



InterRidge

Steering Committee Meeting 1996 Report

Estoril, Portugal
25th & 26th September, 1996

Chair:
Roger Searle

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InterRidge Steering Committee
Estoril, Portugal, 25th & 26th September 1996
REVISED AGENDA

Introduction and Welcome (Chairman)

Apologies for Absence

New Membership

Endorsement of Germany as a new Principal Member Nation and of Germany's second representative to the Steering Committee.

Endorsement of Norway as a new Associate Member Nation and of Norway's representative to the Steering Committee.

General Organisation of meeting and agreement on meeting agenda

Minutes of 1995 meeting

To accept the minutes of the 1995 meeting (**Document A**, previously circulated).

Matters Arising.

InterRidge Office Transfer

To discuss the tendered bid to host the InterRidge Office. To ratify M. Cannat as the next Chair of InterRidge.

InterRidge Program Plan Addendum 1995

To ratify the InterRidge Program Plan Addendum 1995 (**Document B**).

Report of the Co-Ordinator

To receive the report of the Co-Ordinator on activities completed during the year to date (**Document C**).

Discussion.

InterRidge Phase 2 Projects

To review progress made during the last year and agree direction and action for the upcoming year.

To receive project reports:

- Event Detection and Response (Von Damm)
- Biological Studies (Mullineaux)
- To discuss funding for the Hydrothermal Vent Fauna Identification Manual
- Quantification of Fluxes Experiment (Sinha)
- 4-D Architecture of the Oceanic Lithosphere (Parson)
- Back-Arc Basins (Tamaki)
- Global Digital Database
- SWIR Project
- Arctic Oceans Mapping (Langmuir)

Discussion. (Rihm)

Interaction with other organisations and programmes

To receive reports on:

- FARA-IR Mid-Atlantic Ridge Symposium (Needham, Langmuir, see **Document C**)
- ODP-InterRidge-IAVCEI Workshop (Searle, text to follow)
- To discuss suggestions for ODP Working Group membership
- SCOR General Meeting, SCOR Working Group 99, IR's affiliation to SCOR (Sinha, Searle)

Discussion.

InterRidge representation, National Correspondents and membership of committees:

To discuss and decide on any possible additions and changes concerning:

- Chair for Quantification of Fluxes Working Group
- Chair for Global Digital Database Working Group
- InterRidge liaison people to other programmes
- National Correspondents
- Steering Committee - 4 year rotation
- Project Working Group membership

Problems with joint funding of multi-national projects:

What can InterRidge do to help?

Use of abandoned undersea cables.

Funding foreign participants on research cruises

Calendar for 1997

To receive and, if necessary, update the provisional calendar presented as **Document E**.

Any Other Business

International Participation Funding - Travel/Instrument Transport

Joint Funding for International Projects

InterRidge Budget

To receive a financial report from the Co-Ordinator (**Document D**).

InterRidge Steering Committee
Estoril, 25th - 26th September 1996
Report

1.0 Introduction and Welcome (Chair, R.C. Searle)

The Chair welcomed everyone to the meeting and introduced the participants. The Chair reminded the participants that each Principal Member is entitled to 2 representatives on the Steering Committee and each Associate Member is entitled to 1 representative. There are also *ad hoc* members of the Steering Committee, either for disciplinary balance, or in order to include the chairs of the Phase 2 working groups as rapporteurs to the Committee. The Chair thanked J.M.A. Miranda for being such an excellent host and for making the local arrangements for the meeting.

2.0 Apologies for Absence

Apologies for absence were received from M. Canals of Spain, E. Sundvor of Norway and T. Urabe of Japan.

3.0 New Membership

The Steering Committee endorsed Germany as a new Principal Member Nation and welcomed Germany's second representative, P.M. Herzig, to the Steering Committee.

The Steering Committee endorsed Norway as a new Associate Member Nation and ratified E. Sundvor as Norway's representative to the Steering Committee.

Action: A letter of confirmation and welcome to be sent to E. Sundvor.

4.0 General Organization of meeting and agreement on meeting agenda

Clarification of the item "Problems with joint funding of multi-national projects".

Addition of three items:

- Use of existing undersea cables.
- Funding for foreign participants.
- International use of large facilities.

5.0 Minutes of 1995 meeting

The minutes of the 1995 Steering Committee Meeting were tabled and accepted.

5.1 Matters Arising

5.1.1 SOSUS

During the 1994 Steering Committee Meeting in Tokyo, there was a discussion of SOSUS operating status. In summary, there were corrections to be made to the Iceland array, the north-east Pacific array would continue to be maintained and operated, and the Bermuda array had been closed. No further information is available yet. SOSUS will be a topic of discussion at the forthcoming RIDGE Steering Committee Meeting.

Action: K.L. Von Damm is charged with sending an update to InterRidge following the RIDGE Steering Committee Meeting.

5.1.2 Piggyback project brokerage

Offers of both available ship time and potential piggyback projects have been made but no matches have actually been achieved so far.

5.1.3 French multibeam data and the Lamont Multibeam Data Synthesis

Following the 1995 Steering Committee Meeting, J. Francheteau contacted W.B.F. Ryan and asked for the identification of the alleged raiders of the Lamont Multibeam Synthesis. One login was identified. This individual clearly had no malicious intent. Hypertext links were clicked on repeatedly and this may have been interpreted as an attempt to breach password protected barriers. No data was retrieved by this person. The log at IFREMER was reviewed and there was no evidence of any systematic attempt to breach secure files at Lamont.

The allegation that someone in France broke into the databank and downloaded large amounts of data, and that French users, as a result, would be refused access temporarily, was widely circulated. This is viewed

by the French as having seriously damaged international relations and the image of French investigators. Following the transfer of the SEADMA data by P. Gente, access was once again opened to French users. Additional French data is available on request in transferable files. French data from the Atlantic has been synthesized.

There remains some concern in the French community about accreditation of donated data. Contributing investigators are not identified in the Lamont Multi-beam Synthesis. This concern was recognized by the Chair. US representatives stated their wish to put the issue behind them and go forward. Contributors to the databank could easily be credited for their contribution, either by citation within the Lamont data bank, or by use of hyperlinks to data housed at French sites.

The supposed French restrictions on data distribution discussed at the 1995 Steering Committee Meeting do not actually exist. French investigators were misinformed concerning these restrictions.

It was suggested that a statement be issued clarifying the situation and France's role.

Action: J. Francheteau and K.L. Von Damm will write a joint statement for publication in *RIDGE Events* and *La Lettre Dorsales* in Jan/Feb with the intent of clarifying events and stanching rumors. This statement would say that access has been restored, that the following datasets are now available and that French and US investigators are moving forward in their collaborations. It should also include an announcement that funds have been allocated in France for the compilation of French data to be made available as maps and digital files. The statement would also be accessible via the RIDGE World Wide Web home page.

5.1.4 International Lithosphere Program (ILP)

Action: The charge is renewed on R.C. Searle to contact J.C. Mutter concerning the status of the ILP.

5.1.5 Other matters arising

The SWIR Project Plan and co-ordination of ODP and the 4-D Architecture of the Oceanic Lithosphere Project, both matters arising from the previous year's minutes, were tabled again this year.

6.0 InterRidge Office Transfer

The Steering Committee formally accepted the bid tendered by M. Cannat to chair InterRidge and to host the InterRidge Office at the Université Pierre et Marie Curie in Paris, France.

7.0 InterRidge Program Plan Addendum 1995

The InterRidge Program Plan Addendum 1995 was tabled and ratified.

8.0 Report of the Co-Ordinator

8.1 Membership

InterRidge Membership continues to expand. The InterRidge Chair and Steering Committee welcomed Germany and Norway as upgrading members. Germany upgraded to Principal Membership in 1996. Norway upgraded to Associate Member and announced their anticipated participation through 1998. The number of Corresponding Members has also grown with the addition of Denmark. Australia has announced its intention to become an Associate Member in 1997.

The tally of InterRidge Member Nations for 1996 stands at 6 Principal Members (France, Germany, Japan, Spain, UK, USA), 2 Associate Members (Norway, Portugal) and 11 Corresponding Members (Australia, Canada, Denmark, Iceland, India, Italy, Korea, Mexico, Russia, Sweden, Switzerland).

Action: SOPAC will be contacted to investigate the possibility of a Southern Pacific consortium membership.

8.2 Activity in the InterRidge Office

The major portion of the first half of 1996 was spent in preparation of the ODP-InterRidge-IAVCEI Workshop and the FARA-InterRidge MAR Symposium and the associated abstract volumes. Both meetings were well attended and on-site co-ordination was handled by the InterRidge Co-Ordinator.

Publication of the Spring/Summer issue of InterRidge News went on as usual and preparation of the Fall/Winter issue has begun. In an effort to cut the cost of production and postage, *InterRidge News* has been published on lower quality paper during the last year. The Steering Committee finds this acceptable. The InterRidge Office is participating in editing the InterRidge Hydrothermal Vent Fauna Identification Manual, compiled under the direction of the Biological Studies Project Working Group, and has recently published the *Biological Studies at the Mid-Ocean Ridge Crest* workshop report. In addition to this, several other workshop

reports are nearing publication: *Arctic Ridges: Results and Planning, Event Detection and Response & A Ridge Crest Observatory*, and *Investigation of the Southwest Indian Ridge: A Project Plan*.

The Office continues to reply to numerous e-mail inquiries from the international ridge-crest research community on a daily basis. Information and documentation are also provided to various media projects and programs not directly related to ridge crest research. The on-going effort to develop InterRidge membership continues to be a prime concern. In addition, a great deal of effort has gone into updating and maintaining the mailing list database, which now contains more than 2000 entries, and the InterRidge researcher directories on the World Wide Web, and into doubling the number of addresses on the e-mailing list. The Office has also taken steps to make the forthcoming transfer as smooth as possible.

The Steering Committee received H. Sloan's resignation from the post of Co-Ordinator. They formally acknowledged her high level of performance in this position and expressed their thanks.

9.0 InterRidge Phase 2 Projects

Presentations of project reports on the progress made during the last year and discussion of direction and action for the upcoming year.

9.1 Active Processes - K.L. Von Damm

An InterRidge Active Processes Workshop, organized by J.R. Cann, was held in January 1995 in Paris, France. One of the objectives was to draft a workshop report. Publication of this report has been significantly delayed. K.L. Von Damm and the InterRidge Office are now aiming to publish this report as quickly as possible before it becomes outdated, so that others can refer to it for event detection and response planning and for observatory planning.

Active Processes has two main parts: Event Detection and Response and Observatories.

9.1.1 Event Detection and Response

1. How to detect an event, some examples:
 - SOSUS (e.g. Gorda Ridge).
 - Seismics (e.g. Loihi).
 - Luck.
2. How to communicate an event:
 - E-mail.
 - World Wide Web pages.
3. Equipment available:
 - Where are the ships? (This is already on the InterRidge World Wide Web site.)
 - What equipment do they carry?
4. How to plan for an event.
5. What should be the response?

9.1.2 Observatories

Workshop identified:

- Co-ordination and collaboration of on-going and future research.
- Instrumentation compatibility.
- Technology.

Workshop recommendations:

- 17°S East Pacific Rise (EPR) as the site of an international effort.
- Super-fast-spreading ridges.

A number of multi-national efforts have already taken place in this area.

General need to know

- What are the equipment needs?
- What equipment is being developed?
- What equipment is being deployed?

9.1.3 Organization by sites

17°S EPR

- What cruises
- have occurred?

- are planned?

- What experiments are planned and where?
- What equipment is presently deployed?
- Are there 'sanctuary' areas?
- Contacts.
- Project summaries.
- Bibliographies.

Other sites*

- TAG, Juan de Fuca, 13°N EPR, 9°N EPR.
- Preliminary summaries in workshop report.
 - Need to add contacts.
 - Links to other World Wide Web sites.

* "focused areas of activities"

9.1.4 Next Year:

1. Work with InterRidge Office contacting National Correspondents.

Event Detection and Response activities and/or interests:

- People to contact.
- Include equipment.

Observatory activities and/or interests:

- Focus on 17°S EPR.

2. Set up a working group to acquire (update) the information needed for the InterRidge World Wide Web site.

Things that might be included:

- Summary of eruptions for each field (interactive World Wide Web page).
- Equipment 'wish list'.
- Recent publication list.

Discussion Summary

Event detection and response (EDR) and putting together a seafloor observatory are distinct objectives. For EDR, it is essential to know what ships are where, and with what equipment. This can be an InterRidge task (it is actually partly achieved already in the InterRidge World Wide Web pages). Another requirement, more problematic at present, is to figure out ways of getting fast international access to shiptime. As for observatories, InterRidge endorsement of a site would consist of the recognition that a substantial amount of work had gone on at a given site and, for a number of other reasons, it was recommended that people wanting to study particular problems or questions do so at that site for the mutual benefit of all those interested. It would amount to a simple statement that the community consensus was that this would be the best site to do such work. Such a statement could be quoted in proposals or passed on to funding agencies. It was mentioned that the role of InterRidge was to foster access to, and knowledge of, any developments of technology on the seafloor.

The recommendations of the workshop, in light of this discussion, point to communication and co-ordination as key elements for observatories. It is somewhat unclear how to approach this. Two options seem to present themselves:

1. Production of a geographic database for a chosen site.
2. Encouraging development of technology without specifying a site.

The workshop report recommends 17°S EPR for InterRidge endorsement as a targeted co-ordinated study site. US RIDGE has endorsed the Cleft Segment and the Endeavour Segment as observatory sites. A RIDGE committee was established to develop a framework document for the Juan de Fuca Observatories which posed a number of questions to serve as guidelines for work within an observatory context. Endorsement of 17°S EPR would be useless to some nations who are under pressure to work closer to their own shores. However, there is an overriding scientific reason to endorse 17°S EPR: It is currently the most active area known. However 9°N EPR is also active and much more logistically feasible to more nations.

Action: InterRidge accepts the recommendation to develop a communications network as a first step. A working group needs to be constituted to identify where communication/information and geographic database sites already exist, to publicize them, to promote the development of such databases at a number of sites and set up a World Wide Web page. InterRidge recognizes the possibility of taking on the initiation and management of such a site itself.

9.2 Biological Studies - L.S. Mullineaux

9.2.1 Status report on projects or objectives identified in the Biological Studies Workshop

- International Sample Exchange - bogged down.
- Biobox - in progress.
- Ridge Crest Biologist Directory - implemented.
- Data Exchange - Biocean-H - in progress.
- International Vent Biology Symposium - in progress.
- Species Identification Manual - in progress.
- Demarcation of Sanctuaries and Definition of Collection Areas - in progress.
- International Listing of Seagoing Capabilities - implemented.

International Sample Exchange Agreement

The National Curators have all agreed to participate in this agreement. When a letter was sent to InterRidge National Correspondents, asking for official recognition and endorsement of the agreement, no responses were received. It is essential to obtain a response from the National Correspondents to establish official endorsement of the agreement.

Biobox

V. Tunnicliffe is the most active in this domain. She has sent a biobox out on the following cruises:

1. Cruise out of Chile to the southern EPR (no returns).
2. Cruise to the Indian Ridge - *Melville* out of Perth, Australia (no returns).
3. D.S. Schierer's cruise to the Southeast Indian Ridge in Spring 1996:
 - Dredged material: wonderfully documented and well preserved.
 - Vent barnacle described by A.J. Southward and W.A. Newman.
 - Shrimp provided to T.M. Shank and a crab to A.B. Williams.

Biologists are delighted at the lovely job done by the geologists - the biologists can help geologists in return by confirming whether there are any vent species present in water column samples indicative of hydrothermal activity.

D.R. Dixon has recommended to NERC that bioboxes be included on all UK research vessels.

The concept of the biobox is sound and practicable but needs to be promoted more actively.

Discussion Summary

There are no formal guidelines for archiving and distribution of biobox samples. There currently exists only one sorting center capable of dealing with biobox samples and distributing them over the web of taxonomists for identification. The center is located in France. French biobox samples all go to this center but it might not be capable of handling any increase in volume associated with other nations' bioboxes. We could add the list of taxonomists to the Hydrothermal Vent Fauna Identification Manual which would help people who collect samples for distribution. The collectors should be acknowledged in publications but it's not necessary to include them in the author list. The discussion also addressed the problems encountered in having the Sample Exchange Agreement endorsed by national correspondents - are they the right persons to sign it? Should it be signed individually by members of the community of ridge crest biologists?

Ridge Crest Biologist Directory

A listing has been compiled by the InterRidge Office and is accessible via the World Wide Web. As of 20 Sept. 1996 it only had 28 members. It would be worth trying to advertise it more aggressively.

Biologically-Relevant Workshops, Meetings and Reports

A list of relevant workshops, reports and international cruises was presented.

International Vent Biology Symposium

Planning is underway for the First International Symposium on Marine Hydrothermal Vent Biology. It is scheduled to be held in Funchal, Madeira on 19th - 23rd October 1997. The organizational committee consists of M.J. Biscoito, C. Cary, D.R. Dixon and H. Sloan. M.J. Biscoito has provided a general provisional outline for the Symposium program. Biologists involved in research on deep-sea hydrothermal vents, as well as those involved in cold-seep studies (one session for debating this topic is under consideration), will be invited to take part. Session topics include Biogeography, Evolution, Genetics, Taxonomy, Ecology, Micro-distribution, Temporal Evolution, Physiology, Adaptation, Biological Cycles, Larval Dispersal, Plankton and Cold Seeps.

Species Identification Manual and Funding

Several quotes for printing were presented. It is anticipated that both InterRidge and IFREMER will contribute some of the required funds. This proposal is still under review by IFREMER.

It was suggested that M.C. Sinha make an informal inquiry to Cambridge University Press about the volume of the market for such a publication with regard towards funding the manual through sales to libraries, institutions and individuals.

Demarcation of Sanctuaries and Definition of Collection Areas

R.C. Vrijenhoek (Rutgers University) is currently working on a project to set up a Deep-Sea Ecosystem Conservation Fund. The Fund would be supported by proceeds from bioprospecting and sanctuaries would be designated by international agreement. He is currently involved in a project to investigate the ethics of bioprospecting in international waters.

International Listing of Seagoing Capabilities

A listing has been compiled by the InterRidge Office and is accessible via the World Wide Web.

Events

There are a large number of collaborative and multi-national cruises which have recently taken place as well as several biology symposiums and meetings scheduled for the near future. Biological studies at the ridge-crest is alive and well.

Recommendations:

- Appoint a Biological representative (liaison) to all Phase 2 Project working groups.
- Hold a workshop on sample exchange and/or sanctuaries.
- Rewrite the International Sample Exchange Agreement so that it is dependent upon individual investigators rather than funding or policy agencies.

Action: The Biological Studies *Ad Hoc* Committee is charged with rewording the Sample Exchange Agreement so as to exclude the need for 'official' recognition from each nation or funding agency. They will then circulate the agreement for signature only to interested investigators.

L.S. Mullineaux and D. Desbruyères are charged with writing a letter to *Eos* aimed at provoking a response within the community to the issue of experimental seafloor sanctuaries. The letter will be signed by R.C. Searle as Chair of InterRidge.

9.3 Quantification of Fluxes Experiment - M.C. Sinha

9.3.1 Fluxes I

The Segmentation and Fluxes at Mid-Ocean Ridges Workshop was held in Durham, UK in September 1993. This workshop identified many types of fluxes (thermal, magmatic, mantle flow, ocean-lithosphere chemical exchange, hydrothermal and biological fluxes) to be measured, extending from the upper mantle to the water column, and began developing the concept of a 'box' experiment to measure them.

9.3.2 Fluxes II

The Quantification of Fluxes at the Mid-Ocean Ridge Workshop was held in Cambridge, UK on 24th and 25th June 1995. The purpose of this workshop was to design an experiment to measure the integrated fluxes (magmatic, hydrothermal, chemical and biological) at the scale of a ridge segment. Slow-spreading ridge segment morphology, roughly bathtub shaped, provides a natural laboratory within which to carry out a series of experiments to measure these fluxes. By placing current meters across the ends of a segment which is closed or has restricted flow at one or both ends, the composition and flow of the influx can be compared with those of the outflux. The difference will be due to hydrothermal flux into the segment. A number of sites were identified and strategies discussed.

Issues:

- Measurement scale.
- Choice of site.
- Link to Active Processes and 4-D Architecture projects.
- How wide is the ridge?
- Diffuse and low temperature flow/advection.

Possible Sites:

- Lucky Strike.

- Menez Gwen,
- Broken Spur,
- TAG,
- Rainbow,
- Snake Pit.

Site selection criteria were based on the knowledge of existing hydrothermal activity and segment morphology (bathtub). This short list of sites was arrived at, but, as with several workshops, the workshop participants felt unable to actually select a single site.

9.3.3 Current Experiments

1. BRIDGE Fluxes - Broken Spur Segment. This pilot experiment included:
 - Comprehensive water column surveys at the segment scale using BRIDGET.
 - Current meter arrays to measure the flushing of the 'bathtub'.
 - Water column net trawling to investigate larvae dispersal.
 - Deployment of sediment traps to measure particulate plume fallout (these are being picked up at the time of this meeting).
2. AMORES (Research project funded by the European Commission):
 - Lucky Strike, Menez Gwen, Rainbow.
 - Rainbow contrasted with Broken Spur:
 - Broken Spur - bathtub.
 - Rainbow - plume at ridge offset.

Action: A chair is needed for the Quantification of Fluxes working group. C.R. German was suggested and L.M. Parson was charged with asking him.

9.4 4-D Architecture of the Oceanic Lithosphere - L.M. Parson

In the course of the workshops held so far, it was recognized that this project will be made up of two types of experiments: Those that do not require international collaboration (Type 1) and those that do (Type 2). Only 2 components of the 4-D Architecture of the Oceanic Lithosphere project require international collaboration: Drilling and seismic experiments. The membership of the 4-D Architecture working group has been somewhat fluid resulting in a haphazard approach to this project.

The following fundamental questions arose from the workshops held in 1993 and 1994:

1. What is the 3-D magmatic plumbing system of a spreading segment?
2. What is the 3-D hydrothermal system of a spreading segment?
3. How is the extension accommodated in 3-D by brittle/ductile/magmatic/mechanic and what controls the geometry?
4. How is mantle upwelling coupled to lithospheric accretion and deformation?
5. What are the fundamental causes of segmentation? What controls temporal variability in spreading segments?

The experiments were also split into fast- and slow-spreading ridge experiments. It was decided that the fast-spreading experiments required sampling of the deeper levels of the oceanic crust so that a tectonic window into the crust would be necessary. For this reason Hess Deep was selected as the experiment site.

For slow-spreading ridge environments, a number of generic, non-site-specific experiments were described and a short list of 4 sites selected based on the history of work at these sites. These experiments include detailed characterization of axial and off-axis geology, with use of a drill ship (type 2 experiment), geodetic strain measurements, and an integrated along axis and off axis seismic reflection and refraction survey and tomography experiment, with long-term monitoring of seismic activity (type 2). The point was made that these experiments should be carried out at a site where the general bathymetric, gravity, magnetic and geological framework is well characterized, over the length of 2 to 3 segments along axis, and up to at least 10 Ma-old lithosphere. At the *ad hoc* working group meeting held in conjunction with the ODP-IR-IAVCEI Workshop in North Falmouth (May 96), the following list of data that are currently available for the 4 prospective sites was drawn up:

	MARK	TAG	29°N	35°N
Geophysical mapping > 10 Ma	x	x	x	
Deep-towed or Submersible Survey/Seafloor Experiment	x	x	x	x
3-D Seismics	x	x	x	x
Rock Sampling (by dredging, submersible or drilling)	x	x		x

The MARK area is recognized as being at present the site that has the best characterized axial and off-axis seafloor geology. The 35°N site is the only one with segment scale along-axis and off-axis seismic reflection and refraction data. It was considered counterproductive for InterRidge to go any further toward selecting a site at this point. As for the seismic part of the project, it was noted that even a 30% success of the MELT project would prompt funding for long term seismic monitoring. D.R. Toomey was suggested as a likely person to lead the seismic monitoring part of the project and R.S. Detrick has offered to approach him.

The point was made that it would be very useful to have a geologic map of the segment at which the seismic experiments would be carried out. Knowledge of the material through which the seismic waves travel help to prepare the ground for a seismic experiment. For the time being we know the most about the MARK area. InterRidge could make a compilation of the most recent work by soliciting data from PIs carrying out work. From this a geologic map could be made.

Discussion Summary

Consideration of the tomography experiment should be postponed until next year following preliminary results of MELT and the 35°N experiment. The urgent need now is for better and more geological sampling of the high priority segments.

Action: R.C. Searle will write a short article for InterRidge News relating the progress to date and summarizing/synthesizing the component experiments of the 4-D Architecture project.

9.5 Back-Arc Basins - K. Tamaki

The InterRidge Back-Arc Basin Studies Workshop was held in Seattle in 1993, convened by J.A. Pearce and K. Tamaki. The target of Back-Arc Basin Studies in InterRidge is to understand the influence of subduction on ocean ridge processes.

9.5.1 Recent Back-Arc Basin Workshops:

1. ILP - Convenors: M. Talwani, Kinoshita. Subduction working group meeting, 18th - 20th September, Japan
2. US-Japan IBM (Izu-Bonin-Mariana) - Convenor: Iama, Stan.
3. The 16°N Transect in the Mariana Basin Workshop was recently set-up by K. Tamaki.

A draft of the InterRidge Back-Arc Basin Studies Project Plan is in preparation. The Plan's principal objectives are to

1. Focus on 3 active ridges: Mariana, Lau, Scotia. The selection of these three back-arc basins was based on slab angle, age and spreading rate. Also extensive work has already been carried out in these three basins.
2. Conduct concurrent and identical research efforts at these 3 Back-Arc Basins including:
 - High resolution tomography of the upper mantle:
 - Mariana: Japan-US, 1997-8.
 - Lau: Scripps - J.A. Hildebrand, 1995.
 - Scotia: UK, 1997.
 - MOR-type mapping/sampling studies on the segments:
 - Mariana: Japan, 1996-8.
 - Lau: UK-US, 1993.
 - Scotia: UK, 1995.
 - diving/ROV/deep-tow studies:
 - Mariana: Japan, 1996-7.
 - Lau: Japan-UK ?
 - Scotia: none.

- plume chemistry/vent biology:
 - Mariana: US-Japan.
 - Lau: UK-US-France-Japan-Canada-Germany-Australia.
 - Scotia: none.

9.5.2 Proposed Action for the InterRidge Back-Arc Basin Studies Project Plan:

1. Completion of a draft by a small working group as for the SWIR Project Plan.
2. Open an InterRidge Back-Arc Basin World Wide Web site for real-time research information and a Back-Arc Basin database of multibeam bathymetry, geochemistry, hydrothermal sites, bibliography, etc.

Discussion Summary

There remains a need to identify the gaps in the data. M. La Roux (SOC) has begun compiling a database including up to data research information, directories of investigators, etc., and has already amassed a lot of the information but would appreciate guidance. It was suggested that the InterRidge database be integrated with the one currently being compiled.

Action: K. Tamaki is charged with composing a Back-Arc Basin working group. The group would be responsible for completing and finalizing the Back-Arc Basin Project Plan/Synthesis and developing the Back-Arc Basin database.

9.6 SWIR Project - C.H. Langmuir

The SWIR is one of the slowest-spreading ridges (15 - 17 mm/yr.) on the globe. Although the spreading rate is nearly constant along the entire length of the SWIR, the depth of the ridge varies enormously from <1500 m to >6000 m. It has been recognized for a long time that a host of scientific issues associated with super-slow spreading remain to be addressed, whereas slow-, moderate- and fast-spreading ridge characteristics have already been extensively characterized at the MAR and EPR. It has been learned that what is known about fast- and moderate-spreading ridges cannot simply be extrapolated to super-slow-spreading ones and that they may be another species of ridge all together. Investigation of the SWIR will give us a whole new perspective on how ocean ridges actually work.

9.6.1 The Scientific Issues

Characterize super-slow-spreading:

- Magmatic vs. amagmatic spreading,
- Gravity bull's eyes,
- Spacing of magmatic injection,
- Hydrothermal sites: Ultra-slow spacing and style,
- Indian Ocean crustal structure: Thickness, ultramafics,
- Global geochemistry.

9.6.2 SWIR Project Plan

A version was posted on the World Wide Web as a draft for comments. About 15 responses were received, mostly containing minor changes to the text. One comment was made by J.G. Sclater which questioned the proposed location of the project and its philosophy. The philosophy behind the Project Plan is twofold. It tries to combine scientific problems with the logistical realities. The logistical realities of working south of 40°S are a very limited weather window and unsuitable conditions for submersibles and deep-towed instruments. In order to carry out an integrated investigation including geochemistry, geologic mapping and biology, the focus of the project must be the north-east end of the SWIR. Within this limited zone there are three major morphological styles.

J.G. Sclater's criticism was that the north-east end of the SWIR is anomalous because it has been propagating eastwards for a long time. This propagation has been the controlling factor to the north-east. Slightly to the west, the Marion hot spot and the Madagascar plateau have an anomalous influence on the ridge as well. In his opinion, the most interesting region is a very straight, long segment of ridge with almost no offsets at all. This is juxtaposed to the west by some of the largest offset transform faults in the world in a transform dominated terrain. Also the tectonics of the Bouvet triple junction may include a microplate. Thus, the SWIR is characterized by 6 domains rather than 3 domains.

The logistics argument is still very strong, however, the document will be modified so that more regions will fall within its compass and so as to avoid discouraging work at any place on the SWIR. InterRidge still

strongly endorses the objective of mapping and sampling the entire global ridge system. It also encourages meso-scale projects such as the SWIR Project which set out to obtain this objective.

Substantial work is currently planned:

- EDUL - French dredging cruise, early 1997.
- Three Japanese cruises, including use of a submersible: Shinkai, late 1998; Hako Maru, late 1997/early 1998.
- Working up of existing samples.

Substantial axial mapping and underway geophysics has been accomplished.

We need to identify active regions and find potential hydrothermal sites, ideally before the arrival of the Japanese submersible, using:

- Side-scan sonar,
- Water column surveys,
- Sediment sampling and analysis.

9.6.3 Next Steps

- Identify working group Chair.
- Set up World Wide Web site including:
 - List of current datasets,
 - Past and funded cruises,
 - Sample locations,
 - Project Plan,
 - Ability to add name to e-mail list.
- Actively co-ordinate and promote necessary cruises.
- Create working group of people who will/are actively pursuing work on the SWIR.
- Contact Indians and see if they're interested.

Action: C. Mével will be asked to become SWIR Project Working Group Chair. Membership of the group to be as indicated under Section 12.5. The InterRidge Office, when sending out copies of the SWIR Project Plan to National Correspondents, to make a special point of inviting Indian participation.

9.7 Arctic Oceans Mapping - R. Rihm

The 1994 workshop, Arctic Ridges: Results and Planning, was held in Kiel, Germany, on the 15th - 17th November 1994. There were approximately 50 participants from 8 countries. The workshop objectives were to:

1. Make known existing geological, geophysical and biological datasets from the Arctic to researchers interested in this region, through a series of presentations which also served to identify major gaps in data coverage.
2. Correlate different data types in key regions as a first step in the compilation of a data synthesis which would lead to an integrated interpretation.
3. Define approaches and implementation plans as part of a co-ordinated international strategy to overcome logistical challenges and extend data coverage.

The Arctic can be divided into two regions which require different approaches. The Norwegian-Greenland Sea is more or less accessible and a substantial amount of data coverage already exists there. The Arctic Ocean is covered by ice and presents a number of specific logistic problems and has very little data coverage.

The workshop brought to light a significant amount of data, of the existence of which most of the community was unaware.

9.7.1 Recent Arctic Research

- Low budget drilling (Arctic) - Y. Kristoffersen.
- Mapping, heatflow, etc.
- Norway-Greenland Sea - K. Crane.
- ODP.
- Use of submarines - SCICEX program with USS POGY, currently underway collecting gravity and bathymetry data, three more cruises planned for the next three years; Pls: B.J. Coakley and M.G. Langseth.

9.7.2 Specific Approaches to Arctic problems

- Release of military data.
- ODP/NAD (Nansen Arctic Drilling)/low budget drilling.
- Use of ice drift as instrument platforms.
- Arktos and other vehicles.

The workshop report is still in progress and will hopefully be published soon. The report makes a number of recommendations to InterRidge such as the release of classified data and organization of another workshop or meeting to facilitate collaboration between the groups working in the Arctic. InterRidge could serve as a broker for people with large datasets like the Russians and people who want to help with data treatment and processing.

It was hoped that the workshop would draw enough attention to the Arctic and the interest of investigators in working there, so that access would be made available to the *RV Polar Stern*. This hasn't been the case up to now. The existence of an Arctic Project such as the creation of an Arctic map endorsed by InterRidge, would greatly help in obtaining this access. A new working group should be established including people from countries such as Norway, Germany, Canada, the US, etc., to draft a project plan. The recently announced conversion of a nuclear submarine for under-ice mapping makes this project particularly timely.

Action: R. Rihm will invite investigators to become working group members; the working group would be charged with furthering the above proposals.

9.8 Global Digital Database - R.C. Searle

K. Tamaki has decided that, given his present workload, he is unable to continue as Chair of this working group. A new Chair needs to be named and the working group membership established.

The idea behind this project was to establish a diffuse database housed in servers in various countries. It will be very important to establish common data file formats. The source of the data, the server location and proprietorial information must also be made available along with the data. K. Tamaki began compiling a database in Japan, but it has turned out to be too much work for him to continue himself. T. Urabe may continue with the Japanese project.

Discussion Summary

The intent of InterRidge to maintain a ship track line database on the World Wide Web was reiterated. So far the Office has not had the resources to do this. The issue of database maintenance and management is gaining recognition within national programs. Endorsement of the idea of national databases may be a useful role for InterRidge to play. The difficulties surrounding the Lamont Multibeam Data Synthesis, exemplified by the issue of French contributions to it, should be addressed by this working group.

Action: A new Chair will be named and the working group membership established. The following names were suggested: P. Blondel - UK, Chair, K. Heychendorf - Germany, J.J. Dañobeitia - Spain, W.B.F. Ryan - US. K. Tamaki is charged with naming someone from Japan. L.M. Parson is charged with contacting an appropriate investigator in Russia.

The InterRidge Office will initiate a data inventory or catalogue including ship track lines, and will conduct a survey of the national databases and syntheses to establish a baseline knowledge of existing databanks.

10.0 Interaction with other organizations and programs

10.1 FARA-IR Mid-Atlantic Ridge Symposium - H.D. Needham, C.H. Langmuir

The FARA-IR Mid-Atlantic Ridge Symposium was held in Iceland on 19th - 22nd June 1996. The Symposium was intended as the culmination of the FARA Program, which began in 1990, presenting the data and results of work carried out under its auspices. Ideas pertaining to the next step for co-ordinated, collaborative work in the Atlantic were also discussed but no conclusive plans or projects were identified. The suggestion was made that there is enough know how and knowledge as a result of the FARA Project to focus an in-depth study on an individual section in the near future. There was also a movement towards expanding by taking what we learned through the FARA Project and applying it to other ridges to compare and contrast them with the Atlantic.

There was recognition of several aspects of work to be done. Another topic of discussion was the use of existing, unused telephone cables for observatory data transmission. There was a strong indication of interest in monitoring including the use of these cables. It is clear that any effort or program of research will draw the

attention of funding agencies if it includes an element of 'not business-as-usual'. The technical development aspect of reusing existing seafloor cables is just the right type of hook with which to catch funding agency attention.

A Ewing Volume of papers presenting work carried out in the FARA area (15° - 40° N) will be published through the AGU. The InterRidge Office will handle submission and distribution to reviewers. The volume length is expected to be 450 pages. The deadline for submission is 15th December and it is hoped that the volume will appear in time for the 1997 Fall Meeting of the AGU.

The Chair formally thanked H.D. Needham and C.H. Langmuir for the planning of a very successful Symposium and for inviting InterRidge to take part in it. H.D. Needham called attention to the importance of an efficiently functioning office in the organization of this type of symposium and recognized the role the InterRidge Office had played in making it a success.

10.2 ODP-InterRidge-IAVCEI Workshop - R.C. Searle

InterRidge has a long standing interest in collaborating with ODP as closely as possible. Drilling has always been seen as a vital tool for ridge research. This workshop grew out of some work done by H.J.B. Dick who originally set up a group called DOCUM which focused on ocean drilling in the US. R. Searle addressed P-COM about a year ago during which the idea of ridge crest drilling was informally discussed. This idea was formalized in the workshop held in North Falmouth in May 1996.

Five thematic working groups were set up at the meeting: Fast-spreading Ridges, Slow-spreading Ridges, Active Ridge Processes, Large Igneous Provinces and The Arc Environment. There weren't many people involved in arc environments present at the meeting and it was thought that a further workshop to target those people might be held.

The main conclusions come from the first 4 working groups. LIPs are not closely linked to ridge processes so we are principally concerned with the results of the first three groups. Each working group identified first-order scientific questions and the objectives needed to answer them.

- One of these was total penetration of the crust from the top of the extrusive basalt layer into the mantle for both fast- and slow-spreading ridges. A variety of reasons were presented for this: Limited resolution of geophysical methods, interest in the way the crust is built up, the way melt is delivered from the mantle into the crust, how well does the layered seismic/ophiolite model correspond with real oceanic crust generated at a mid-ocean ridge.
- The techniques of offset drilling and drilling tectonic windows at both fast- and slow-spreading ridges were emphasized in order to look at lateral variability and extend the knowledge gained from single deep holes.
- It was recognized that the deep holes would require new technology and consideration was given to planning into the next century. A planning program was generated to the year 2003 and onwards.

The plans for drilling match very closely those which were generated at the InterRidge 4-D Architecture of the Oceanic Lithosphere Workshop held in Boston. It is probably through implementing this type of plan and by writing drilling proposals and getting them funded that we will implement much of the 4-D Architecture project plan.

The slow-spreading targets selected were the 15° N area where there are large outcrops of serpentinized peridotite, and the generic site for the InterRidge 4-D Architecture experiment (see Section 9.4). The 15° N target was identified because it is thought to provide the best opportunity to carry out the mantle study objectives of the 4-D experiment. While this is separated geographically from the main 4-D Architecture experiment it therefore remains thematically similar. It calls for an array of 5 - 6 relatively shallow holes to be drilled in order to investigate the upper mantle and lower crust. The drilling plan for the 4D experiment generic site involves two transects of holes perpendicular to the ridge trend. About three holes would be drilled from very young crust to 10 Ma crust at a segment center where there's a well developed mantle Bouguer anomaly low and presumably thick magmatic crust. Another three holes would be drilled at a segment end where there's a mantle Bouguer anomaly high and presumably thin magmatic crust. This drilling project would start with existing capability of the *JOIDES Resolution* with shallow holes. As the drilling technology advances, a pair of those holes would be chosen, one at the segment center and the other at the segment end, to deepen for full crustal penetration. This would be coupled with arrays of offset drilling holes around the two deep holes.

The drilling targets for fast-spreading crust were initially off-axis in mid-plate at the H2O site half way between Hawaii and the western US coast. There is a submarine cable at this site. The precise location will be decided by the people who write the drilling proposal. If drilling is successful at this site, the hole would be

maintained and a deep crustal section would be drilled during the next decade or so. If this site was not successful, the focus would move to medium-spread crust at the Costa Rica Ridge. A hole would be drilled very quickly, without sampling, down to the depth reached at hole 504B and then deepened down to the Moho. Alongside that, offset drilling would be carried out at Hess Deep as discussed in the 4-D Architecture project plan.

The Active Processes working group gave highest priority to drilling at the ridge axis. They propose drilling and instrumenting 5 holes in conjunction with a ridge axis observatory. The ideal configuration would be 4 holes to ~500 m depth and 1 hole to ~2 km depth. These holes would be logged and CORKed and instrumented in order to determine the physico-chemical state of the crust in the region of an active volcano-hydrothermal system and monitor the fluid and geochemical evolution of the system over decade timescales. Other critical environments for Phase 3 drilling include the flank of the Juan de Fuca Ridge, mid-plate volcanoes and convergent margin hydrothermal systems.

The main recommendation to ODP was that working groups should be set up to take the ideas issuing from this workshop forwards. ODP is in the process of structural reorganization. What has been P-COM over the past few years will divide into an Operations Committee and a Science Committee (SCICOM). SCICOM will continue to send out proposals for peer review, but it will also set up working groups called Project Planning Groups which will report to it. They will be pro-active in developing drilling proposals. It will still be possible for individuals to develop proposals for submittal to SCICOM. However, ODP is encouraging proposals to be submitted via the Project Planning Groups which will be set up in conjunction with thematic programs like InterRidge.

The North Falmouth workshop recommended that 4 Project Planning Groups be set up: Ridges (both fast- and slow-spreading), Large Igneous Provinces, Active Processes and Biology. The Biology Planning Group was inspired by the recent discovery of biological activity deep in the crust and the general thought was that this was an opportunity to be seized. One of the recommendations was, as a matter of urgency, to set up a proper microbiological laboratory on the *JOIDES Resolution*.

InterRidge has been tasked with recommending membership of the Ridges (and with MARGINS, the LIPs) Project Planning Groups. InterRidge will not be the sole organization having input, but a large part of the recommendations is expected to come from InterRidge. The InterRidge Steering Committee is charged with making these recommendations within the next few weeks. It was also recognized that, since a Biological Studies Working Group already exists within InterRidge, that group of people might assist ODP in composing a suitable ODP Biology Project Planning Group. SCICOM is due to meet in February when they will formally set up or invite nominations for these working groups. A list of 16 - 20 proposed names should be put forward, representing people who would take a vigorous interest in preparing and promoting the drilling plan. Nominees should include representatives of the main projects conceived at the North Falmouth meeting and two liaison people from InterRidge. InterRidge should reserve the right to add or replace members as appropriate in consultation with SCICOM. The nominations should include 3 - 4 potential candidates for chairing the groups.

Discussion Summary

The technical feasibility of the proposed project was called in to question. The required technology does not actually exist although work is being done towards advancing the technology. The project is staged to accommodate the technological development of the hammer casing and diamond coring. Deep drilling may remain difficult, but will certainly not happen if the community does not work actively for it.

Action: The Steering Committee is charged with making recommendations for ODP Project Planning Group membership. The list should be finalized before the Office transfer. The 4-D Architecture working group is charged with putting together a core of nominations which will then be circulated to the other Steering Committee Members for additions or substitutions. Nominees will be contacted before the list is put forward to ODP to make sure they are willing to serve on the Project Planning Groups. R.C. Searle will ask H.J.B. Dick for the list of the North Falmouth workshop's working group members to select a core of nominees.

10.3 SCOR General Meeting, SCOR Working Group 99 - M.C. Sinha

The SCOR General Meeting was held in September in Southampton, UK and, as part of that meeting, SCOR WG99 held a one day symposium aimed at the members of the SCOR General Meeting. On the following day SOC organized a BRIDGE General Science Meeting. The SCOR General Meeting was attended by about 50 delegates from many countries. Most of the people there represented non-InterRidge countries and the overwhelming majority were not active ridge scientists but administrators or policy makers. SCOR WG99

gave a set of 8 review presentations outlining the present state of ridge science and the directions to be considered for the future.

SCOR WG99 is coming towards the end of its life. Before it ends, it must complete two tasks. The first is the publication of a booklet aimed at a wider audience than the ridge research community, explaining what goes on at MORs, why they are important and why they should be of interest to those who make policy that affects the environment, general science policy and oceanography. The second is a report on the deliberations of the working group. A draft of the booklet exists. A complete text and list of figures is currently being worked on by S.K. Juniper who will tie it all together.

The booklet will appear in early 1997 in small format and be about 30 pages long with lots of color figures. The booklet will initially be published in English. If the responses to the booklet are positive, it might be translated into other languages. It will be distributed to the SCOR mailing list and possibly to a selection of the InterRidge mailing list. The SCOR mailing list has 2500 members and InterRidge has over 2000 members. The booklet will be expensive to produce and, to reduce distribution cost, may not be distributed to all the members of either or both of these lists. SCOR has given the working group \$5000 to produce the booklet and will handle distribution to its mailing list but the cost will certainly exceed this amount. InterRidge is committed to making a contribution towards the production and distribution costs, but the amount remains to be determined.

A more substantive publication will consist of a cross-disciplinary review of the state of ridge science based on the presentations made at the Symposium. This would be published in a high profile journal, perhaps one that specialized in reviews. Advantages were seen in integrating the summary presentations into a single paper. The links between the disciplines will be more apparent if contained within a single document. This remains an objective of the SCOR WG99. Once this goal is obtained the working group will disband.

Discussion Summary

The suggestion was made that the cost of distribution to members of the InterRidge mailing list could be reduced by enclosing the booklet with an issue of InterRidge News.

10.4 InterRidge affiliation to SCOR - R.C. Searle

E. Gross and I.N. McCave of SCOR have been in contact with InterRidge over the last year. They have extended an informal invitation to InterRidge to become officially affiliated to SCOR. One of the issues under discussion was the stipulation that, should InterRidge become formally affiliated with SCOR, SCOR wishes to be involved in decisions concerning the membership of the InterRidge Steering Committee. When asked if this might allow SCOR to appoint InterRidge Steering Committee members who were not active scientists, assurances were received that SCOR had no interest in doing that. Their interests lie very close to those of InterRidge: They want to be involved in membership decisions to assure themselves that there are active scientists on the committee and that there is a reasonable thematic and international balance. Formal SCOR affiliation also entails agreement to abide by the SCOR publication policy which means that InterRidge must announce on its major publications that it is an affiliate of SCOR and include the SCOR logo along with its own.

R.C. Searle was invited to make a presentation to SCOR during its General Meeting in Southampton in September 1996. He described the objectives and composition of InterRidge and answered questions from the delegates. This presentation was very well received.

SCOR is very eager for InterRidge to become an affiliate. One of the reasons for this is that InterRidge is one of the two remaining international organizations with a geological component. SCOR would like to involve other countries by working through InterRidge. If InterRidge becomes affiliated, SCOR would want a representative of InterRidge to become an ex-officio member of the SCOR Steering Committee as a scientific rapporteur, participating in one meeting per year. Annual and biannual reviews of InterRidge along with one or two scientific presentations would also be requested.

An application for affiliation has been presented to the president of SCOR by the InterRidge Chair. This application bears the condition of ratification by the InterRidge Steering Committee before it will be considered as formalized. The formal outcome of the SCOR General Meeting has not yet been announced, but the informal understanding is that InterRidge affiliation would be accepted if the application was formalized.

Discussion Summary

SCOR could make finding funds to pay the annual InterRidge subscription easier for member nations and it could lend legitimacy in the eyes of potential member nations. SCOR representatives are governmental representatives giving SCOR a degree of legitimacy that a group of scientists can never have.

Action: Following rewording to include a clause allowing InterRidge to end its affiliation, the application to SCOR for affiliation was agreed by the Steering Committee.

11.0 Provisional Calendar for 1997

The Calendar of events of interest to InterRidge for 1997 was reviewed and updated. The 1997 InterRidge Steering Committee Meeting was provisionally scheduled to be held in Barcelona, Spain on 18th & 19th September 1997. The alternative location is Paris, France.

12.0 InterRidge representation, National Correspondents and membership of committees:

The following changes to working group and committee membership and representation were suggested:

12.1 Chairs for Phase 2 Project Working Groups:

- C.R. German was suggested as Chair of the Quantification of Fluxes Working Group
- P. Blondel was suggested as Chair of the Global Digital Database Working Group.
- C. Mével was suggested as Chair of the SWIR Project Working Group. If she does not accept, R.C. Searle will take over.

12.2 Liaisons with other Organizations

- J.C. Mutter will be asked to confirm his position as Liaison to ILP.

12.3 National Correspondents

- R. Rihm will be sole National Correspondent for Germany. H.-U. Schminke will retire.
- K. Tamaki will communicate Japan's nomination for a replacement National Correspondent.
- P. Tartarotti was suggested as National Correspondent for Italy.
- S.P. Maschenkov was suggested as a second National Correspondent for Russia, replacing the recently deceased S.G. Krasnov.

12.4 Steering Committee - 4 year rotation

- K. Becker was suggested as the replacement for C.H. Langmuir, subject to approval by the RIDGE Steering Committee.
- C.R. German or H. Elderfield were suggested as the replacement for M.C. Sinha.
- R.C. Searle will remain as an UK representative.
- D. Prieur or H. Bougault were suggested as the replacement for J. Francheteau, subject to approval by the Comité Dorsales.
- D. Desbryères will remain as a French representative for one more year.
- K. Tamaki will communicate Japan's nomination for a replacement Steering Committee Representative to the InterRidge Office

12.5 Project Working Group membership

SWIR

C.L. Van Dover, M. Canals, D. Sauter (if C. Mével does not accept), K. Tamaki, R.C. Searle or L.M. Parson, C.H. Langmuir, A. Mitra (India), P. Halbach or J.E. Snow (Germany), a biogeographer (to be suggested by L.S. Mullineaux and D. Desbryères).

Action: Once referral has been made to the appropriate national programs, invitations will be sent as follows:

- C.R. German will be invited to become Chair of the Fluxes working group and a Steering Committee representative for the UK.
- Subject to approval by the RIDGE Steering Committee, K. Becker will be invited to become a US representative to the Steering Committee.
- Subject to approval by the Comité Dorsales, D. Prieur will be invited to become a French representative to the Steering Committee.
- H.-U. Schminke will be thanked for his service.
- S.P. Maschenkov will be invited to become the second National Correspondent for Russia.
- P. Blondel will be invited to become Chair of the Global Digital Database Working Group.
- C. Mével will be invited to become Chair of the SWIR Project Working Group. If she does not accept, R.C. Searle will take over.
- R. Searle will ask J.C. Mutter to confirm his position as Liaison to ILP.

- Invitations will be made to those listed above to become members of the SWIR Working Group.

13.0 Use of abandoned undersea cables

There has recently been a lot of interest, particularly in the US, in using abandoned submarine cables for research. There are many conventional telephone cables being abandoned and replaced with fiber optic cables. When the cables are abandoned they are cut and removed for insurance reasons. Although abandoned, they are still functional communication links that cross the oceans. There are a number of cables crossing the Mid-Atlantic Ridge that are going to be abandoned in the next few years. These cables could be exploited if there was a program that was ready to make use of them. A substantial amount of work is going on to develop ways to connect these cables. The Japanese have been very active on this front. There is also a US program to raise a cable between Hawaii and California, cut it and deploy an OBS on it.

The will, the availability and the technology are already there, but currently there is no funding or coordinating organization. This is a unique opportunity for ridge research because the cables provide sources of power and communications to seafloor instrumentation, two things which are most difficult and essential for developing ridge observatories. If this opportunity is lost it is lost forever.

Exploitation of abandoned cables would not be accomplished through ordinary channels. There would have to be discussion with the communications industry (ATT, Telecom). It would naturally be an international program and it is a natural technological progression as research interest in seafloor instrumentation and observatories increases. There is a window of opportunity that presently exists in the US and France. The FARA program was based on the French-American Bilateral Agreement high level link between French and US agencies. With the end of the FARA program, the proponents of this Agreement are looking for a follow-on project to maintain the Agreement in vigor.

Given the international, collaborative nature of using abandoned undersea cables and the current research trend, this might be an excellent project for InterRidge to pursue.

Discussion Summary

Raising these cables requires specially equipped ships. Due to the level of investment in these cables, two appropriately equipped ships are funded and maintained on constant call 365 days a year to repair them. It might be possible to arrange for one of these ships to raise the cables and connect the instruments.

Japan is the nation most experienced in reusing cables to do a range of scientific research. There is already a large number of scientists working on developing ways of exploiting them. Given the enormous interest of InterRidge in such a project, a way to link the project with the work of the Japanese scientists should be found.

Japan is currently using an abandoned cable which runs from Guam to Japan to measure electrical potential in order to explore deep crustal and mantle structure. J. Kasahara has been working on exploiting cables for 5 years. One master's thesis has already come out of this work. A new 5 year program has been initiated to develop cable use. The Japanese program has just obtained another cable which runs between Japan and Korea to research ocean currents. It was necessary to buy the land where the cable comes ashore and construct a building.

The cost of maintenance of, and supplying power to, such cables was raised. A committee set up to investigate abandoned cable exploitation found these costs to be high. A major contributor to the expense is the cost of observatory instrumentation.

Action: A working group will be established to explore the range of science that could be done and logistics of exploitation. They will also be charged with gathering information about work that has already been done in this area. The nominations for membership are as follows: A. Chave as Chair (C.H. Langmuir will invite), J. Kasahara, P. Tarits, A. Flosadottir (M. Sinha will e-mail address), A. Schultz, C.H. Langmuir. Formal invitations will sent following confirmation to the InterRidge Chair of A. Chave's acceptance.

14.0 Funding for International Participation in Cruises - Travel Costs and Instrument Transport

It was proposed to set up a fund to provide travel money for scientists to participate in cruises from another nation or to send their instrument to sea on someone else's cruise. A fund of \$15,000 might make it possible to facilitate 5 different scientists' participation in foreign cruises or to ship instrumentation. It would be a means by which InterRidge could improve the efficiency of science and promote international collaboration. It would be a concrete contribution that InterRidge could make toward international collaboration with only a small amount of money.

The Steering Committee acknowledges the spirit and value of the proposal but due to the problems it might engender, decided not to endorse it.

15.0 Joint Funding for International Projects

There have been a number of cases of an international program involving scientists, ships and instruments from several countries which must be funded by individual investigators applying to their own nation's funding agency. It is extremely difficult at present to arrange for projects like this to be funded through several different national agencies. Deadlines for funding proposals are different in each nation. Funding may be granted only on the condition of approval for funding all the other components. In some countries there is a delay between funding approval and ship scheduling. Is there some way to facilitate funding of multi-national projects?

Discussion Summary

Five year plans such as FARA or possibly the SWIR Project Plan are the best way to get agency attention. Planning of ship operators must also be taken into consideration. Operators will not send a ship into an area without a having a number of cruises lined up in that area. Awareness of the planning activities of one of the big multi-national programs, such as JGOFS or WOCE, would allow a given program to take advantage of the intended deployment of ships. An alternative is ship swapping. A number of ship time swaps have been successfully arranged between the UK NERC and the US NSF over the past few years. Ship time swaps gain approval more easily than funds to buy ship time.

It was suggested that the letters that accompanied the draft of the SWIR Project Plan, requesting an estimate of the level of commitment of national resources, be transmitted to the appropriate national agencies via the recipients or national ridge programs. The intent was that the letter be presented to the national ridge program committee who would in turn seek agency commitment to certain level of contributions towards the SWIR Project. These letters will also be accompanied by a letter from the InterRidge Chair.

Action: SWIR Project Plan and a letter requesting an estimate of the level of commitment of national resources to be forwarded to the appropriate national funding agencies via the investigators and/or national ridge programs. They will also be accompanied by a letter from the InterRidge Chair.

The InterRidge Chair will approach the International Ship Operators' Commission which meets once a year to suggest a presentation of InterRidge and the problem of joint international projects specifically.

16.0 InterRidge Budget

The Steering Committee received a financial report from the Co-Ordinator. The expenditure for the InterRidge Office 1993-1995 and the provisional budget for 1996 were presented. The anticipated income for 1996 is \$150,000 and for 1997 it is \$155,000. The anticipated expenditure for 1996 is \$131,500 and the balance for 1995 was \$3,500. These two positive balances will allow the operating deficit from 1994 to be eliminated. It is anticipated that any surplus will be swallowed up in the publication costs of The Hydrothermal Vent Faunal Identification Manual and the SCOR WG99 booklet.

The issue was raised that the unpredictability of the date on which the subscription is received by the InterRidge Office can cause problems in the financial management of the Office. The Steering Committee was urged to encourage their funding agencies to pay as early in the year as possible. When any delay in payment is expected, the InterRidge Office should be notified.