugin, and Bugware because they were all DOS programs with too many screens and steps to move through, and I spent a lot of time streamlining the way FossilList works to get as close to amodal Mac functionality as possible. This, however, is a big step backwards. There is no reason someone should not be able to type in a new taxon name directly in either a datum list or a zone list or a sample edit window, and

have the computer check the name versus the dictionary. If it matches a name in the dictionary, it uses the name from the dictionary. If it doesn't match, then it automatically adds it to the ODP dictionary as well as to the other list. This is how FossilList works. I don't see a way to type in a new taxon name in the Sample Edit window in the current program - it needs to be there. If someone wants to use a name from the dictionary, that should be a parallel function directly accessible from the datum list or zone list or sample edit windows, but it should not be an intermediate step anytime you need to type in a new name.

I recommend we get rid of Taxon Concept Author and Year. It takes a lot of extra screen space, and currently I see no entries in these columns, and I doubt there will be many added to them in the future. People can always use a comments field to explain what they mean by some species name.

Taxon ID number should not show up in the dictionary or in the Sample edit window. This is not something users need to see.

The datum list window has rows for each datum that are too thick. The information for each datum can easily fit on one row. You should be able to see at least 20 to 25 rows of datums, like the taxon list in the sample edit window, or like the ODP Dictionary window. At the bottom of the Datum List window should be a separate area, boxed off, one row, with fields for:

Genus Species Author Year Datum Type Age From Age To Author Year

The Datum type could be the pull down selection as long as the cursor is in the Datum type field. When you fill in the row, you press a button to Add New Datum to the Datum dictionary. Then you can copy it to your own datum list if you want. This gets rid of opening several other screens to add each piece of information to the datum definition. I envision something similar for Zones.

Why is there a Save Comments button for the Species Comments field? There should not be a need for this. If it gets typed in, it should stay in there. I thought at first the comments field wasn't working because when I changed species and then came back to an old species comment, it was blank. Users will not remember to push that button each time they type in a comment, and they should not have to use the button. Make the comments field work without the button.

From the Sample Edit window, you should be able to change your taxon subset list, which would blank out the current taxon subset showing in the window and replace it with the new one. Same with Zone subset - you should be able to access and change your zone subsets from this window.

Where is the cursory analysis screen? Where you can check off presence of a single species in a number of samples?

The order of the fossil groups in the list should be:

- Calcareous Nannofossils
- Planktonic Foraminifers
- Benthic Foraminifers
- Diatoms
- Radiolarians
- Silicoflagellates/Ebridians/Actiniscidians
- Dinoflagellates/Acritarchs/Prasinophytes
- Pollen/Spores

Question for Phil Weaver: should Bolboforma be added to the Benthic foram list, as Benthic Foraminifera/Bolboforma, or should they be a separate list. If separate, they should be below Pollen/Spores. Note also, that Ebridians is currently misspelled in the program.

How do you upload a list of taxa or datums or zones from a text file into the database? I do not see that feature.

Global Replace taxa seems to work okay, but how do you globally add a taxa or globally delete a taxa from a list of samples? Also, how do you do these on just a subset of selected samples rather than the whole database?

Bugs (that you probably already know about):

I added one species name from the dictionary to a sample, then tried to add another one, but when I hit the Dictionary button a second time, I got an error message: General Protection Violation.

New Investigation of Sample doesnt work. I added my name and nannofossils, and edited a sample. Then I added my name and dinos, and tried a new investigation on the same sample. it would not allow me to do it.

The Close button on the Sample List window causes an error message: General Protection Violation.

Save taxa subset is not working - cant be saved, get an error.

Add a new taxon name to the dicitonary does not work cause it cant be saved - get an error message.

I closed a sample edit window to print it, then I tried to reopen the sample with the Edit button, and got this message: 'The sample edit window is already active, please finish editing the currtent sample before beginning another'. However, no sample window was open. I had to quit Janus and re-enter before I could open any sample edit window.

BRIAN HUBER RESPONSE TO ODP PALEO REPORT

Date: Tue, 23 Jun 1998 11:47:06 -0400
From: "Brian T. Huber" <HUBER.BRIAN@NMNH.SI.EDU>
To: janecek@quartz.gly.fsu.edu, John_Firth@odp.tamu.edu
Subject: Paleo appliciton report
Mime-Version: 1.0

Hi Tom,

Sorry I can't attend the SciMP meeting in Lamont, as I would like to hear more about the problems with the Janus paleo application and how ODP would replace the it with something new and better. The comments from shipboard paleontologists indicate that Janus paleo is still too slow and cumbersome especially for high recovery legs. It is disturbing to find out that some shipboard paleontologists are abandoning the program and using their own spreadsheet applications, as none of those data get captured during or after the cruise. Clearly something needs to be done to ensure that this does not happen on upcoming legs.

I reviewed John Firth's critique of the application and agree that the program could be a lot more user friendly by eliminating unnecessary

steps to perform simple tasks and by making the program more flexible. The steps needed to enter paleo data are not intuitive, and without sufficient training or a good "how to" manual I can see why users want to revert to using a simple spreadsheet. But I'm curious to find out why the application was not streamlined before it sailed on Leg 171B given the comments sent to Tracor et al. by John Firth in 1996. My guess is that Paul Albright did his best to accommodate the very complex basic requirements recommended by the Janus Paleo User Group, but ran out of time to streamline the functionality. If this is the case, why doesn't John present an option to do some streamlining using the Janus programming language NeuronData? I thought that somebody at ODP was supposed to get trained in that language to handle just such problems.

Regarding the options to address the problem, I definitely think ODP should waste no time in optimizing the SQL behind the the Paleo Sample List screen (Step 1 in John's 16 June report). The delay in moving from one sample to another is a huge source of frustration particularly when Janus gets loaded down with 1000s of core samples. But I shudder to think of the implications of the second proposed step to "replace the existing application". I bet the money that has been poured into ODP paleo applications during the past decade could just about fund the entire ODP for several months. FossilList is the latest example of a program developed at ODP after a tremendous number of planning and programming hours, but it was abandoned when it was ~90% completed once Janus promised something new and better. I clearly recall the strong reassurances IHP received that FossilList would be implemented in "a very reasonable time frame". Before I would recommend Step 2 be pursued, SciMP should get concrete answers to the following:

- 1) Why can't improvements to streamline the Janus Paleo application be made using NeuronData?
- 2) What is sacrificed in terms of the integrity of the shipboard database by going with a spreadsheet interface? In other words, is there a certainty that (a) the the new spreadsheet application would smoothly interface with the core-depth, age model and other Janus applications, and (b) that removing some of the rigidity that was built into the current Janus application does not increase the likelihood of user error (e.g., data entry mistakes, critical data not entered)?
- 3) What programming time cost is required to complete the spreadsheet interface in time for Leg 182 or 183, and how does this compare with other programming priorities at ODP?
- 4) Is the programming language that would be used for the spreadsheet interface as complicated as 4th Dimension (used for FossilList) or can programmers be easily trained to work with it? I recall that the reason FossilList was never completed is that the two ODP programmers who were familiar with 4th Dimension left and nobody at ODP had the expertise to finish it.
- 5) Would the program be portable, i.e., loadable on a pc for shorebased

work?

If (1) it is not feasible to make program improvements using NeuronData, (2) there is no sacrifice to the integrity of the database, (3) there are guarantees that the programming time is not unreasonable relative to other priorities, and (4) the programming language is relatively transparent, I agree that the Step 2 approach should be pursued immediately. If, the spreadsheet application would also be portable then this would be a big improvement over the current Janus paleo application.

I will be away from 25-27 June and then 2-7 July, but I'd be happy to followup more discussion on this before or after those dates. You might consider talking to Woody Wise about this before the SciMP meeting, as he has been actively involved in trying to get a good paleo application on the ship for many years, and he has firsthand experience with the shortcomings of the current Janus paleo application.

The main MRC news to report to the panel is that agreement letters have gone out to prospective curators of DSDP/ODP Micropaleontological Reference Center collections including (1) Dave Lazarus (Museum fuer Naturkunde, Humboldt Universitat, Berlin; radiolarians), (2) Guiliana Villa (University of Parma, Italy; calcareous nannofossils); (3) Jeremy Young (The Natural History Museum, London; calcareous nannofossils); and (4) Woody Wise and yourself (FSU; Antarctic calcarous nannofossils and diatoms). Once the agreement forms are signed and returned transfer of the collections to the new satellite institutions will get underway.

Cheers,
Brian

From: John_Firth@odp.tamu.edu
Date: Wed, 24 Jun 98 13:37:13 CST
To: "Brian T. Huber" <HUBER.BRIAN@NMNH.SI.EDU>, janecek@quartz.gly.fsu.edu
Subject: Re: paleo application rpt.

Hi Brian, Tom:

Thanks for your input Brian. I want to answer some of your questions you brought up.

1) There are two reasons I see for why Tracor did not streamline the Janus paleo app before 171B. One is that Paul did run out of time to do anything more on it, and was being put on other programming projects, and secondly, he was somewhat unwilling to make any changes to it. He told me several times that what I wanted could not be done with Neuron Data, only for me to find out from our own programmers (Gil) that you can do the things I asked, if you know the NeuronData application well enough. Gil Munoz

programmed the repository sampling program , JRS, using NeuronData, which acts like a spreadsheet interface and is more streamlined than the sampling application that Tracor wrote for Janus for the ship. Gil's new smear slide application and the new Paleo spreadsheet application are also written in NeuronData, just like the Janus apps are. But his apps are standalone apps that connect to the Oracle db separately from entering the 'Janus' environment. The reason we propose to replace the Janus app is that its code is so different from what it needs to be to streamline it, that it is easier and faster for Gil to rewrite the entire thing than to try to fix the existing application. I agree that way too much time was spent by Tracor writing the Janus Paleo app, for what it provides us. Unfortunately, I see no other way to solve the problem of the criticisms from the shipboard paleontologists than to start over, use pieces of the code from the existing Janus app that are okay, but essentially redo the program, using NeuronData, as we outlined in the report. Our ODP programmers use NeuronData still to program, as witnessed by the Smearslide app that will also be ready for 181 (it looks much like the Paleo spreadsheet interface), and JRS, and other things.

Tom: if you really want to get a feel for whether the new interface we propose will go over well, ask Rainer Gersonde to review it. He was one of the most outspoken critics of Janus, and also gave us some detailed inputs last month on the shortcomings of the existing program. Obviously since Woody is there, you can ask him for input as well.

The last thing I wanted to do was to have to revisit this project one more time, especially after almost getting there with FossilList, and then having high hopes for Janus. But I see no other way to get this done finally and quickly, and with Gil Munoz, I have the best programmer I have ever worked with, and I am confident we can get a good working program this time around.

Let me know if I have answered your concerns, Brian, or if you have further questions.

Regards,

John

From: John_Firth@odp.tamu.edu
Date: Wed, 24 Jun 98 13:55:02 CST
To: "Brian T. Huber" <HUBER.BRIAN@NMNH.SI.EDU>, janecek@quartz.gly.fsu.edu
Subject: Re: paleo application rpt.

Brian:

actually, here are a couple more answers to your questions.

The spreadsheet application is actually up and running right now, and ready to use on 181. It took Gil about 1.5 weeks to program it, using the Smearslide program code already done. The remaining work to port over the individual sample screens will be all or mostly ready for 182. If anything else remains to be done, it would be done for 183. This project would not affect other programming projects too much, but that is something that Jay Miller will present to SCIMP next week. The program interfaces with the Oracle db as well or better than the existing Janus Paleo app.

Just like JRS in the repositories, it connects with Oracle just fine.
The program could conceivably be portable, just like JRS can run in standalonemode,
but it would require some Oracle communicaiotn modules to be connected to it which
we could not give out to people for free. In other words, we at this time
couldnt produce a free runtime version, like FOssiList to give out, becasue
of its (NeuronData) need for some Oracle software to go along with it. I can pursue
this further, as I am just as interested in this possibility as you are.
We could have it run stand alone back on shore or in any ODP office right now, but couldnt give it out to
others who dont have our Oracle license.

Regards,

John

APPENDIX 98-2-4

Integrated Curation and Publication Policy

The ODP Policy

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Note to reviewers: Please respond to all notes and queries highlighted in bold within the text. This document has been designed for publication on the WWW. Any words that are underlined and all references to “Back to top” represent links.

The ODP Policy

I. Introduction

The international Ocean Drilling Program (ODP) collects and analyzes marine cores of rocks and sediments from the sea floor recovered by the research vessel *JOIDES Resolution*. These cores, as well as those from the Deep Sea Drilling Project (DSDP), are stored in four repositories located in the United States and Germany. Scientists who participate in ODP cruises or use data or samples generated onboard the *JOIDES Resolution* incur an obligation to publish the results of their postcruise research. The regulations of the obligation incurred vary depending on whether (a) samples or data are received within one year of the cruise (the moratorium), or (b) after one year has passed (the postmoratorium).

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II. The ODP Obligation

All members of the shipboard scientific party¹ who (a) sail on an ODP cruise, (b) receive samples or data as a shore-based participant during the moratorium, or (c) receive samples during the postmoratorium incur an obligation that must be fulfilled by:

- submitting a Sample and Data Request Form² to ODP,
and
- publishing³ their research results according to the guidelines established in this policy.

Any individual who is unable to produce research results because appropriate samples or data were not retrieved during the cruise will be exempt⁴ from fulfilling the obligation requirements. If data or results could not be obtained during postcruise analyses, a letter of explanation must be submitted to the ODP Publications Coordinator.

NOTES/QUESTIONS FOR REVIEWERS:

¹ Is everyone O.K. with the wording of the first sentence of the obligation definition? Jack Baldauf recommended changing “Anyone” to “All members of the shipboard scientific party” because not everyone who SAILS has this obligation.

² The ODP/TAMU staff had some discussions about whether or not data recipients need to submit a Sample and Data Request Form. The following summarizes what was discussed:

Ann said the main reason for requiring scientific party members to fill out the form if they plan on fulfilling their obligation by publishing a paper based on ODP data is not an issue of granting permission. Rather, the form is a tracking device so that ODP will know how SP members plan to fulfil their obligation this way.

Tom Davies believes it is important to have everyone fill out the request form and noted that it will expose any potential duplication if two scientists plan to do the same thing.

John Firth says, everyone should fill out the form because it will identify those who want to use specific data in a specific way to write a paper.

Jack Baldauf commented that the shipboard party members who sail should not have to complete a data request because shipboard scientists, by definition, should have access to the shipboard data sets.

Rakesh Mithal doesn’t see a need to require scientists who sailed on an ODP cruise to submit a data request since they can receive all data while on the ship and have access to all data generated during their cruise via the WWW during the moratorium.

³ By changing the policy from requiring authors to “submit” to requiring them to “publish” what happens when SR data reports are rejected? Currently this only happens to about one paper per volume. But it may occur more often if we modify the requirements for authors who choose to submit to the outside literature. This draft policy

states that if papers submitted to outside journals are rejected, the authors must submit data reports to the SR volume within 6 months. There is a chance we could see more rejections. Since the authors would not have “published,” would we classify them as nonperformers, or would there be a loophole in the policy to make them exempt?

⁴Is everyone O.K. with the term “exempt.”

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III. Guidelines for Cruise Participants and Sample and Data Recipients during the Moratorium

A. Obtaining Samples

1. Leg-Specific Sampling Strategy

(a) Leg-specific sampling, both shipboard and shorebased, will follow a “Sampling Strategy” established by the Sample Allocation Committee (SAC) (see Appendix A). The strategy will integrate and coordinate the programs for drilling, sampling, data acquisition and downhole measurements to best meet the scientific objectives of the cruise. By necessity, the strategy will evolve over the course of leg planning, during the leg (e.g., depending on drilling results), and in the postcruise moratorium. All sampling plans should be carefully considered in the strategy.

(b) Whenever possible, sampling should be deferred to a coordinated shorebased sampling effort (commonly referred to as a “sampling party”) in order to sample more efficiently, and with the perspective gained from having completed the leg. This will insure the best possible use of the core and distribution of samples. Shorebased sampling will be particularly appropriate for legs where many samples will be needed, such as those focusing on paleoceanographic objectives.

2. How to Request Samples during a Cruise or the Moratorium

[QUESTION: FOR THE SCIENTISTS WHO WANT TO KNOW WHAT THEY NEED TO DO IN ORDER TO REQUEST SAMPLES, WOULDN'T IT BE BETTER TO DIVIDE THIS SECTION INTO PARTS: If you request samples before a cruise or while at sea; During the moratorium, etc.? Jack Baldauf agrees it would help, J. Firth had no comment.]

Scientific party members should submit sample requests to the ODP Curator at Texas A&M University no later than three months prior to the start of the leg. This will provide sufficient lead time for planning. The Sample Allocation Committee (SAC) will review the sample requests and approval will be based on compatibility with the Sampling Strategy. In cases where a sample request is considered incompatible, the SAC may do one of the following: recommend modifications to the request; modify the Sampling Strategy; or reject the request if the other options are inappropriate. The SAC will also consider requests submitted at sea or within the moratorium. Request approval requires endorsement by a majority of the SAC. In the event of an evenly divided vote, the Curator will make a decision. The sample requester may choose to appeal the SAC's and/or Curator's decision to the Curatorial Advisory Board (CAB). If a conflict arises over the allocation of samples, shipboard scientific party members have priority over shorebased members.

A Sample and Data Request Form is included in Appendix D, and Appendix E contains general guidelines to assist the requester in estimating sample volumes.

3. Collaborative Agreements

All collaborative arrangements must be made in writing, tied to request numbers, and approved by the SAC in advance of receiving samples.

4. Samples for Routine Shipboard Analyses

All data produced from routine shipboard analyses are available to the entire scientific party. Unless requested, samples used for shipboard analysis, and/or their residues, are shipped to the appropriate core repository at the end of the cruise. If scientific party members want these materials for postcruise research, they are available through the normal sample request procedure. Thin sections and smear slides generated on the ship are also sent to the repository after the postcruise, where they are catalogued before they are made available for short-term (less than one year) loan to scientific party members. An agreement is made between the sample recipient and the ODP Curator regarding the duration of the loan.

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B. Obtaining Data

Everyone who plans to fulfill their ODP obligation by publishing a paper using ODP shipboard data must fill out a Sample and Data Request Form and submit it to the Sample Allocation Committee (SAC). The request will be given an ID number that will be used in tracking fulfillment of the ODP obligation.

[NOTE: See Section II, NOTES/QUESTIONS FOR REVIEWERS, QUESTION #2. If the final ruling is that data requestors don't have to submit a request form then this section needs to be reworded.]

Data produced during a cruise from routine shipboard analyses remain proprietary to the ODP Scientific Party for a period of one year from the end of the cruise (the moratorium). There is one exception to the one-year moratorium rule—the ODP Databank and the National Geophysical Data Center (NGDC) are given copies of the underway navigation, magnetics, bathymetry, and seismic data after each cruise ends. Any other scientists who wish to receive these data within the moratorium must submit a request to the SAC. Appendix F lists the data types that ODP maintains.

The proprietary data is available to all Scientific Party members through the JANUS Web site (go to [Error! Bookmark not defined.](#), click on “Moratorium Access” and enter username, then click “OK” and select data sets from the “Database Overview”). A JANUS login “username” is required to obtain data from this site during the moratorium. All ODP data that is not under the moratorium can be accessed through the JANUS Web site (go to [Error! Bookmark not defined.](#) and click on “Database Overview”). Data requests can also be submitted to the ODP Data Librarian.

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C. Publishing Postcruise Research

All members of the Scientific Party who (a) sail on an ODP cruise, or (b) receive samples or data as shore-based participants during the moratorium incur an obligation to publish their research results according to the guidelines outlined below. Individuals have the option of submitting papers for publication to an internationally recognized peer-reviewed scientific journal that publishes in English, or the *Scientific Results* (SR) volume for the leg.

1. Guidelines for Submitting Papers to Scientific Journals

1.1 Submission during the Moratorium (0–12 months postcruise)

(a) Authors who wish to submit manuscripts to a scientific journal before the 1-year postcruise moratorium has expired must receive prior approval in writing by a majority of the scientific party. This approval must be coordinated by the ODP Staff Scientist who will circulate the manuscript(s) among the scientific party and notify the authors of the scientific party's decision. If approval is granted, authors must submit a copy of the final manuscript to the ODP Publications Coordinator at the same time that they send their submission to a scientific journal.

(b) The Editorial Review Board (ERB) is responsible for checking each manuscript for proper citation of site summaries and site chapters and for proper use of data and conclusions from other members of the scientific party.

(c) Authors are responsible for meeting all responsibilities listed under section 1.2.a.

(d) Failure to meet any one of these obligations and responsibilities could result in the rejection of future sample requests and may influence participation on future legs.

[QUESTION: DO YOU WANT TO CONSIDER REWORDING THIS TO: “Failure to meet any one of these obligations and responsibilities will (or may) result in the rejection of future sample requests and influence participation on future legs.”?]

1.2 Submission after the Moratorium and up to Submission Deadline

(13–28 months postcruise)

(a) Authors who choose to publish their postcruise research in a scientific journal must carry out the following:

| | |
|---|---|
| 1 | Comply with all written collaborative agreements identified in the leg data/sampling plan. |
| 2 | At the second postcruise meeting, submit final title(s) to the Editorial Review Board (ERB) for paper(s) that fulfill the ODP obligation. |
| 3 | Acknowledge in all publications the receipt of data or samples from ODP and the funding agency that supported the research. |
| 4 | Submit the manuscript(s) to the journal(s) no later than 28 months postcruise. |
| 5 | Submit a copy of the manuscript(s) to the <u>ODP Publications Coordinator</u> at the time of submission to the journal. Cover letter should include venue and date of submission. |
| | [NOTE: I DELETED THE FOLLOWING “Send the <u>ODP Publications Coordinator</u> verification from the publisher that the paper was received for consideration,” AND ADDED THE LAST SENTENCE IN #5. I realize there is a difference between stating WHERE the paper was sent and showing proof that the paper was received for consideration by the journal. Up until now, we based fulfillment of the obligation on whether the paper was “of reviewable quality and was received for consideration.” If we plan to change the obligation definition to require that authors’ papers be PUBLISHED (not just submitted), I don’t see the need to track this any more. I think we should do away with this rule and just require authors to report when the paper is either accepted for publication or rejected. If the paper is rejected, then we require them to submit a data report within 6 months. O.K.??] |
| 6 | If the paper is accepted for publication, submit an electronic copy of the following to the <u>ODP Publications Coordinator</u> : <ul style="list-style-type: none"> ◆ final citation, ◆ abstract (Note: Each author is responsible for requesting permission to post the abstract on the ODP leg-related publication list located on the ODP WWW site), and ◆ key-word list. If the paper is rejected, submit a data report for the <i>Scientific Results</i> volume to the <u>ODP Publications Coordinator</u> within six months of the rejection. See Section C.2, below, for submission guidelines. [NOTE: I ADDED THE 6 MONTH DEADLINE] |
| 7 | Submit one reprint to the <u>ODP Curator</u> . |
| | [NOTE: As per the new recommended Policy guidelines, which do not include submission of postcruise data to ODP, I deleted the following: Submit an electronic copy of all final data obtained from samples to the <u>ODP Data Librarian</u> as soon as the results have been submitted.] |

(b) The ERB is responsible for checking each manuscript for proper citation of site summaries and site chapters and for proper use of data and conclusions from other members of the scientific party.

(c) Failure to meet any one of these obligations and responsibilities could result in the rejection of future sample requests and may influence participation on future legs.

[QUESTION: DO YOU WANT TO CONSIDER REWORDING THIS TO: “Failure to meet any one of these obligations and responsibilities will (or may) result in the rejection of future sample requests and influence participation on future legs.”?]

2. Guidelines for Submitting Papers to the *Scientific Results* Volume

(a) Authors who choose to publish their postcruise research in the *Scientific Results* volume must carry out the following:

| | |
|---|---|
| 1 | Comply with all written collaborative agreements identified in the leg data/sampling plan. |
| 2 | At the second postcruise meeting, submit final title(s) to the Editorial Review Board (ERB) for paper(s) that fulfill the ODP obligation. |
| 3 | Acknowledge in all publications the receipt of data or samples from ODP and the funding agency that supported their research. |
| 4 | Submit manuscript(s) to the <u>ODP Publications Coordinator</u> by 28 months postcruise.* Note: All manuscripts must be of reviewable quality, and meet ODP's standards as outlined in the <u>Publication Instructions for ODP Scientists</u> guide. Manuscripts that do not meet ODP standards will be returned to the author and will not go through the review process unless they are revised to meet ODP standards before the submission deadline. *Synthesis papers are not due until 34.5 months postcruise. |
| | [NOTE: As per the new recommended Policy guidelines, which do not include submission of postcruise data to ODP, I deleted the following: Submit an electronic copy of all final data obtained from samples to the <u>ODP Data Librarian</u> as soon as the results have been submitted.] |

(2) The ERB is responsible for coordinating the peer-review and approval processes for all papers submitted to the *Scientific Results* volume.

(3) Failure to meet any one of these obligations and responsibilities could result in the rejection of future sample requests and may influence participation on future legs.

[QUESTION: DO YOU WANT TO CONSIDER REWORDING THIS TO: "Failure to meet any one of these obligations and responsibilities will (or may) result in the rejection of future sample requests and influence participation on future legs."?]

IV. Guidelines for Sample and Data Recipients after the Moratorium

A. Obtaining Samples

1. Postmoratorium Sampling Regulations

Core material samples recovered during a leg are available 12 months after a cruise to any scientist, curator, or educator who has the resources to complete a scientific investigation, or prepare materials for curatorial or educational purposes. The sample requester must independently secure funds for sample-related research activities. Approval of sample requests will be based on the availability of material and the anticipated length of time it will take the investigator to complete the proposed project.

2. How to Request Samples

Postmoratorium sample requests should be submitted to the ODP Curator who will evaluate them for completeness and for adherence to the provisions in this policy. Requests should be prepared using the Sample and Data Request Form (Appendix D). If questions arise, the Curator will consult with the requester. If a sample requester disagrees with the Curator's final decision on a sample request, and wishes to appeal the decision, the Curator will forward the request to the Curatorial Advisory Board (CAB) for resolution.

When considering a sample request, the Curator will ascertain whether the requested material is available in the working half or the temporary archive half of the core. If not available, the Curator will consult with the requester to determine if the range of the sought interval(s) or the sample spacing within the interval(s) may be modified. If the request cannot be modified because of scientific requirements, a request to sample the permanent archive can be considered (see Permanent Archive Sampling below).

To assist the sample requester, the Curator can provide relevant information on previous sample requests and resultant studies on the core interval in question. The Curator can also provide advice and guidance to the requester when considering sample volumes and frequencies (see Appendix E).

3. Permanent Archive Sampling

Sampling of the permanent archive is feasible five years postcruise if the working and/or the temporary archive halves of the core have been depleted, as judged by the Curator. Requests to sample the permanent archive should be sent to the Curator, who will forward them to the Curatorial Advisory Board (CAB) after conducting a preliminary review. The CAB will evaluate the request based on its scientific merit and on the extent to which the working half is depleted. If necessary, the CAB may also consult with members of the original Sample Allocation Committee (SAC) who were responsible for establishing the permanent archive being considered for sampling. The CAB will strive to maintain a representative continuous section of core material for archival purposes whenever possible. Once a request to sample the permanent archive is approved by the CAB, the Curator will oversee implementation of the sampling. This may include encouraging others to collaborate on the samples taken, to maximize their scientific use, or to encourage non-destructive analyses to be done on the interval before sampling. The CAB will be informed of the implementation procedures for each request.

4. Educational Sampling

Cores can be viewed, described, and sampled for teaching and educational purposes. Core materials that are abundant in the collection, or not in high demand for research purposes, are available to educators for sampling. Sample requests should be prepared using the Sample and Data Request Form (Appendix D). The ODP Curator approves requests if they do not deplete the working and/or the temporary archive halves of the core. Educators who receive samples or conduct non-destructive analyses do not incur an obligation to publish.

5. Requests for Public Display Material

Core material is available for public display, such as in museums or at professional scientific meetings. Requests to borrow cores may be submitted to the ODP Curator, and the requests should:

- (1) include a description of the public display, including the location and purpose;
- (2) indicate the duration of the display and how the curatorial state of the cores will be maintained; and
- (3) identify the person(s) responsible for overseeing the cores.

All public displays of ODP/DSDP material will include a notice that properly credits the ODP and support by the National Science Foundation and its international partners. Requests will be reviewed by the ODP Curator and/or the Curatorial Advisory Board (CAB), and will be forwarded to Joint Oceanographic Institutions, Inc. (JOI) as appropriate. A loan agreement will be required for loans of two weeks or more. The Curator will provide details about the loan agreement upon request.

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B. Obtaining Data

Anyone who wishes to receive ODP data after the one-year moratorium must submit a request to the ODP Data Librarian. No obligations are incurred when data is received postmoratorium.

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C. Publishing Postcruise Research

Everyone who receives samples or conducts non-destructive analyses on ODP cores after the 12-month moratorium ends incurs an obligation to publish their research results. Individuals are expected to submit papers for publication to an internationally recognized peer-reviewed scientific journal that publishes in English.

[QUESTION: Is the last sentence a necessary requirement? We state this as a requirement for individuals that receive samples within the moratorium. John Firth isn't sure the English requirement is O.K. and notes that many people publish in other languages. Tom Davis also questions if this is necessary.]

1. Guidelines for Submitting Papers to Scientific Journals

(a) Authors must carry out the following:

| | |
|---|---|
| 1 | Submit a paper for publication based on their results. |
| 2 | No later than 36 months after receipt of samples, submit either a reprint of a published manuscript, or a progress report to the ODP Curator outlining the status of the samples and/or the data. [NOTE/QUESTION: IS THIS A WORTHWHILE REGULATION? FIRTH QUESTIONS WHAT HE IS SUPPOSED TO DO IF A SCIENTIST JUST SAYS "I'M STILL WORKING ON THE SAMPLES."] |
| 3 | Submit one reprint to the <u>ODP Curator</u> . [NOTE: I'M DELETING THE FOLLOWING: Submit an electronic copy of all final data obtained from samples to the <u>ODP Data Librarian</u> as soon as the results have been submitted. (Notes: Each author is responsible for contacting the ODP Data Librarian for information on acceptable data formats. Submission of reprints to the ODP Curator does not fulfill this responsibility.)] |

(b) Failure to meet these responsibilities will result in the rejection of future sample requests and may influence participation on future legs.

[QUESTION: DO YOU WANT TO CONSIDER REWORDING THIS TO: "Failure to meet any one of these obligations and responsibilities will (or may) result in the rejection of future sample requests and influence participation on future legs."?]

Appendix A: Authority

The authority and responsibility of making decisions regarding the distribution of DSDP/ODP samples lies with the ODP Curator, the Sample Allocation Committee (SAC), and the Curatorial Advisory Board (CAB).

The **ODP Curator** (at Texas A&M University) is responsible for the day-to-day curation of ODP and DSDP samples. The Curator maintains a record of all distributed samples, both on board the *JOIDES Resolution* and from the repositories. During the leg, the Curator's authority and responsibilities to the Sample Allocation Committee (SAC) are ceded to the **Shipboard Curatorial Representative**.

The **ODP Data Librarian** is responsible for distributing data when requests are received. The Data Librarian maintains a record of all data distributed from the ODP data library to shorebased participants during and after the moratorium. These records, which include the recipients, the nature of the proposed research, and the status of the request, are available to investigators upon request.

For each ODP leg, a **Sample Allocation Committee (SAC)** is constituted, comprising the Co-chief Scientists, the ODP Staff Scientist, and the ODP Curator/Curatorial Representative.

The SAC is responsible for reviewing and approving all Sample and Data Request Forms that are submitted by (a) all shipboard participants and (b) any shorebased scientists who want data or samples during the moratorium.

Because the SAC best understands the scientific goals of their leg, this group establishes a leg-specific sampling policy and makes decisions on leg-specific sample and data requests received before the leg sails, during the leg, and within the moratorium, but not after. Approval of such sample and data requests requires endorsement by a majority of the SAC. In the event of an evenly divided vote, the Curator will make a decision. If desired, the sample requester may choose to appeal the SAC's or Curator's decision to the Curatorial Advisory Board (CAB). (See Table A.1 for list of members and contact information.)

The **Curatorial Advisory Board (CAB)** is a standing body that consists of the ODP Deputy Director, the Manager of Science Services, and two members of the scientific community (selected by the JOIDES Scientific Measurements Panel) who will serve four-year terms that overlap by two years. Scientists may contact any member of the CAB with questions or in the event of an appeal. See Table A.1 for CAB contact information. Every effort will be made to insure that CAB membership represents as wide a variety of scientific disciplines as possible. The CAB will act as an "appeal board" vested with the authority to make final decisions regarding sample distribution whenever significant conflicts or differences of opinion arise among any combination of the ODP Curator, the sample requester, and the SAC. In the case of an equally split vote among the four CAB members, the final authority rests with the ODP Deputy Director. The CAB is also responsible for reviewing and approving requests to sample the "permanent archive" (defined below), and requests for loans of core material for public display. To insure prompt decisions, CAB members will communicate via teleconferencing or e-mail.

Table A.1. Curatorial Advisory Board Members

| CAB Board Member | Contact Information |
|-------------------------|--|
| Dr. Christopher MacLeod | E-mail: macleod@cardiff.ac.uk Phone: 44(1222)874 830, ext. 5181; Fax: 44(1222)874 326 Dept. of Earth Sciences, University of Wales of Cardiff, PO Box 914, Cardiff CF1 3YE, United Kingdom |
| Dr. Rick Murray | E-mail: Error! Bookmark not defined. Phone: 617-353-6532; Fax: 617-353-3290 Department of Earth Sciences, Boston University, 675 Commonwealth Avenue, Boston, MA 02215 USA |
| Dr. Jack Baldauf | E-mail: Error! Bookmark not defined. Phone: 409-845-9297 Deputy Director, Ocean Drilling Program, 1000 Discovery Drive, College Station, TX 77845 USA |
| Dr. Tom Davies | E-mail: Error! Bookmark not defined. Phone: 409-862-2283 Manager of Science Services, Ocean Drilling Program, 1000 Discovery Drive, College Station, TX 77845 USA |

The authority and responsibility of making decisions regarding the adherence to the postcruise publication policies lies with the ODP Manager of Publication Services, the Editorial Review Board (ERB) for the leg, and the Assistant Director of the Joint Oceanographic Institutions (JOI).

The **ODP Manager of Publication Services** (at Texas A&M University) is responsible for overseeing the day-to-day implementation of the publication section of this policy. The Manager's staff maintains a record of all contributions that fulfill the publication obligations for scientists who receive samples within the moratorium.

For each ODP leg, an **Editorial Review Board (ERB)** is established, comprising the Co-chief Scientists, the ODP Staff Scientist, and/or an external scientist/specialist. **[CHECK IF WE HAVE A PAGE THAT LISTS ALL CC AND SS THAT WE COULD LINK TO.]** The ERB is responsible for overseeing the publication of postcruise science results for everyone who receives samples within the moratorium. In particular, the board is responsible for checking all postcruise science generated from the cruise for proper usage of data and conclusions from other members of the Scientific Party, for coordinating the peer-review of any papers submitted to the *Scientific Results* volume, and for investigating individuals who do not fulfil their publication obligation and passing recommendations of actions that should be taken against these individuals on to JOI.

The **Joint Oceanographic Institutions (JOI)** is responsible for determining any action that should be taken against individuals who do not fulfil their obligations as outlined within this policy.

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Appendix B: Terminology and Curatorial Requirements

In this section, ODP-related curatorial terms, concepts, and requirements are defined and explained.

B.1 Scientific Party

The scientific party for any ODP leg consists of the scientists who sail on the leg, as well as any shorebased scientists who were granted permission from the SAC to receive samples from the leg within the moratorium.

B.2 Moratorium

The period from the beginning of a leg through one year after the end of the leg is designated as the “moratorium” period for a leg. **[NOTE: We need a better way to word this because it contains too many phrases. Any suggestions?]** During the moratorium, certain restrictions are applied to cores and data generated during the leg. The purpose of the moratorium is to ensure adequate time is allotted for scientific party members to conduct leg-related research before the cores and data are made available to the general public. This requirement is to help the scientific party fulfil their publication obligations to ODP without competition from the general science community.

B.3 Unique and Non-Unique Intervals

A cored interval is designated “unique” if it has been recovered only once at a drill site. The most common occurrence of a unique interval is one that results when only one hole is drilled at a site. If the cored interval is recovered from two or more holes, then the interval is considered “non unique.” A critical exception to this definition occurs when drilling into igneous basement rocks, metamorphic rocks, or ore deposits. Every hole drilled into these lithologies is considered unique because of their inherent lateral heterogeneity. Lithostratigraphic analysis of advanced piston cores from multiple holes drilled at one site may reveal that short (generally less than two meter) sedimentary intervals are commonly missing between successive cores from any one drill hole, even where nominal recovery approaches 100%⁵. These missing intervals can be ignored when considering whether or not an interval is unique.

⁵**[QUESTION: Rick Murray suggested adding “provided such intervals are not ‘critical intervals’ (see below).” John Firth is not sure if this should be added. Someone needs to make a decision.]**

B.4 Archive and Working Halves

By tradition, and by shipboard procedure, drill cores are split into halves. One becomes the “working half” and the other becomes the “archive half.” Prior to 1997, the sample distribution policy stipulated that the archive was preserved (unsampled) and conserved in the repository, available only for non-destructive examination and analysis. Samples for destructive analyses were taken exclusively from the working half. Since 1997, the entire working half is now available for sampling. The procedure of splitting cores into working and archive halves will continue, for practical and database purposes, among others, but the concept and definition of an archive half has now been expanded and modified. This will enhance scientific flexibility by enabling greater access to important and often coveted material.

B.5 Permanent Archive

Archive core earmarked “permanent” is material that is initially preserved unsampled and is conserved in the core repositories for subsequent non destructive examination and analysis. Thus, the definition of “permanent archive” is somewhat analogous to that of “archive” which was used prior to 1997.

B.6 Minimum Permanent Archive

A fundamental provision of this policy is that a “minimum permanent archive” will be established for each ODP drill site. In “unique intervals,” this archive will consist of at least one half of each core, excluding whole-round samples (e.g., for interstitial pore water analysis). If so desired, the SAC may choose to designate more, but not less, than this as the permanent archive. In “non-unique intervals”, the permanent archive will consist of at least one half of one set of cores that span the entire drilled sequence, again, excluding whole-round samples. In practice, if holes are cored continuously, the minimum permanent archive may consist of half of the cores taken from the deepest hole drilled at a site. As such, the archive halves of cores from other holes drilled to equal or shallower depths, and contain replicate copies of the stratigraphic interval constituting the minimum permanent archive, need not be designated as “permanent archive,” but can be, if so desired by the SAC. If not deemed “permanent archive,” they are “temporary archive.”

B.7 Temporary Archive

Cores taken from non-unique intervals that are not part of the permanent archive will be split into working and archive halves. These archive halves, however, will be considered “temporary archives,” unless stipulated otherwise by the SAC in the Sample Strategy. These halves may be sampled and treated as working halves when either the working halves have been depleted by sampling, or when pristine, undisturbed material is needed for special sampling needs, such as U channels or slab samples.

B.8 Critical Intervals

Critical intervals are defined as lithologic spans that are of such scientific interest that there is extremely high sampling demand for them. These intervals may vary from thin, discrete horizons to thick units, extending over an entire core or more. Examples include: décollements, sediment-basement contacts, igneous contacts, impact/tektite horizons, gas hydrates, marker ash horizons, scaly fabric, magnetic reversals, and particular biostratigraphic levels. The SAC is responsible for anticipating the recovery of critical intervals and for developing a strategy for sampling and/or conserving them. For postmoratorium sampling, the Curator will work with investigators to ensure that previously defined critical intervals are sampled only when necessary.

B.9 Non-Destructive Analyses

Requests to perform non-destructive analyses on cores (e.g., descriptions, imaging, x-ray) should be submitted to the Curator in the same fashion that requests for core samples are submitted, that is, through the Sample and Data Request Form ([Appendix D](#)). Investigators who carry out non-destructive analyses incur the same obligations as those who request samples.

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Appendix C: Leg-specific Sampling Strategy: Guidelines and Examples

C.1 Guidelines

Development of the leg-specific Sampling Strategy begins in the initial stages of leg planning, when ODP drilling proposals are written and submitted to JOIDES. At this stage, proponents will develop a draft Sampling Strategy that will fulfill the scientific objectives of the leg. Once a proposal has been scheduled by JOIDES for drilling, the SAC will write a formal, leg-specific Sampling Strategy for publication in the ODP Scientific Prospectus. Prior to publication, the ODP Deputy Director will review the Scientific Prospectus, which provides him with the opportunity to advise on sampling issues pertaining to the broader (non-leg-specific) community. The Sampling Strategy will meet the specific objectives of the leg. The Strategy will define the minimum permanent archive and any supplements to it that the SAC deems necessary. The strategy will also become the basis of the shipboard and moratorium “sampling plan.”

A successful strategy will cover all of the following:

| | |
|---|--|
| 1 | Define the amount of core material available to the scientific party for sampling by deciding if (and when) more than a minimum permanent archive is needed. |
| 2 | Anticipate and possibly define limits on the volume and frequency of shipboard sampling for routine analyses, pilot studies, and low-resolution studies. |
| 3 | Estimate the sampling volume and frequency that is needed to meet the objectives of the leg, as per scientific sub-discipline and request type. |
| 4 | Anticipate the recovery of critical intervals and develop a protocol for sampling and/or preserving them. |
| 5 | Decide where and when sampling will occur. The SACs are strongly encouraged to defer large-volume and high frequency sampling to postcruise “sampling parties” at ODP core repositories. |
| 6 | Determine special sampling methods and needs (e.g., Pressure core sampler, microbiology, whole rounds). |
| 7 | Consider any special core storage or shipping needs (e.g., plastic wrap, freezing sections). |
| 8 | Identify disciplines/personnel needed for shorebased sampling. |

C.2 Examples

See the ODP Scientific Prospectus series at **Error! Bookmark not defined.**

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Appendix D: ODP Sample and Data Request Form

Available at **Error! Bookmark not defined.**

[NOTE: THIS FORM IS CURRENTLY The Sample Request Form AND WILL NEED TO BE REVIEWED AND UPDATED BY ODP/TAMU STAFF.]

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Appendix E: Typical Sample Volumes

Available at **Error! Bookmark not defined.**

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Appendix F: Data Collected and Maintained by ODP

| Data Group | Data Type |
|---------------------|--|
| Core | Core, sample, drilling |
| Multi sensor track | Gamma ray attenuation porosity evaluator (GRAPE) |
| | P-wave logger |
| | Magnetic susceptibility |
| | Natural gamma |
| Physical properties | Color reflectance |
| | Paleomagnetism |
| | Moisture and density |
| | Thermal conductivity |
| | Sonic velocity |
| | Shear strength |
| Paleontology | Paleontology |
| | Age profile |
| Chemical properties | Carbon/carbonate |
| | Interstitial water |
| | Gas |
| X-ray | X-ray fluorescence (XRF) |
| | X-ray diffraction (XRD) |
| Downhole tools | ADARA downhole temperature tool |
| | WSTP downhole temperature tool |
| Core description | Sedimentary core description |
| | Smear slides |
| | Thin sections |
| | Structural core description |
| | Hard rock core description |
| Underway geophysics | <u>Underway navigation</u> |
| | Magnetics |
| | Bathymetry |
| | Seismic data |

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APPENDIX 98-2-5

Proposal submitted by Carla Moore (NGDC liaison to SciMP) to Establish an ODP Database Mirror Site at the US National Geophysical Data Center (NGDC) and the co-located World Data Center A for Marine Geology and Geophysics (WDCA for MGG)

The US National Science Foundation and the US NGDC have an interagency agreement, designating NGDC as a parallel and permanent archive of marine geological and geophysical data generated by the Ocean Drilling Program and its predecessor, the Deep Sea Drilling Project.

NGDC proposes to use Internet mirroring technology as a new, cost-effective approach to completing and maintaining the ODP parallel archive.

NGDC seeks the endorsement of SciMP for this new approach, and a SciMP recommendation to SciCOMM that the JOIDES community ask the Science Operator to work with NGDC to determine what one-time resources would be needed from JOI for initial setup of a mirror site at NGDC. NGDC would maintain the parallel archive and perform all necessary data manipulation to fulfill permanent archive functions (attachment 1) at no further cost to JOI/ODP.

History of the Parallel Data Archive at NGDC

Historically, preparation of data for transfer to NGDC has been labor-intensive for the Science Operator. At the end of the DSDP, data preparation continued two years beyond actual drilling and was a major effort for both DSDP and NGDC. Although establishing the archive was painful, it proved worthwhile when NGDC was able to assist ODP in its first years by providing backup data from the parallel archive where needed. As ODP began producing data, transfers to NGDC required ODP staff to download and prepare data. After Leg 129, when use of the 1032 database declined and data were collected in diverse forms, data transfer to NGDC ceased in anticipation of a new database system at ODP. Now that JANUS is in place, issues of data archival can be addressed again.

Mirroring Technology as a Cost-Saving Mechanism for Data Archival.

Internet mirroring technology provides a cost-effective and efficient method of creating a parallel archive of ODP data at NGDC. The Drilling Program has already explored the possibility of creating a mirror site for JANUS at a European institution as a means to speed access to ODP data by non-US scientists. If ODP also simultaneously mirrors the JANUS database at NGDC, a continuously updated, parallel archive of the data would result with almost no additional effort on the part of ODP. By virtue of the nature of mirror sites, the data would automatically be updated at NGDC whenever ODP made a change. No post-drilling data transfer program would be required.

Once established, NGDC staff would assume the burden of maintaining the mirror site, providing access statistics to ODP, and performing data downloads from the ORACLE database to officially-sanctioned archive media. These services would be at no cost to the Drilling Program and would require no effort on the part of ODP staff other than maintaining the mirror connection.

Additional Benefits to the Scientific Community.

An additional benefit would be multiple access paths to ODP data and a backup server. Two Internet routes to the database within the U.S would provide faster access by dividing traffic, and would also mitigate the existing "single point of failure." NGDC has multiple, extremely fast Internet connections (attachment 2) and new redundant web servers (attachment 3). The entire NGDC framework would be available at no cost to JOI/ODP to augment access to the ODP database, and to act as a fail-safe net to prevent interruptions in service to the scientific community.

The Bottom Line

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. However, NGDC would assume responsibility for the long-term maintenance and operation of the proposed mirror site and parallel archive because of our mission as the US national archive (attachment 4) for marine geological and geophysical data collected with public funds, and because of our international role as the WDC A for MGG. The NSF-NGDC interagency agreement (and NSF policy; attachment 4) is consistent with this mission. NGDC has a long-term commitment to ensure that ODP data not only remain in the public domain, but are also maintained in perpetuity for future science.

Attachment 1: NGDC's Archival Policy; Adherence to Archival Guidelines

Data archival and data storage are two entirely different issues. Placing scientific data into a database management system is good data management, but does not fulfill the requirements of data "archival." In order to be an official data archive, certain standards and requirements must be met^{1,2}.

NGDC maintains dual-storage archives in strict conformance with National Archives and Records Administration (NARA)¹, National Institute of Standards and Technology (NIST), and International Standards Organization (ISO)² guidelines. One archive area is on-site at NGDC with limited access. The second archive area is off-site. Both areas are climate controlled and fully secured with alarm systems to notify GSA of intrusion or threat of flooding or fire. Data received at NGDC/WDC A for MGG are copied to NOAA/NESDIS approved archival media. The current approved media is 3480 tape cartridge. This will change as technology changes. One copy will be placed in the working on-site archive, and one in the offsite backup archive. Any original media are also maintained for re-use if errors are detected on archive media.

A complete catalog is maintained of all archive tapes. The catalog contains dates of creation, dates of access, and version numbers.

Archive data are migrated to new media after a period of time that is determined by the archival medium. At present, 3480 tape cartridges are assigned a useful life of 10 years. A long term archive migration program is in place to ensure that all archive data are migrated to new media before the end of the useful life of the archive medium.

¹Managing Electronic Records, *National Archives and Records Administration Instructional Guide Series*, NARA Office of Records Administration, Washington, D.C. 1990.

Vital Records and Records Disaster Mitigation and Recovery, *National Archives and Records Administration Instructional Guide Series*, NARA Office of Records Administration, Washington, D.C. 1996.

² ISO Archiving Standards, see URL <http://ssdoo.gsfc.nasa.gov/nost/isoas/>

Attachment 2: NGDC's Connection to the Internet

NGDC currently has multiple high-speed connections to the Internet via T1 (1.5 Mbps), OC3 (155 Mbps ATM), fractional T3 (fraction of 45 Mbps), and through NCAR. These connections will be maintained at the new NGDC building beginning in the spring of 1999.