SCIMP Appendix 00-1-5

JANUS Application Review

This Appendix contains

1) Letter by David Becker regarding JANUS prioritization
2) Methodology for JANUS Application Review Committee
3) Spreadsheet w/ results of JANUS Application Review Committee
4) Reprioritization of JANUS Application Review Committee

LETTER TO ODP Community from David Becker

I want to introduce myself to you. My name is David Becker and I am the new Information Services Manager at ODP/TAMU. After one month on the job, I find myself faced with an awesome challenge: review all JANUS database applications developed by either TRACOR or my staff, here at ODP, and identify and prioritize the projects needed to satisfactorally complete JANUS.

While the basic database structure is in place and is working, more work needs to be done on the upload and retrieval portions of the system. Now that the system has been in operation for over a year, we are in a position to fully evaluate what remains to be done in order to make this system acceptable and responsive to the scientific community.

Therefore, I am formally announcing the formation of a special committee to review JANUS applications. This committee will serve until a plan has been formed to deal with existing and future JANUS applications. The committee will have three objectives: 1. to evaluate the current status of JANUS applications; 2. to identify JANUS applications which are currently underway and planned for the near term; and, 3. to identify and prioritize JANUS applications over the next three years.

The committee has been formed with the following ODP representation: Peter Blum, Jay Miller, David Becker, Debbie Partain, Ken Emery, Susan Freeman, David Fackler, and Ron Grout. We would like to extend an invitation to members of SCIMP to join our committee and take an active role in the review of JANUS applications. Our first meeting will occur during the first week of June. If you are interested, please respond through this bulletin board or by contacting me directly at my e-mail address, david_becker@odp.tamu.edu. My phone number is 409-845-9324.

Methodology for JANUS Application Review Committee
August 25, 1999

1. Identify ODP/TAMU department/group ownership of each of forty applications and the appropriate ISD custodian.
Completed on August 25, 1999

2. Owners and custodians of each JANUS application shall each prepare a standardized report to include:
   a. A description of the application.
   b. A statement about the priority need for the application.
   c. A list of the major tasks needed to finish the application and their status.
   d. An estimate of the time required to finish each task.

These reports are due to the committee chair by September 24, 1999

3. Circulate the reports internally to ODP interested users of the application (e.g., ODP scientists, MLS's, MCS's, editors and lab working group leaders), members of the JANUS Review Committee, and scientists who sailed on legs 182-186.
Responses to be received by October 22, 1999

4. Compile results and circulate to JANUS Review Committee for their individual and appropriate science community reviews.
October 29, 1999

5. JANUS Review Committee meets to discuss and prioritize applications.
November 18-19, 1999

6. Draft report circulated to JANUS Review Committee..
Reviews due back to committee chair by December 3, 1999

7. Final report to ODP Headquarters.
Due on December 10, 1999

JANUS PRIORITIZATION COMMITTEE RANKINGS

								EVALUATIONS					PRIORITIES	
NO.	*TASK NAME*	*DATA SYSTEM*	*LWG*	*%*	*HR 1*	*LWG*	*SS*	*Sci*	*DQ*	*Ship*	*Shore*	*G1*	*G2*	*G3*
1	Integrate ICP data	JANUS.X-RAY	X-ray	0	400	1	H					1		
2	Evaluate microbiology needs	Microbiology	BIO	0	40	1	H					2		
3	Reevaluation of HR applecore	Applecore (HR)	CD	0	40	1a	H					3		
4	Reevaluation of sediment applecore	Applecore (sed.)	CD	0	40	1a	H					4		
5	Rig instrumentation integration	RIG	DH	10	400	3						6		
6	Implement digital imaging	Digital image	CD	0	400	2	H					7		
7	Implement integrated display	Winlog (or similar)	X	0	200	2						8		
8	TPC new tool	TPC	DH	0	300	3						9		
9	Downhole temperature collection	APCT-DVTP-WSTP	DH	10	400	1	H	X	X	X	X		1	
10	Implement bar codes	All	All lab	80	120	1	H		X	X	X		2	
11	Upgrade "PWS"	VSR	PP	80	120	1	H	X	X	X	X		3	
12	Fix uploader	Applecore (sed.)	CD	60	200	1c		X		X			4	
13	Fix batch export of core id's	Applecore (sed.)	CD	80	120	1d				X			5	
14	Age-depth control points	Datums (all)	X	20	200	1	H	X		X			6	
15	TC user interface	TC	PP	0	200	1B	H	X	X	X	X		7	
16	Implement JRS (Java) on ship	JRS	Curator	0	120	1	H		X	X	X		8	
17	Downhole temperature in database	APCT-DVTP-WSTP	DH	0	200	2		X		X	X		9	
18	Splice as query parameters	All reports	X	0	200	1				X			10	
19	Automated CR	AMST-CR	PP	40	200	2			X	X			11	
20	Fix Slider entry and bugs	Sliders	CD	90	120	2		X		X			12	
21	WCMST control data	WCMST	PP	80	200	1			X				13	
22	Implement PWS4	PWS4	PP	0	120	2			X				14	
23	Age independent variable	All reports	X	0	400	2				X			15	
24	Simultaneous MSP	AMST-MSP	PP	40	200	2				X			16	
25	Create X-Converter	X-Converter	X	0	200	1	H	X	X	X	X		17	
26	Reformat gas element table	GAP	CHEM	40	24	1	H	X		X				1
27	Reformat gas element graphs	GAP	CHEM	40	24	1	H	X		X				2
28	Section breaks in Net query	Cryo	Pmag	0	24	1A	H	X		X				3
29	Create Net query for Zplot	Cryo	Pmag	40	24	1B	H	X		X				4
30	Applecore software bugs/upgrades	Applecore (sed.)	CD	0	40	1a				X				5
31	Ensure IW upload on PC	JANUS-CHEMISTRY	CHEM	0	16	1				X	X			6
32	Ensure CARB upload on PC	JANUS-CHEMISTRY	CHEM	0	16	1				X	X			7
33	Fix/create splice reports	Splice reports	X	40	40	1	H				X			8
34	NGR data transfer	WCMST-NGR	PP	0	40	1	H	X	X					9
35	WCMST threshold warnings	WCMST	PP	60	80	1	H		X	X				10
36	Implement measurement types	Cryo	Pmag	10	80	1	H		X	X	X			11
37	TC data model	TC	PP	0	40	1A	H		X	X	X			12
38	MAD control measurements	MAD	PP	40	24	1	H		X	X				13
39	Better integrate Splicer	Splicer	X	40	40	1	H	X		X				14
40	Deploy, test PC vers of Coulometer	COULOMETER	CHEM	0	24	1				X				15
41	Implement updated MAD	MAD	PP	90	24	2				X	X			16
42	PWL calibration data	WCMST-PWL	PP	0	40	2					X			17
43	Age model upload/report	Age model	X	80	40	2		X		X				18
44	Reorient dec to Tensor	Cryo	Pmag	0	24	2		X	X	X				19
45	Add std error to Tensor data	Tensor	Pmag	10	24	2		X	X					20
46	MSP data model	AMST-MSP	PP	0	80	1			X	X	X			21
47	MSL drift correction	WCMST-MSL	PP	80	40	2			X					22
48	Correct GAS upload	JANUS-CHEMISTRY	CHEM	0	8	2			X	X	X			23
49	Implement thin section description	STP	CD	40	24	2		X		X	X			24
50	Alter output to display precision data	JANUS.X-RAY	X-ray	0	16	2a			X	X	X			25
51	Longcore program positioning	Cryo	Pmag	90	24	3			X					26
52	Improve output format	JANUS.X-RAY	X-ray	0	24	3				X	X			27
53	Upgrade "STRENGTH"	VSR	PP	80	40	2				X				28

54	Other DH measurements in DB	Packer, CORK, PCS, etc.	DH	10	80	2				X	X			29
55	Increase batch upload file size-XRF	JANUS.X-RAY	X-ray	100	0	2b	H			X				30

Legend for Headers, Evaluations, Priorities	**Lab Working Groups**
SS = staff scientist	DH = down hole laboratory
G1 = application tasks requiring project definition - once defined, will be integrated into G2 or G3	PP = physical properties laboratory
G2 = application tasks well defined and requiring > 120 hours	Pmag = paleomagnetics laboratory
G3 = application tasks well defined and requiring < 120 hours	CHEM = chemistry laboratory
H = high priority based on staff scientist ranking	X = miscellaneous issues affecting multiple laboratories
LWG = lab working group, also identifies the numbered LWG priority rankings	X-ray = x-ray laboratory
% = estimated percent of project complete	CD = core description laboratory
HR1 = estimate of hours to complete major task	BIO = biology laboratory
HR2 = revised estimates of hour to complete	
Sci = science impact of task	
DQ = data quality impact of task	
Shi = shipboard data management impact of task	
Sho = shorebased data management impact of task	
X = flag indicating significant impact, used in Sci, DQ, Shi, Sho columns	
Resource Legend	
Sci = representative staff scientist(s) from the associated lab working group or all lab working groups	
Tech = laboratory technician for the associated laboratory	
Dev = developer from Science Services, Information Services, Drilling Services, or an outside contractor or temporary worker	
DB = person from the database group familiar with data modelling and data collection issues	
Mgr = departmental manager	
MCS = marine computer specialist	
LWG = lab working group, used when input from several staff scientists is required	
TW = tech writer	
Cur = curator	
Eng = engineer	
Admin = administrative function (contracts, purchasing, etc.)	
Ops = operations, drilling operations manager in this context	
Departments	
SS = science services	
DS = drilling services	
IS = information services	
PB = publications	
CR = curation & repositories	

SCIMP JANUS RANKING

					PRIORITIES			SCIMP
No.	*TASK NAME*	*DATA SYSTEM*	*FUNCTION*	*LWG*	*G1*	*G2*	*G3*	*Rank*
10	Implement bar codes	All	Total system	All labs		2		**2**
2	Evaluate microbiology needs	Microbiology	Total system	BIO	2			**1**
3	Reevaluation of HR applecore	Applecore (HR)	Total system	CD	3			**1**
6	Implement digital imaging	Digital image	Total system	CD	7			**1**
12	Fix uploader	Applecore (sed.)	Upload	CD		4		**1**
4	Reevaluation of sediment applecore	Applecore (sed.)	Total system	CD	4			**2**
30	Applecore software bugs/upgrades	Applecore (sed.)	Collection	CD			5	**2**
13	Fix batch export of core id's	Applecore (sed.)	Access/Display	CD		5		**3**
20	Fix Slider entry and bugs	Sliders	Total system	CD		12		**3**
49	Implement thin section description (sed.)	STP	Total system	CD			24	**3**
31	Ensure IW upload on PC	JANUS-CHEMISTRY	Upload	CHEM			6	**1**
32	Ensure CARB upload on PC	JANUS-CHEMISTRY	Upload	CHEM			7	**1**
40	Deploy, test PC version of Coulometer	COULOMETER	Collection	CHEM			15	**1**
48	Correct GAS upload	JANUS-CHEMISTRY	Upload	CHEM			23	**1**
26	Reformat gas element table	GAP	Display	CHEM			1	**2**
27	Reformat gas element graphs	GAP	Display	CHEM			2	**2**
16	Implement JRS (Java) on ship	JRS	Collection	Curator		8		**1**
5	Rig instrumentation integration	RIG	Upload/Structure/Access	DH	6			**1**
9	Downhole temperature collection	APCT-DVTP-WSTP	Collection/Analysis	DH		1		**1**
8	TPC new tool	TPC	Total system	DH	9			**3**
17	Downhole temperature in database	APCT-DVTP-WSTP	Upload/Structure/Access	DH		9		**3**
54	Other DH measurements in DB	Packer, CORK, PCS, etc.	Upload/Structure/Access	DH			29	**3**
28	Section breaks in Net query	Cryo	Access	Pmag			3	**1**
29	Create Net query for Zplot	Cryo	Access	Pmag			4	**1**
36	Implement measurement types	Cryo	Collection/Upload/Access	Pmag			11	**2**
44	Reorient dec to Tensor	Cryo	Access	Pmag			19	**2**
45	Add std error to Tensor data	Tensor	Collection	Pmag			20	**2**
51	Longcore program positioning	Cryo	Collection	Pmag			26	**3**
21	WCMST control data	WCMST	Collection/Access	PP		13		**1**
34	NGR data transfer	WCMST-NGR	Collection	PP			9	**1**
35	WCMST threshold warnings	WCMST	Collection	PP			10	**1**
38	MAD control measurements	MAD	Collection	PP			13	**1**
41	Implement updated MAD	MAD	Total system	PP			16	**1**
42	PWL calibration data	WCMST-PWL	Access	PP			17	**1**
47	MSL drift correction	WCMST-MSL	Collection	PP			22	**1**
15	TC user interface	TC	Collection	PP		7		**2**
37	TC data model	TC	Structure	PP			12	**2**
19	Automated CR	AMST-CR	Collection	PP		11		**3**
46	MSP data model	AMST-MSP	Structure	PP			21	**3**
11	Upgrade "PWS"	VSR	Collection	PP		3		**3**
22	Implement PWS4	PWS4	Collection	PP		14		**3**
53	Upgrade "STRENGTH"	VSR	Collection	PP			28	**3**
24	Simultaneous MSP	AMST-MSP	Collection	PP		16		**3**
14	Age-depth control points	Datums (all)	Total system	X		6		**1**
43	Age model upload/report	Age model	Upload/Access	X			18	**1**
33	Fix/create splice reports	Splice reports	Access	X			8	**1**
39	Better integrate Splicer	Splicer	Access	X			14	**1**
7	Implement integrated display	Winlog (or similar)	Display	X	8			**2**
18	Splice as query parameters	All reports	Access	X		10		**2**
23	Age independent variable	All reports	Access	X		15		**2**
25	Create X-Converter	X-Converter	Access	X		17		**2**

1	Integrate ICP data	JANUS.X-RAY	Upload/Structure/Access	X-ray	1			**2**
50	Alter output to display precision data	JANUS.X-RAY	Access	X-ray			25	**3**
52	Improve output format	JANUS.X-RAY	Access	X-ray			27	**3**
55	Increase batch upload file size-XRF	JANUS.X-RAY	Upload	X-ray			30	**3**
	NOTE: SCIMP ranking is only within a Laboratory: 1(highest); 3 (lowest)							

SCIMP Appendix 00-1-6

Microbiology Steering Committee
November 19-20, 1999
Joint Oceanographic Institutions

Meeting Summary

Overview

Joint Oceanographic Institutions' Microbiology Steering Committee met for the first time in Washington DC on November 19th and 20th. The committee's mandate is to assist the Ocean Drilling Program with implementation of the Long Range Plan Deep Biosphere Pilot Project using recommendations from the Ocean Drilling Program advisory groups in the Joint Oceanographic Institutions for Deep Earth Sampling (see Appendix A for the committee mandate). The goals of the first meeting were to define:

- *JOIDES Resolution* lab equipment needs
- Shipboard sampling procedures & protocols
- Sample handling needs
- QC needs: routine & special cases
- Microbiology shipboard scientist's role on the JR
- Technical support needs on the JR
- Committee members & next meetings
- Reporting needs

Meeting Participants

Members:
Steve D'Hondt, geologist/paleontologist, Univ. of Rhode Island
Martin Fisk, igneous petrologist/microbiologist, Leg 185, PPG member, Oregon State Univ.,
Karsten Pedersen, microbiologist, PPG member, Goteburg University
Tommy Phelps, microbiologist, PPG member, U.S.Dept. of Energy
David Smith, microbiologist, Leg 185, Univ. of Rhode Island
Art Spivak, geochemist, Leg 185, Univ. of North Carolina at Wilmington
Andreas P. Teske, microbiologist, biochemist, U.S. National Science Foundation Life in Extreme Environments awardee, Woods Hole Oceanographic Institution

Liaisons:
Rick Murray, Boston Univ., geochemist, Leg 185, U.S. Science Advisory Committee and the Ocean Drilling Program Scientific Measurements Panel

Tom Davies, Manager Science Operations, Texas A& M University – Ocean Drilling Program
John Farrell, Assoc. Prog. Director, Joint Oceanographic Inst. - Ocean Drilling Program
Kate Moran, Program Director, Joint Oceanographic Inst. - Ocean Drilling Program

Guests:
Bruce Malfait, Ocean Drilling Program Manager, U.S. National Science Foundation
Paul Dauphin, U.S. Science Support Program Manager, U.S. National Science Foundation
Alison Sipe, Biological Oceanography, U.S. National Science Foundation

Laboratory, Sampling, and Quality Control

Laboratory equipment needs were discussed after hearing reviews of: the Deep Biosphere Program Planning Group recommendations, the microbiology experiences from Leg 185, the existing *JOIDES Resolution* laboratory equipment and lab status, the Life in Extreme Environments award and mandate, and U.S.Dept. of Energy interests.

Laboratory equipment is defined in terms of Routine Microbiology that will be conducted on the *JOIDES Resolution* on every leg, and Non-Routine Microbiology that will be conducted on a regular basis (but not necessarily on every leg) by sailing scientists. Routine Microbiology is described in four categories (Table 1):

- samples or analyses for direct microbial analyses;
- samples or measurements that categorize the *in situ* physico-chemical environment;
- samples and analyses that characterize the history of microbial processes at the site; and
- quality control samples and analyses.

The committee also discussed curation and core sampling strategies and protocols. Routine analyses will be conducted with one whole round sample taken immediately after core recovery on the catwalk. The Routine core flow and sampling strategy is shown in Figure 1 for sediments and sedimentary rocks.

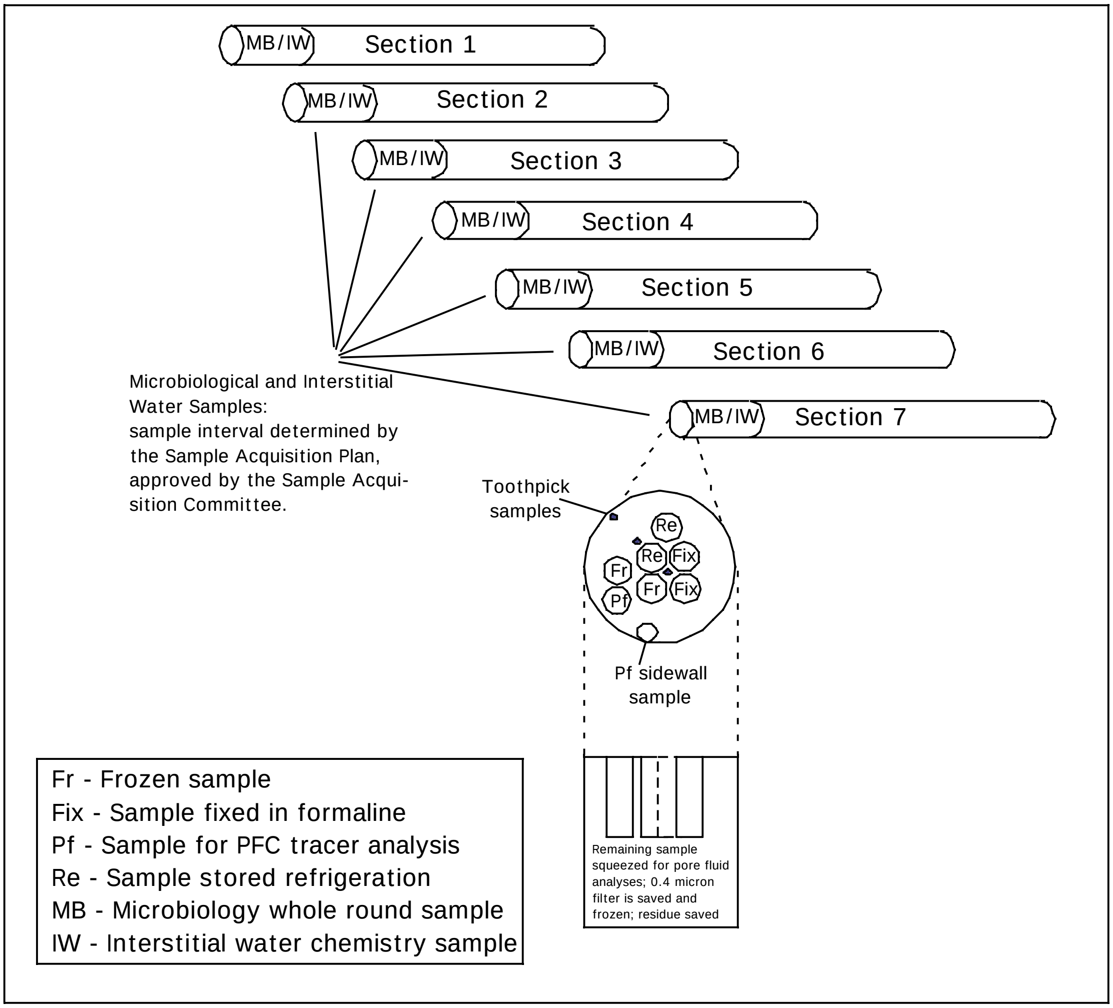

Figure 1. Routine microbiology sampling protocol. Duplicate samples are taken as archives.

Table 1

	Routine Procedure	Lab Equipment	On *JOIDES Resolution*?	To be purchased by:	Frequency	Who is Responsible?
	Direct Microbial					
1	DNA - frozen sample taken	-80 degree C freezer	yes, may need a 2nd	Ocean Drilling Program, if needed	10-15 cm whole round -coordinated with IW sample request	Microbio Tech or Microbio Scientist
2	Culturing - refrigerated sample taken	Refrigerator Glove bag Autoclave Water purifier w/ RO Gas maniifold H_2O_2 monitor	yes yes no no no no	Not applicable Not applicable Life in Extreme Environments Award	taken from same whole round, listed above	Microbio Tech or Microbio Scientist
3	Total Counts - formaline fixed sample taken	Microscope	no	Life in Extreme Environments Award	taken from same whole round, listed above	Microbio Tech or Microbio Scientist
	In Situ Characterization Properties:					
4	Tortuosity/porosity proxy: resistivity	4 Probe Electrode	yes - requires assessment and lab manual	Not applicable	minimum: take measurment adjacent to IW and Microbio whole rounds	Phys Props Scientist
5	Temperature	Adara, D- V Temp. Probe, Temp. Logging Tool	yes	Not applicable	Adara: 1/3 APCs	Downhole Tools Tech and Phys Props Scientist
6	Acetate and Volatile Fatty Acid concentration in pore fluid	GC w/ capillary column FID	yes	Not applicable	Measured on Microbio IW	Chem Tech or Chem Scientist
	Characterizing the History of Microbial Activity:					
7	NO3,Fe2+,Mn2+	ICP	yes	Not applicable	Measured on Microbio IW	Chem Tech or Chem Scientist
8	DOC	TOC Analyzer	no	Life in Extreme Environments Award	Measured on Microbio IW	Chem Tech or Chem Scientist
9	H_2	GC	yes	May need a dedicated GC	Measured on IW	Chem Tech or Chem Scientist
10	Fe+3, Mn+4	ICP	yes	Not applicable	Measured on Microbio Whole Round Residue	
11	NO_2	Auto Analyzer	no	Ocean Drilling Program	Measured on Microbio IW	Chem Tech or Chem Scientist
12	TOC	Coulometer & CNS	yes	Not applicable	Measured on Microbio Whole Round Residue	Chem Tech or Chem Scientist
13	S_t	to be determined	Art Spivak is investigating options for measuring	Ocean Drilling Program, if needed	Measured on Microbio Whole Round Residue	Chem Tech or Chem Scientist

	Quality Contol					
	Pore water chemistry report should routinely include an evaluation of fluid contamination	Not applicable	Not applicable	Not applicable	IW	Chem Scientist
14	DNA of seawater drill fluid intake	-80 degree C freezer	yes, may need a 2nd	Ocean Drilling Program, if needed	10-50cc sample from the drill water intake: 1 sample per site	Core Tech and Microbio Tech
15	Culturing of seawater drill fluid intake	refrigerator	yes	Not applicable	same sample as 10-50cc, listed above	Core Tech and Microbio Tech
16	Total Counts of seawater drill fluid intake	Microscope	no	Life in Extreme Environments Award	same sample as 10-50cc, listed above	Core Tech and Microbio Tech
17	DNA of core top water sample	-80 degree C freezer	yes, may need a 2nd	Ocean Drilling Program, if needed	10-50cc sample from the core liner above the core: 1 sample per core type per site	Microbio Tech
18	Culturing of core top water sample	refrigerator	yes	Not applicable	same sample as 10-50cc, listed above	Microbio Tech
19	Total Counts of core top water sample	Microscope	no	Life in Extreme Environments Award	same sample as 10-50cc, listed above	Microbio Tech
20	Perflourocarbon tracer:					
	delivery	automate the delivery pump	no	Ocean Drilling Program, engineering upgrade	Deliver in the drill fluid at all holes where microbiological samples are taken (1 hole per site)	Microbio Tech
	analyses	GC	yes	Not applicable	Taken from the same sample as #1	Microbio Tech or Microbio Scientist
21	Beads or other surrogate tracers					
	delivery	plastic bag in core bottom	yes	NA		Core Tech
	analyses	Microscope	no	LExEn	Toothpick samples (core center, core edge, and midway between edge/center)	Microbio Tech or Microbio Scientist

Special consideration was given to hard rock sampling. The committee recommended a modified procedure for hard rock sampling (Figure 2). Hard rock cores must first be visually inspected before selecting samples so as not to remove any critical intervals from the core. For most hard rock legs, only single hole sites are drilled. Therefore, it is important to assess each recovered section to ensure that it is not unique before removing an entire whole round interval for microbiology.

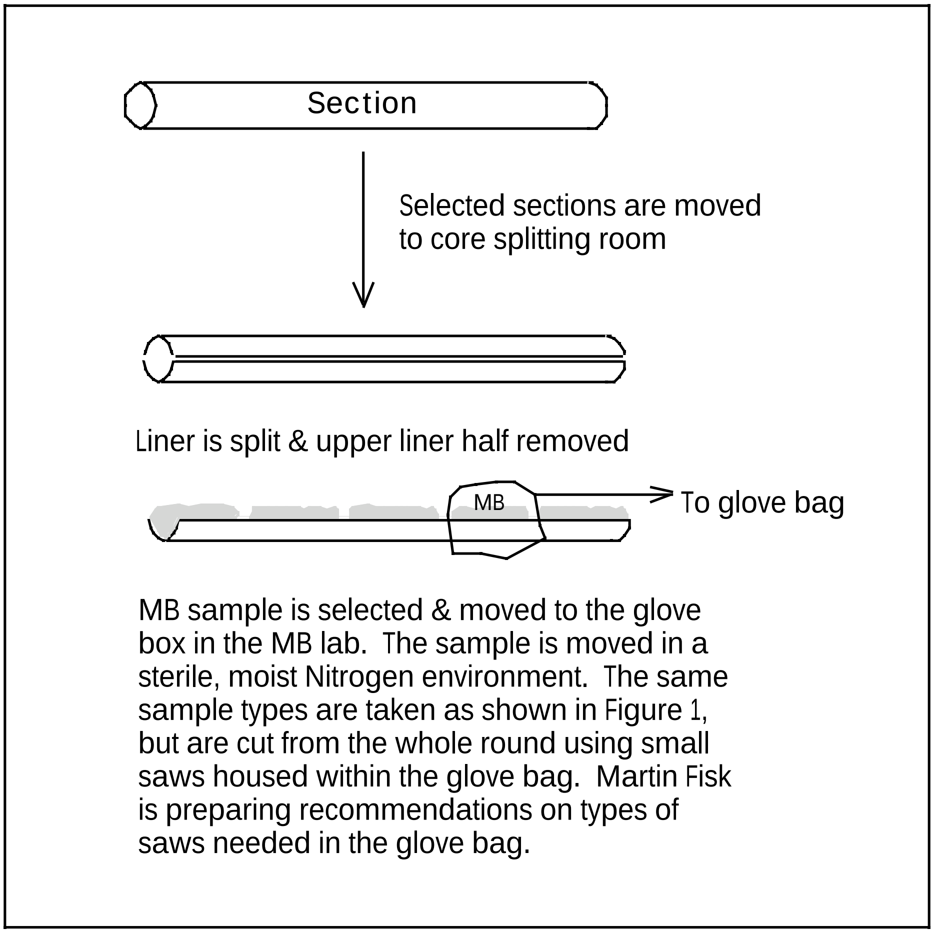

Figure 2. Special sampling for routine hard rock microbiology

Table 2 lists the Non-Routine Microbiology needs and the associated equipment required to meet these needs. The space allocation required for non-routine microbiology experiments will be addressed on a leg by leg basis. However, Table 2 lists the equipment that should be available onboard the *JOIDES Resolution* for non-routine analyses, as well as equipment that should be supplied by the sailing scientist (principle investigator, PI). The committee considered both routine and non-routine needs during the discussion of laboratory space requirements and lab layouts.

The committee reviewed the potential laboratory spaces available for microbiology on the *JOIDES Resolution*. The *JOIDES Resolution* space was recently increased during dry dock with expansion of the labstack's 7th level. The committee reviewed two options: installing the new microbiology laboratory in the new 7th level space or; installing the lab on the 5th level in the current locations of the

X-Ray and Thin Section labs. The committee's preference is the 5th level option because the chemistry laboratory is adjacent and much of the microbiology analyses require the use of chemistry equipment. Increased efficiencies would be gained with the new microbiology lab located adjacent to the chemistry lab. Their recommended layout for the two large new pieces of equipment are shown in Figure 3.

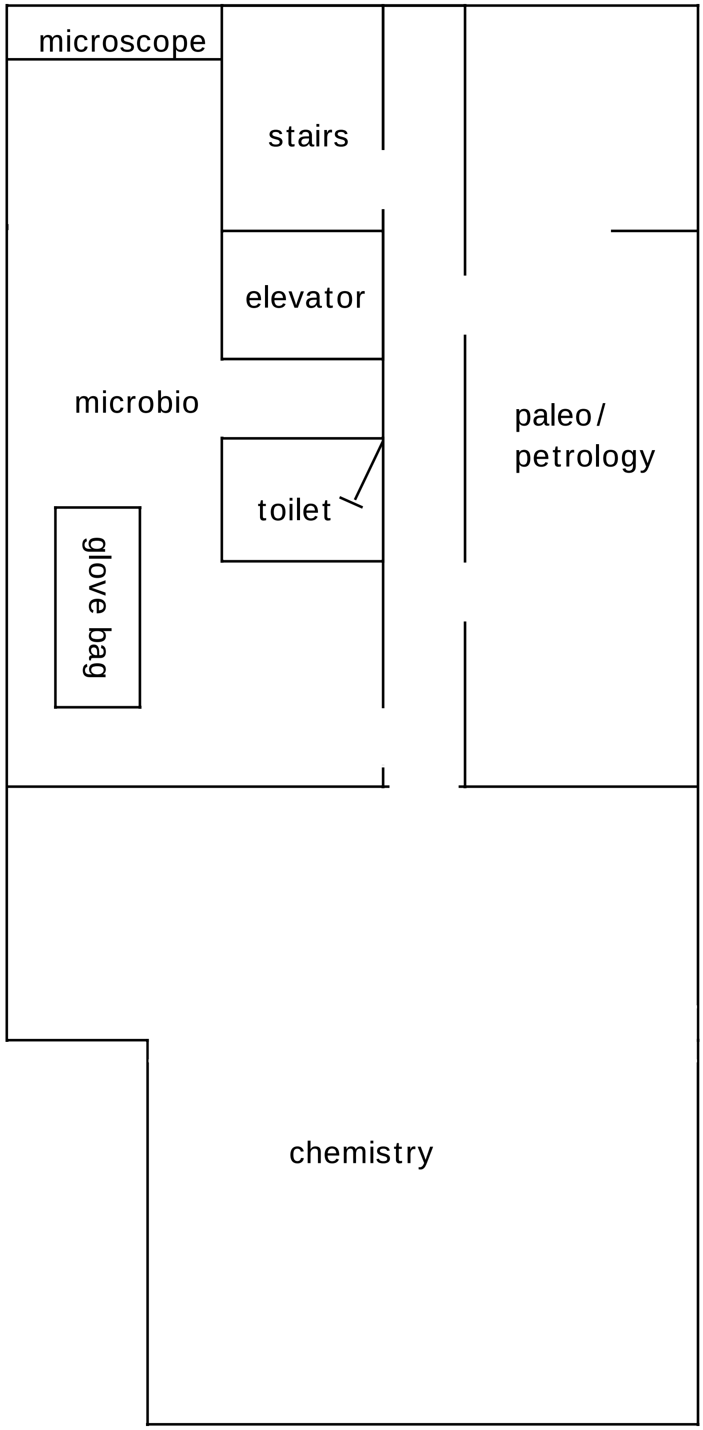

Figure 3. Proposed location of the microbiology on the labstack 5th level. The preferred spaceis the existing X-Ray and Thin Section labs. Non-bearing partitions are removed in this sketch. The glove bag is shown in the current position of the XRF and the microbiology microscope is positioned in the committee's preferred location, where light can be best controlled.

Table 2

Non-Routine Procedure	Lab Equipment	On *JOIDES Resolution*?	To be purchased by:	Frequency	Who is Responsible?
Radiotracer Experiments				shipboard scientist request	Microbio Tech or Microbio Scientist
	Liquid scintillation counter	no	LExEn		
	Chemical storage cabinet	no	LExEn		
	Separate van	yes	Not applicable		
	refrigerator	yes	Not applicable		
	laminar flow hood or tiles	yes	Not applicable		
	glove bag	yes	Not applicable		
	temperature control (shaker & incubator) system	no	LExEn		
	pressure sampling system	no	LExEn		
Culturing Experiments				shipboard scientist request	Microbio Tech or Microbio Scientist
	Autoclave	no	LExEn		
	Trace O2 Stripper	no	LExEn		
Nuclear Staining				shipboard scientist request	Microbio Tech or Microbio Scientist
	microscope with image capture	no	LExEn		
	tiny oven	no	ODP		
	microwave/convection oven	no	ODP		
Enzymology				shipboard scientist request	Microbio Tech or Microbio Scientist
	fluorometer	no	supplied by PI		
Gas Hydrate				shipboard scientist request	Microbio Tech or Microbio Scientist
	Raman spectrometer	no	supplied by PI		
Other				shipboard scientist request	Microbio Tech or Microbio Scientist
Biochemical Markers			supplied by PI		
Molecular Analyses			supplied by PI		
Respirometry			supplied by PI		
POC			supplied by PI		
Stable Isotopes			supplied by PI		

LExEn – Life in Extreme Environments Award
ODP – Ocean Drilling Program

Shipboard Microbiology Scientist and Technical Staff

The committee reviewed the draft position description for the shipboard microbiology scientist presented by Tom Davies. The modified position description is listed in Appendix B. The committee also reviewed the scheduled legs and staffing microbiology scientists. The following legs were identified as routine where at least one microbiologist should sail:

Leg 188, Prydz Bay
Leg 189, Southern Gateways
Leg 192, Ontong Java
Leg 194, Marion Plateau
Leg 197, Hotspots
Leg 199 Paleogene

The remaining legs (except ION legs), listed below, were identified as non-routine where 2-3 microbiology scientists should be staffed:

Leg 190/196, Nankai I/II
Leg 193, Manus Basin
Leg 198, Hydrate Ridge
Leg 201, SE Paleoceanography

The committee recommends that one microbiology technician is staffed for every leg. With the potential removal of the XRF and the purchase of a new benchtop XRD, the responsibilities of the X-Ray technician could be shifted to microbiology. The responsibilities of the technician are:

- routine sampling
- routine quality control testing
- maintenance of routine measurement equipment
- training/assisting the sailing microbiology scientist(s)
- maintenance of the radiotracer lab eqiupment and
- maintenance of non-routine procedures (cookbooks) and equipment.

Shipboard Procedures and Database Needs

The committee will assist in the preparation of shipboard “cookbooks” for the new microbiology procedures. Committee members will prepare drafts by mid-December:

- Rock sampling procedures (Martin/Karsten)
- Sediment sampling procedures (David/Rick)
- Quality control procedures (David/Art)

The following data fields should be added to Janus:

- the new sample types shown in Fig. 1
- total counts for each sample type in a new microbiology table
- addition of the new bulk sediment chemistry fields listed in Table 1
- add to core table, the type of tracer used (beads or PFCs or both)
- add bead counts to a new microbiology table

- add PFC results (concentration) to GC chemistry table
- add new pore water analyses (Table 1) to inorganic chemistry data tables

Future Committee Members, Meetings, and Reporting

It was agreed that a second full committee meeting was not needed because all goals were addressed. Small groups of committee members will meet at AGU in December (Thursday afternoon following the Microbiology poster session) to review:
- status of cookbook drafts
- laboratory layout

Andreas Teskes and Kate Moran will meet in early January to review the Life in Extreme Environments Award and Ocean Drilling Program equipment purchases. They will work with the list of Routine and Non-routine laboratory equipment defined by the committee (Appendix C).

Rick Murray and David Smith will present options for installing a radioisotope van on the JR at SCIMP in mid-January for their review and approval.

David Smith is preparing a news article about microbiology opportunities in ODP for the American Society of Microbiologists (ASM) News. John Farrell will assist David in the preparation of the article by providing information about USSSP funding options and information about upcoming legs. The committee also recommended that ODP lease booth space at the annual meeting of ASM for increased outreach to this community.

Kate Moran will present the committee results at the Deep Biosphere PPG meeting, following AGU.

Appendix A
BUGSCOM Mandate

Establishing JOI's *ad hoc* "Microbiology Steering Committee"

(or maybe "Bacteria Under Ground Steering Committee", BUGSCOM)

October 9, 1999

Abstract.

Managers of the Ocean Drilling Program have decided to create an *ad hoc* advisory committee on the deep biosphere that will be named "Microbiology Steering Committee" (MSC). The purpose of MSC will be to rapidly provide expert advice and guidance to ODP management on implementing actions and activities associated with the Program's deep biosphere pilot project (that is described in the 1996 ODP Long Range Plan) as supplemented by the recommendations of the JOIDES Deep Biosphere Program Planning Group (PPG). The committee will report directly to JOI which, in turn, will coordinate closely with JOIDES, TAMU, and LDEO. JOI will reimburse the travel and other miscellaneous costs incurred by the committee members. Membership will consist of no more than eight scientists selected by JOI, in consultation with others. For operational purposes, TAMU will send a liaison to the committee. John Farrell will be the point of contact at JOI. The kick-off meeting of this committee will be scheduled for Nov. 19-21 in Washington, DC. Proposed agenda topics are listed below.

Background

At the October 3-5 1999 meeting of the ODP Managers and Directors, including the SCICOM and EXCOM Chairs, and leading representative from NSF, JOI, TAMU, and LDEO, a decision was made to create a microbiology steering committee. The need for such a committee stems from the fact that many deep biosphere issues, such as the need for a sampling protocol, creation and equipping of a shipboard lab, questions about a radioisotope facility, incorporation of LExEn-funded equipment, inter-agency collaboration, have arisen and require implementation. To do so, management seeks advice.

From an organizational point of view, two options were considered. The first was the creation of a JOIDES Detailed Planning Group (DPG). The second was the creation of an *ad hoc* advisory committee that reports directly to JOI. Prior examples of such *ad hoc* JOI steering committees include those focusing on the creation of the Janus database, the revision of the sampling and curation policy, and the evolution towards electronic publications. After considering these two options, the managers decided that a JOI steering committee would be the preferred route.

The MSC is designed to complement the JOIDES Deep Biosphere PPG, not to replace or supplant it. The PPG's mandate is to advise on drilling/technology strategies and proposals for major scientific objectives that are not adequately covered by existing drilling strategies or proposals. The PPGs are also designed to foster communication between the ODP and other major geoscience initiatives. In terms of the MSC, management seeks a committee (analogous to a "kitchen cabinet") that can quickly and deftly provide expert advice and guidance as well as commit time and effort on various projects, such as establishing protocols and methodologies for sampling, testing, curation, and databases.

Membership

Membership will consist of not more than eight members selected by JOI. Membership will not necessarily be proportionally representative of the international ODP partners. Membership criteria will include expertise in at least one scientific subdiscipline that is closely affiliated with the deep biosphere, familiarity and/or experience with the JOIDES advisory structure, ODP, and, most importantly, the Program's needs, and willingness to participate fully and to respond quickly and substantially to requests for advice and guidance.

JOI invites the following scientists to serve on the MSC:

Dr. Steve D'Hondt, utility player, Univ. of Rhode Island, dhondt@gsosun1.gso.uri.edu.

Dr. Marty Fisk, igneous petrologist/microbiologist, Leg 185, PPG member, Oregon State Univ., mfisk@oce.orst.edu.

Dr. Karsten Pedersen, microbiologist, PPG member, Dept. of General & Marine Microbio., pedersen@mgg.gu.se

Dr. Tommy Phelps, microbiologist, PPG member, DOE, tkp@cosmail1.ctd.ornl.gov.

Dr. David Smith, microbiologist, Leg 185, Univ. of Rhode Island, dcsmith@gso.uri.edu.

Dr. Art Spivak, geochemist, Leg 185, University of North Carolina at Wilmington, spivacka@uncwil.edu.

Dr. Andreas P. Teske, microbiologist, biochemist, LExEN awardee, WHOI, ateske@whoi.edu

Liaisons:

Dr. Rick Murray, Boston Univ., geochemist, Leg 185, USSAC, SCIMP, rickm@bu.edu.

Dr. Tom Davies, Manager Science Operations, TAMU/ODP, Tom_Davies@odp.tamu.edu

Dr. John Farrell, Assoc. Prog. Director, JOI/ODP, jfarrell@brook.edu

Dr. Kate Moran, Program Director, JOI/ODP, kmoran@brook.edu

Appendix B

Job Description: Ocean Drilling Program
Shipboard Microbiology Specialist

Microbiologists who sail on Ocean Drilling Program cruises range in levels of expertise from graduate students well advanced in their doctoral research programs to senior research scientists with many years of research and teaching experience. Each Microbiologist must be able to commit a considerable amount of time before and after the cruise in addition to the daily twelve-hour work shifts aboard ship.

Pre-Cruise Responsibilities:

- Two months before the cruise, complete and submit the sample request form by detailing the nature of the studies you wish to pursue post-cruise and the kinds of samples needed to complete these studies.
- Review the “Introduction to the Ocean Drilling Program” technical note.
- Initialize preparation of special experiments if they are outside of the routine shipboard program, especially as it affects logistics and technical support.
- The lead microbiologist will attend the pre-cruise co-chief meeting at Texas A&M University. Pre-cruise training for all sailing microbiologists is available at Texas A&M University.
- Review and plan consumables and equipment needs for the leg with the lab officer. This review should also include any special chemistry needs.
- Work closely with the Operations Manager and Lab Officer in the design of downhole quality control tests.

Cruise:

- Collect, analyze and compile microbiological, related data and quality control data in a manner conformable with Ocean Drilling Program standards and format.
- Work with the Operations Manager and Lab Officer in executing downhole quality control tests.
- Become familiar with the Janus database, shipboard computer facilities and with the lab-specific and generic (e.g., word processing) software used in the microbiology lab. Where data are collected on paper data forms, complete hand-written forms accurately, completely, and legibly, so that these data can be entered correctly into Ocean Drilling Program’s computerized database after the cruise.
- Take part in the routine shipboard sampling program for your own and other’s post-cruise studies as outlined in the cruise sample plan.
- Provide data access for the entire scientific shipboard party in a timely manner.
- Contribute “Microbiology” sections to the Hole Summaries. The Hole Summaries form the basis for the *Initial Reports* volume of the *Proceedings of the Ocean Drilling Program.*
- Pursue your own scientific interests in the form of pilot studies leading to formal papers submitted to either the *Scientific Results* volume of the *Proceedings of the Ocean Drilling* Program or to an appropriate journal in accordance with the ODP Publications Policy. Aboard ship, however, personal research is accomplished as time permits, and not at the expense of shipboard duties necessary to achieve leg objectives.

Post-Cruise:

- Complete the “Cruise Evaluation Form” at the end of the cruise, and return it to the ODP Science Operations office via the Staff Scientist or by mail.
- Analyze your samples and data and report scientific results in a format and time frame appropriate for inclusion in the Ocean Drilling Program database and for publication in the *Proceedings of the Ocean Drilling* volumes, as detailed in the Ocean Drilling Program Sample Distribution Policy.
- Review the Hole Summary reports written aboard ship and submit corrections to the designated shipboard scientist before the first post-cruise meeting (normally held 4-5 months post-cruise). If you are designated to attend the first post-cruise meeting, you are responsible for assembling all suggested corrections to your portion(s) of the site reports and for making final revisions to these chapters.
- Attend the second post-cruise meeting (normally 12-24 months after the leg) to present your research results.
- Submit manuscripts for the *Scientific Results* volume of the *Proceedings of the Ocean Drilling* or for an appropriate journal by the deadline established for your leg, and revise them based on peer review in a timely manner.

Appendix C
Routine Microbiology Equipment

Equipment	Estimated Cost ($k)	Program/Comment
Zeiss microscope with digital camera and capture and vibration isolation	80	LExEn
Total organic carbon analyzer	40	LExEn
Water purification w/RO	5	LExEn
Autoclave	7	LExEn
-80° C Freezer	5	Assess if second freezer is needed – ODP
FID for GC (H_2)	7	R. Murray will assess
Auto analyzer	20	ODP
Seawater intake sampler	?	ODP – engineering development
H_2-O_2 monitor	4	LExEn
Tracer consumables	?	ODP
Rock sampling tools	1	ODP
Airlocks for the glove bags	1	LExEn
Microfuge	2	LExEn
2 balances	2	ODP
Gas manifold	.5	LExEn
Pump Automation	?	ODP – engineering dev.

Non-Routine Microbiology Equipment

Equipment	Estimated Cost ($k)	Program/Comment
Liquid scintillation counter	35	LExEn
Pressure reactors and pressure pump	29	LExEn for radioisotope van
Chemical storage cabinet		ODP
	1	
Glove Bag		
		LExEn
H_sO_2 monitor	7	
		LExEn
2 Shaker/incubators	4	
		LExEn/ODP
Water bath	12	
		LExEn
Laminar flow hood/tiles	4	
		ODP for radioisotope van
Refrigerator	?	ODP
Autoclave	1	ODP for inside glove bag
		LExEn
Trace O_2 stripper	7	
		LExEn
Small oven	?	
		LExEn
Microwave/convection oven	1	
	0.5	

Total Routine & Non-Routine LExEn: $226k + consumables
Total Routine & Non-Routine ODP: $20-$32k + engineering development

SCIMP Appendix 00-1-7

Integration of Wireline, Seismic, and Core measurements shipboard: Vision for the Joides Resolution and the OD21 (A SciMP Report)

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Overview:

Scientists who have sailed on the Joides Resolution have expressed concern over the inadequacy of current capabilities to integrate logging, core measurements, and seismic measurements on the Joides Resolution. We summarize the current state of affairs and propose improvements.

Desired Capabilities

We acquire seismic before we drill, we run wireline logs, we core and make measurements on core, and we perform checkshots to determine a time-depth calibration. We describe two levels at which it is possible to integrate these data.

Level 1 (1-D): Figure 1 illustrates the integration of wireline, core, and seismic measurements in one dimension. Core measurements, log measurements, and seismic measurements are displayed side by side and a synthetic seismogram is constructed from the log data. To achieve this a time-depth tie (‘welltie’) must be made that typically involves the combination of low frequency check-shot (VSP) data and wireline sonic data to generate a time-depth table. Once this is established, it is possible to post log, core, and seismic data on a single figure (Fig. 1). It is also possible to convolve a wavelet with the reflection coefficients of the log data to compare a synthetic seismogram with an actual trace extracted from the seismic data as is shown on the far right of Figure 1. There are many software packages that do this routinely.

Fig. 1 is a one dimensional image. However, it provides an important connection between logging and seismic that has not been utilized consistently on the Resolution. The capability of doing this rapidly allows scientists to know with moderate certainty if they are at their target horizon. Thus good well ties allow better drilling decisions. Just as important, if these ties are routinely available, it will begin the process of integrating the efforts of those analyzing core with those acquiring logs. Scientists on previous legs have commented on the extraordinary utility of a well tie being posted in the core lab adjacent to a paper seismic section. It motivates scientists to begin to integrate multiple disciplines.

Level 2 (2- and 3-d): Figure 2 illustrates a second level of wireline to seismic integration. Once wireline and borehole information are time-depth calibrated it is possible to directly post this information on seismic data. This is a second level of complexity because one now must have the seismic data loaded onto the workstation. This information would allow scientists to truly integrate drilling with seismic data on the workstation.

Level 2 capability would allow the shipboard party to visualize drilling results and integrate drilling results with previously shot seismic data. This has the potential to increase the interdisciplinary research on the ship.

Status of Integration on Joides Resolution

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

Summary of Current BRG Capabilities

Current BRG capabilities are limited to a series of ad-hoc utilities that are linked together by the user. These capabilities will continue to be available on the JOIDES resolution with technical assistance to shipboard scientists available by request from ODP-LDEO. A summary of the procedure (provided by G. Itturino) is as follows:

A) Depth-time calibration

1. Edit to remove anomalous data spikes and intervals of missing data (Excel, Kaleidograph, Igor Pro).
2. Calibrate depths to travel time by interpolating between known travel times (e.g. WST check-shot) using Unix shell script, “Analyseries.”

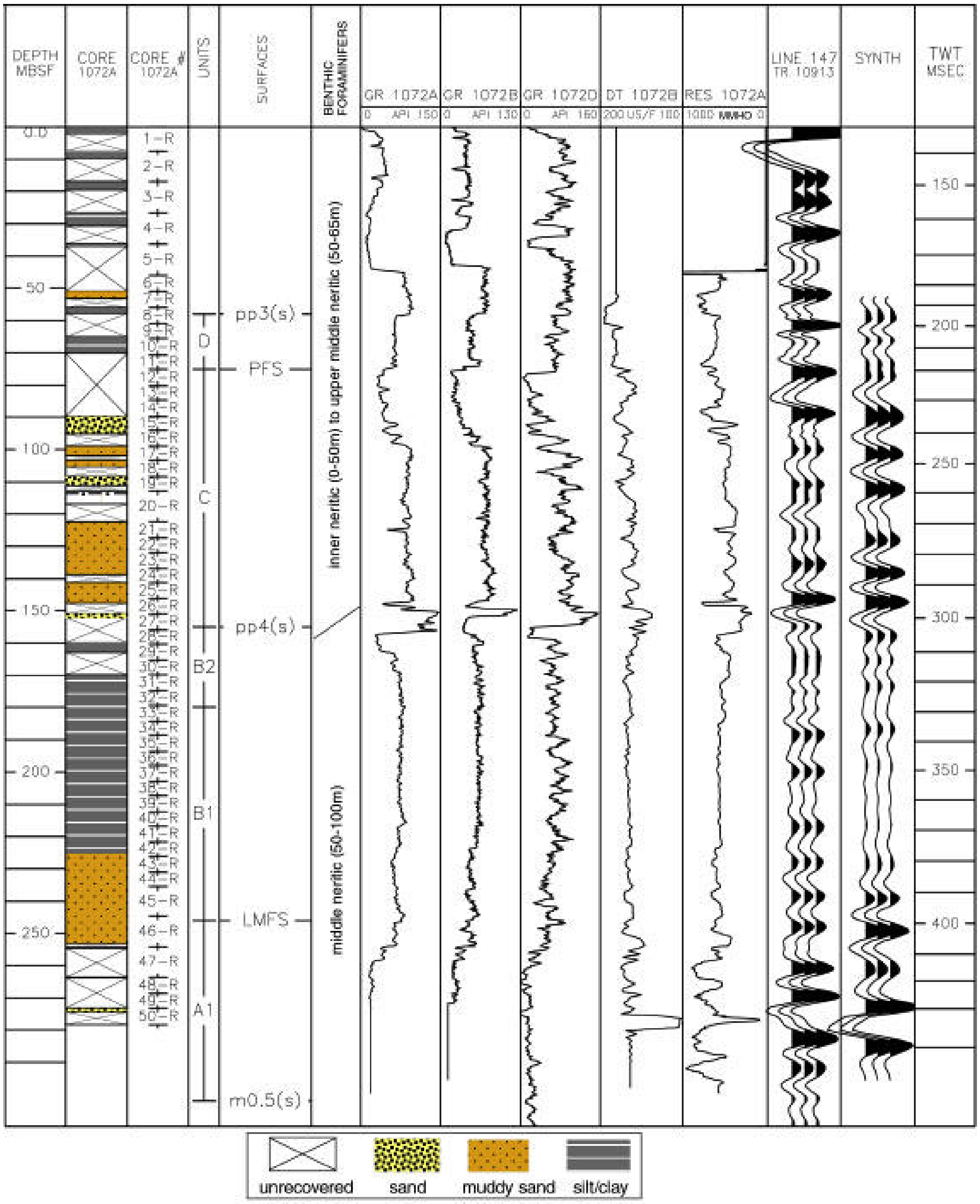
DEPTH MBSF
CORE 1072A
CORE # 1072A
UNITS
SURFACES
BENTHIC FORAMINIFERS
GR 1072A
0 API 150
GR 1072B
0 API 130
GR 1072D
0 API 160
DT 1072B
200 US/F 100
RES 1072A
1000 MMHO 0
LINE 147
TR 10913
SYNTH
TWT MSEC
0.0
50
100
150
200
250
1-R
2-R
3-R
4-R
5-R
20-R
45-R
46-R
47-R
D
C
B2
B1
A1
pp3(s)
PFS
pp4(s)
LMFS
m0.5(s)
inner neritic (0-50m) to upper middle neritic (50-65m)
middle neritic (50-100m)
150
200
250
300
350
400
unrecovered
sand
muddy sand
silt/clay

Figure 1

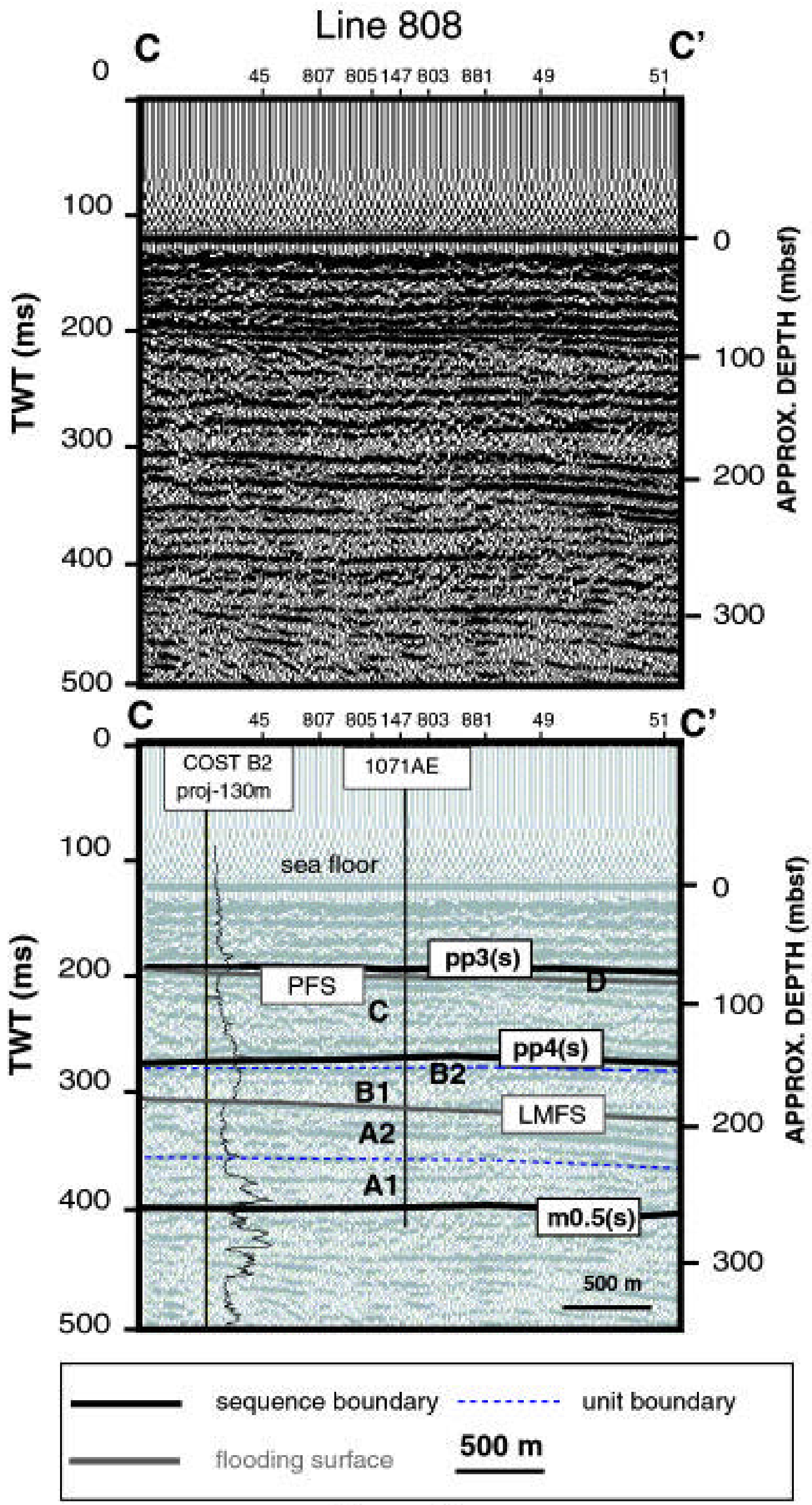
Line 808
C
C'
0
45
807
805
147
803
881
49
51
100
200
300
400
500
TWT (ms)
APPROX. DEPTH (mbsf)
COST B2
proj-130m
1071AE
sea floor
pp3(s)
PFS
D
C
pp4(s)
B2
B1
LMFS
A2
A1
m0.5(s)
500 m
sequence boundary
unit boundary
flooding surface
500 m

Figure 2

3. Integrate travel times of the sonic logs and/or travel times measured on core (short Igor-Pro script, short Fortran program), to get a depth vs. travel-time relation.

B) Synthetic seismograms:
1. Get a source wavelet by calculation (Igor Pro, Khoros, short Fortran code (e.g. Yue Feng Sun's code) or by extracting from the seismic section (Sioseis).
2. Make an impedance log and reflection coefficient series (Excel, Kaleidagraph, Awk, Igor pro).
3. Convolve the source wavelet with the reflection coefficient series to get the synthetic seismogram (Fortran code, Igor Pro, GMT utility).
4. Plot synthetic within seismic section (Khoros/Cantata).

BRG Plans for Improving Capabilities:

ODP-LDEO has initiated a review and evaluation of more comprehensive commercial processing packages for ODP (Appendix III 'Seismic/Log/Core Integration' of the BRG SciMP Report provided on 12/24/99). BRG plans '… a pilot study to format digital seismic data and to test its use for future cruises. Evaluation of the procedures and level of effort that would be needed for routine digital data access, while enabling some protected release of site survey data, is the long-term objective.'

SciMP Summary and Discussion

In SciMP's January 1999 meeting the following recommendations were made:

> **SCIMP RECOMMENDATION 99-1-11:** SCIMP recognizes the importance of maximizing the integration between core, log, and seismic data both on the JOIDES Resolution and in post-cruise research. Presently, there are limited formal resources available on the JOIDES Resolution to integrate these datasets. To this end, SCIMP recommends that the Borehole Research Group enable the seismic and sonic analysis software presently installed as part of the GeoFrame system both on the JOIDES Resolution and at the BRG at Lamont.
>
> **SCIMP RECOMMENDATION 99-1-12:** SCIMP recommends that BRG-LDEO should have as their baseline expertise the ability to do time-depth calibration (i.e., to tie depth data [core/log] to time data [seismic]). This capability should include the ability to integrate checkshot data with wireline sonic data and the ability to generate synthetic seismograms at sea. The BRG uses the Geoquest Seismic Package entitled ISX. This package is a 2- and 3-D seismic visualization package. BRG also has GeoFrame software which is the log analysis package provided by Geoquest (Schlumberger).

SciMP commends BRG's implementation of Geoquest's IESX software on the Resolution. This has the potential to significantly improve well ties, drilling decisions, and interdisciplinary science on the Resolution. We make the following general comments.

1) Commitment to Integration: We spent considerable time discussing the fact that at the heart of this issue is the need for there to be a commitment to having the expertise on the ship to perform wireline/core/seismic integration on the ship. Currently, there are some ad-hoc procedures by which this can be done at a rudimentary level, but it is extremely difficult for a scientist who is on the ship for a single leg to master these skills. Once the commitment is made to formalizing wireline/seismic/core integration, then decisions such as software are relatively simple.

2) Responsibility: Several options were discussed for whom should be responsible for housing this expertise. At this point, the general consensus is that BRG will take on the responsibility to provide Level 1 and Level 2 capability. This means that the BRG will provide the software on the ship, will provide training on the beach, and will provide a detailed training manual.

3) Redefining the Joides Logger and other positions: There are ongoing discussions concerning how to redefine the Joides positions so that there could be an individual committed to core/seismic/wireline integration.

4) Solve Level 1 needs first. The immediate and fundamental need is to have on board the Joides Resolution the ability to do time depth calibrations and synthetics in a rapid, simple, and consistent manner (Level 1). This is a significantly easier task than is the ability to manipulate seismic data shipboard. Appendix III of the BRG SciMP report implies that BRG is moving immediately to implement the Level 2 needs. We recommend that BRG focus first on solving and implementing Level 1 services and demonstrate success in this over the next 6 months.

5) Vendor Issues. We spent a considerable amount of time discussing possible vendors for software to achieve both Level 1 and Level 2 needs. Three possible software suites were discussed: 1) Kingdom (pc based), 2) Schlumberger (unix-based), 3) Landmark (unix based). Two members of this report use Landmark's Petroworks and Syntools software routinely and we recognize that this software would immediately meet Level 1 needs.

6) Cost Issues: It is now routine for Landmark and Geoquest (Schlumberger) software to be released for free to academic sites. Software costs are not a problem.

7) Continue to Work to Meet Level 2 needs: We applaud BRG's efforts to work on testing and obtaining seismic software, and further encourage the cooperation with the Site Survey Panel/Data Bank for resolving the issues regarding making digital seismic data available for all ODP cruises. This is an appropriate long-term vision.

8) New Hardware: We recommend that the shipboard facilities for Wireline/Seismic/core integration include a separate workstation dedicated to this effort (currently there is only one workstation and thus while there is log processing it will be difficult to do integration).

9) Plotting: We recommend that the IESX software be able to plot directly to large-scale (36") plotters and printers and that this capability be implemented by June 2000 SciMP meeting. This plotting issue is always a problem. We recommend that we bite the bullet and pay for the drivers to implement the plotting ability that is inherent in IESX and not spend time exploring bootleg solutions.

10) Integrate Unix Facilities: We recommend that TAMU and BRG provide a plan for integrating the Unix network on the ship. To extend the IESX software outside of the logging group, there will need to be a more integrated UNIX shipboard network.

Integration of Wireline, Seismic, and Core measurements on the OD21 (A SciMP Report)

The new OD21 is a riser vessel will have even greater needs to incorporate drilling measurements, cuttings, etc. with the traditional measurements made currently on the Resolution. We propose an approach to an integrated core/seismic/drilling/wireline data integration center for the new OD21 vessel. The OD21 will be a riser vessel and it will be following a fundamentally different scientific methodology. The most extreme example of this is that far more time will be spent doing things other than acquiring core. Entirely new types of data will include cuttings, drilling fluid composition, borehole pressure measurements (mud weights). In addition, measurements already made on the Joides Resolution will acquire even greater importance on the OD21. These include measurements while drilling (MWD, e.g. weight-on-bit, penetration rate, torque), LWD (logging while drilling). The scientific facilities on board the ship need to be capable of integrating these measurements into the daily scientific workflow. Below we outline some of the key needs to integrate these data.

1. **Cuttings Analysis**
   The scientific party must easily sample cuttings. These samples must be easily transported to the laboratories. There must be space and facilities for cuttings analysis. It is quite possible that core analysis and cuttings analysis will occur simultaneously. Experiments could include petrography, biostratigraphic analysis, x-ray diffraction, etc.

2. **Fluids Analysis**
   Borehole fluids must be easily accessed by the scientific party. These samples must be easily transported to the laboratories. There must be facilities to analyze these fluids shipboard. Possible experiments include organic and inorganic chemistry analysis.

3. **Direct feed of drilling data to scientists**
   LWD and MWD data must be fed directly to the scientific party. SciMP has previously recommended that a workroom be set-aside for data integration and computing. This room could possibly serve as the nerve center to which the LWD and MWD data may be sent (see below).

4. **Data Integration Center**
   A single data integration center will be important to the scientific program. This data center will be able to monitor continuously all parameters related to drilling and logging. Capabilities should include the ability to interpret and process a wide range of borehole data. In addition, this center should have capabilities to do seismic processing and continuously tie borehole measurements to previously shot seismic measurements.