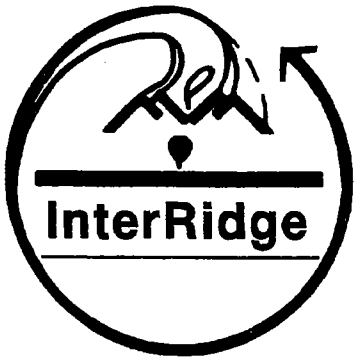

InterRidge

Steering Committee Meeting 1994 Report

Ocean Research Institute, University of Tokyo
Tokyo, Japan
5 & 6 September, 1994

Chair:
Roger Searle

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InterRidge Steering Committee Meeting 1994
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Absent: Joe Cann, John Delaney, Daniel Desbruyères and Martin Sinha

InterRidge Steering Committee
Tokyo, 5-6 September 1994

AGENDA

Introduction and Welcome (Chair)

Apologies for Absence

InterRidge Steering Committee Constitution
To discuss and if necessary modify the constitution.

Minutes of last meeting

Report of the Co-Ordinator
To receive the report of the Co-Ordinator on activities completed during the year to date.
Discussion

InterRidge Budget
To receive a financial report from the Co-Ordinator.
Discussion (Note: Prof. Francheteau has requested a formal review of the budget and InterRidge subscriptions, and the Chair has prepared a reply).

Changes of representatives
To suggest and agree changes of membership of InterRidge committees, working groups and national representatives, where necessary, in order to reflect the requirements of the constitution.

Reports from Working Groups
To receive annual reports from the Working Groups:

Global	(Langmuir)
Meso-Scale	(Searle for Sinha)
Active Processes	(Searle for Delaney)
Biological	(Lutz)

Discussion of reports.

Interaction with other organisations
To receive reports on contacts with other organisations as follow:

SCOR Working Group 99	(Searle for Sinha)
FARA	(Langmuir and Needham)
ODP	(Searle and Fox)

Discussion.

InterRidge Program Plan
To ratify the InterRidge Program Plan.

InterRidge Phase 2
To consider in more detail the shape of Phase 2, and agree actions for its detailed planning and implementation.

Calendar for 1995
To receive and if necessary update the provisional calendar.

Any Other Business
China 1996 Meeting, General InterRidge Meeting, Working Group Meetings
Expanding InterRidge Membership
Meeting and Workshop Organisation and Co-ordination with other Programs

InterRidge Steering Committee Meeting 1994 Report

The Chair and Steering Committee formally thank K. Tamaki, T. Urabe, H. Fujimoto and the other members of InterRidge Japan, ORI, ERI, and JAMSTEC for the excellent hospitality and facilities they have provided.

The meeting was attended by the following members of the Steering Committee: Roger Searle (Chair), Bob Detrick, Jeff Fox, Jean Francheteau, Charlie Langmuir, David Needham, Kensaku Tamaki and Testuro Urabe. Apologies were received from John Delaney, Daniel Desbruyères, and Martin Sinha all of whom were unable to attend. Joe Cann, invited as Chair of the Active Processes Working Group, also presented his apologies for being unable to attend. Richard Lutz attended as appointed alternate for Daniel Desbruyères, Hiromi Fujimoto of the Earthquake Research Institute, Chair of InterRidge Japan, attended as an observer, and Heather Sloan attended as Co-Ordinator.

1 InterRidge Steering Committee Constitution

Following a request made by T. Matsumoto during the 1993 Steering Committee Meeting for the addition of a second Japanese representative, the Steering Committee increased the number of representatives from one to two for Principal Member nations and welcomed T. Urabe as a new member of the Steering Committee. A corresponding modification was made to the InterRidge Program Plan (see Appendix A, section 7.3).

2 Minutes of the Last Meeting

The "InterRidge Steering Committee Meeting 1993 Report" was table and accepted by the Committee.

3 InterRidge Office - Co-Ordinator's Report

The Co-Ordinator's Report was presented by H. Sloan. The full text of this report may be found in Appendix B

4 InterRidge Budget

4.1 InterRidge Budget 1993

The 1994 InterRidge Budget (see Appendix C) was tabled and approved by the Steering Committee.

ACTION: The InterRidge Office is charged with preparing the 1995 budget for review by the Steering Committee in San Francisco.

4.2 1993 Subscriptions

K. Tamaki reported that approximately $5,000, designated as partial Japanese subscription for 1993, remained in the Japanese InterRidge budget. J. Francheteau indicated that the French subscription for 1993 was also now available in the newly created Dorsales budget. Both expressed their countries' wish that these funds be paid to the US National Science Foundation.

ACTION: It was agreed that H. Sloan would contact D. Epp at the NSF to make him aware that these funds were now available and to request exact details required for their transfer. These details would then be communicated by the InterRidge Office to J. Francheteau and K. Tamaki.

4.3 The French Request

Following earlier discussions with R. Searle (InterRidge Chair) J. Francheteau (InterRidge Correspondent for France) formally asked, on 15 July 1994, that the InterRidge Steering Committee include a discussion of the 1995 InterRidge budget in its agenda for the September 1994 Tokyo meeting. In his 15 July correspondence, J. Francheteau confirmed that France would pay its 1993 and

1994 dues but is asking for a reduction of the amount of the 1995 dues. He mentioned that, although an alternative might be to keep the level of dues the same but provide a greater return for the annual contribution (e.g. provision of funds for IRSC meetings), he doubted that this would be feasible.

At the Steering Committee meeting in Tokyo, J. Francheteau presented and explained France's position concerning the InterRidge Office budget and summarised it as follows:

"The French position is a serious one and should be considered as such.

France is requesting InterRidge to reduce the amount of the member contributions and asks for a host-country contribution. An examination of the budget figures as presented by the Durham Office shows that it is only possible to reduce member nation contributions significantly if the host-country contributes significantly.

Suggestions for a significant host-country contribution include :

- support of the Chair's salary (approx. $30,000),
- support or waiver of the overhead charged by the University of Durham (approx. $10,000).

At present the host-country makes no specific contribution.

The request by France for a host-country contribution is reasonable and justified because :

1) The UK bid offer to InterRidge did include a specific host-country contribution ($20,000 in the budget proposed for the bid). France feels that this written commitment should be honored.
2) Prior InterRidge Office management included considerable host-country contribution :
   - by the USA: 95-99 % support of the Seattle Office,
   - by France: 100 % support of the co-chair of InterRidge for salary and travel.

We have moved from a situation where the host-country(ies) was(were) contributing 100 % of the cost to one where the host-country contributes nothing.

Refusal by the host-country to contribute :

1) would create a precedent for future moves of the InterRidge Office,
2) would make it impossible to reduce the cost of member nation contributions (without additional members),
3) could create a very difficult situation for InterRidge should France choose to withdraw either fully or partially.

France makes a plea to the host-country to restore a significant contribution to the office bid. France also makes a plea to the IRSC to avoid closing the door to what is felt a justifiable request."

The Chair thanked J. Francheteau for his presentation of France's point of view. He noted that he could not give a formal reply for the UK without consultation and opened the subject for discussion by the Steering Committee, who examined the matter at considerable length and reached the following conclusions (with formal abstentions by R. Searle (Chair) and by J. Francheteau and H.D. Needham (as representatives from France).

"The Steering Committee notes with pleasure that France has confirmed her 1993 and 1994 contributions to join InterRidge as a principal charter member together with the US, Japan and the UK. It recognizes that, with InterRidge now dependent on the $20 000 annual fees for principal membership, agreement on budgetary matters is an important issue, and that the concerns raised by France need to be carefully examined, in particular with respect to a host-country contribution and the accountability of the budgetary process to the sponsoring nations.

Two major questions were discussed in response to the arguments presented by France:
(1) Is the InterRidge Office budget reasonable for the level of service that is currently provided?
(2) How should the budget be paid for?

It is the unanimous opinion of the steering committee that the budget for the InterRidge office is appropriate for the services it currently performs. There is a clear need to have an internationally respected and highly experienced leader in the Chair's role, and to have a post-doctoral scientist as the co-ordinator. We consider it entirely reasonable that some financial support be made available in partial compensation for the efforts we expect the chairperson to employ to the detriment of his or her own research work, and that asking an InterRidge Office to function with no secretarial

assistance would undermine the capability of the Office to provide satisfactory services for the funds it receives. The InterRidge Office already plays a significant role in ridge crest activities. It is involved with planning and organization of five or more meetings per year, including the publication of results and reports from those meetings, acts as a clearinghouse for information and communications for hundreds of investigators world wide, publishes two issues of a newsletter each year, and co-ordinates the activities of more than 50 people involved in various committees and working groups. It is the view of the Steering Committee that the current budget of the InterRidge Office should not be reduced.

Concerning the question of how the budget should be paid for, possible sources of additional funds include a larger number of member nations, or a significant contribution from the host country. It would clearly be desirable to have the membership of InterRidge expanded although, at present, there are clear limits to this possibility. Even if, as we hope and anticipate, Germany joins InterRidge in the coming months, the total 1995 contributions from five principal member nations at the current rate would just cover the present annual budgetary requirements. Second, we agree that, as a general principle and precedent, it is desirable that the host country contribute to the funding of the InterRidge Office. The US and France provided substantial support in order to get InterRidge started, reflecting a real, high level commitment to the program and, in a sense, acknowledgement of the indirect benefits that accrue from being central to the activities of a large, international group of scientists.

In order to address these two budgetary issues, and in direct response to France's concerns, the Steering Committee asks Roger Searle, as the current InterRidge Chair (1) to renew actively efforts to encourage additional countries to join InterRidge and (2) to approach the appropriate UK agencies to request a significant gesture of host country support for the InterRidge Office. In order to make the budgetary proceedings for 1995 more open and efficient, we also ask the Chair to submit a 1995 budget for consideration by member nations in advance of the issue of invoices in January.

There will be different possible outcomes to these recommendations. If additional funds become available through increased membership or host country support, then either the membership subscriptions could be correspondingly reduced, or we could ask for additional services from the InterRidge Office. The steering committee suggests that, among other possibilities, one legitimate area to support - for example through a host country contribution - would be development of an InterRidge database. Aims could be to implement rapidly an information database and to catalyze the process of developing effective interdisciplinary databases that take into account the particular interests of each InterRidge nation.

Despite these efforts, it is possible that additional funds will not become available for 1995. In this event, the steering committee would still believe it is essential for the InterRidge Office to remain viable at the level of service which it is now able to provide. We believe that this is a minimum requirement for InterRidge to continue to exist, let alone develop as a robust international program.

The steering committee fully recognizes that InterRidge must be an endeavour that leads not only to the advance of science in the larger context, but also to substantial scientific returns for the participating countries. Since InterRidge is still primarily in the planning stages, the full results of the international co-operation cannot yet be expected to have borne fruit and the full scope of what will be possible remains to be seen. Nevertheless, we consider that very real progress has been made, notably towards defining scientific and practical objectives for integrated studies under the Meso-scale and Global themes, objectives which can best be harnessed by having a diversity of researchers, platforms and tools on a scale only possible in an international context. We also note that participation in InterRidge has already helped to encourage national efforts in ridge-crest studies and that it has given individual scientists a new opportunity to strengthen their personal research projects. Participation in the planning of the more operational phases of InterRidge programs will lead to still greater benefits.

The achievements to date, the widespread recognition of InterRidge, the ambitious goals of this program, and the fact that the program is still in the formative stages show that the program has great potential but still needs careful nurturing to come to fruition. Since France is one of the premier oceanographic nations, all members of the Steering Committee are very concerned that France would consider withdrawing its support from a program that is in great need of its energies and ideas in order to be successful. Despite the inevitable difficulties that attend the initiation of an international

program, we believe that the long term benefits that we can expect to accrue from investment in the development of such a program will far outweigh short term impediments.

In conclusion the Steering Committee acknowledges the concerns of France and urges that every effort be made to improve the InterRidge budgetary process and to increase InterRidge resources through host country support and through attracting new member nations. The Steering Committee also urges a continuing commitment from France, in recognition of the larger InterRidge objectives and their benefits for scientists from all participating nations."

ACTION:

"The Steering Committee asks Roger Searle, as the current InterRidge Chair (1) to renew actively efforts to encourage additional countries to join InterRidge and (2) to approach the appropriate UK agencies to request a significant gesture of host country support for the InterRidge Office. In order to make the budgetary proceedings for 1995 more open and efficient, we also ask the Chair to submit a 1995 budget for consideration by member nations in advance of the issue of invoices in January."

5 Membership

5.1 Spain

It was decided that, failing further correspondence from Spain concerning their subscription fee, the Chair propose Associate Membership rather than Principal Membership to the Spanish National Correspondent.

5.2 Rights and responsibilities of membership

The InterRidge Membership structure was discussed. The agreed modifications may be found in section 7.1 of the InterRidge Program Plan (Appendix A) which give full details of Principal, Associate and Corresponding Membership. See also section 8 of this report

6 Reports from the Working Groups

6.1 Global Working Group - Charlie Langmuir

Global Project Planning Activities

A. Printing and distribution of a report from Paris meeting which incorporated comments from meeting participants (15%) and from the 1993 Steering Committee Meeting. The reoprt deals with:
   - Scientific problems for SWIR, SEIR, PAR
   - Discussion of the role of InterRidge
B. Baltimore Indian Ocean Meeting, 22 May, 1994 This meeting provided a venue for discussion of scheduled and proposed Indian Ocean Cruises, and focused an interdisciplinary on regard on the Indian Ocean Ridges.
C. Arctic Meeting (15-17 Nov, 1994; Kiel) This meeting is in response to a demand generated by the community identifying the scientific problems in the Arctic as significantly different to those of the Indian Ocean.

Sea-Going Activities Currently Scheduled

A. Two MG&G Sampling legs on SEIR (Chief Scientists: Cochran, Christie, and Sempéré, USA)
B. Mapping of the western SWIR (Chief Scientists: Grindley and Madsen, USA)
C. Two programs of mapping and sampling of part of the PAR (Chief Scientists: Géli and Bougault, France; Bloomer, Castillo, and Natland, USA)
D. "Galieni" Cruise to the SWIR (Chief Scientists: Patriat et al., France)
E. Bouvet Triple Junction (Chief Scientists: Mitchell and Livermore, UK)

These cruises are in response to Global Planning but are not part of the larger collaborative international problems. They tend to be individually oriented, self interest driven investigation rather than a cohesive program of global exploration.

Problems with execution of the Global Agenda

A. Difficulties with hydrothermal programs. The reasons for this may be due the lack of funding for hydrothermal vent research and the limited number of people working in this area.
B. What's the point of funding sites that can never be investigated due to logistical difficulty?
C. Need for basic input from various facets of the international community according to their specific capabilities rather than their national program interests.
D. Current plans do not foster co-operation. At present national programs consist of sequential isolated cruises due to the nature of the science. This tendency towards sequential investigations is reinforced by logisticaly difficulty in reaching these isolated sites.
E. What's in store for Phase 2? Random progress is anticipated for the future of the Global Program rather than planned, programmed progress which would be preferable.

Suggestions for Future Actions

A. Concrete steps towards international database: Global Atlas
B. Convene a meeting to agree on standards and procedure for the collection of data for the Global Atlas and to make a clear statement of InterRidge policy towards availability and distribution of data.
C. It is necessary that Phase 2 of the InterRidge Global Program incorporates meso-scale activities to be sufficiently broad for collaborative programs
D. Needs to contain ridge segments that are not isolated or at high latitudes but rather focused more on thematic bases of investigator such as the super-slow-spreading end-member of spreading centers, for example the SWIR? This requires a phased approach which starts with a global perspective, progresses to meso-scale, and ultimately involves investigation of hydrothermal sites. If InterRidge were instrumental in co-ordinating such an overall, progressive program, then the Global project would be much more integrated with the other aspects of the Program and InterRidge might be of greater interest to individual investigators and national programs.
E. Take steps to foster discovery of logistically acceptable hydrothermal sites. Particularly, a site in the Indian Ocean would be in the interest of the biological objectives within the Global Program. Given the results of recent investigation, this is an achievable goal of value to the InterRidge Program.
F. The Global Project recommends that the Steering Committee endorse and support the White Sub Project as essential for complete accomplishment of Global Project objectives.
G. The Global Project recommends that the Steering Committee endorse and support conversion of the Japanese submarine R/V Matsu from nuclear to diesel fuel to be used as a research platform.

Discussion and action summary

- White Sub Project

The White Sub Project is an initiative to investigate and encourage the conversion of a retiring US Naval Nuclear Submarine to exclusive use as a research platform. A workshop to be held in Washington, D.C. on 21 & 22 Sept, 1994, will focus on this possibility. The project would be extremely costly and its accomplishment depends on determining a lot of the policy concerning such an initiative. The submarine, although available for civilian research, would be crewed by navy personnel. The question of international exploitation of this platform remains to be resolved. The Steering Committee endorses this project and encourages its development. R. Searle will write to the appropriate individuals or committees to be identified expressing the position of InterRidge.

- Japanese Sub Project

The Steering Committee expressed its endorsement and support of the Japanese ship R/V Matsu conversion from nuclear to diesel fuel to be completed in 1996. The capacity of the converted R/V Matsu to carry out long range surveys at high latitudes make it an excellent candidate for mid-ocean ridge mapping in these areas. Interest has been expressed by the international ridge research community in carrying out such surveys as part of a concerted global mapping scheme.

- Further discussion and actions concerning the Global Project Working Group Report appear in section 9 "InterRidge Phase 2" of this report.

6.2 Meso-Scale Working Group

A aummary of the report presented by the Chair on behalf of M. Sinha. See Appendix D for the full text of the report.

Discussion and action summary

The Chair thanked M. Sinha for the Meso-Scale Working Group Report.

The Chair acknowledges M. Sinha's request to step down as Chair of the Meso-Scale Working Group. Jian Lin was nominated as replacement for M. Sinha. In the event that J. Lin does not accept, R. Detrick will take the Chair for one year until a suitable person can be found.

- Upcoming 4-D Architecture of the Oceanic Lithosphere Workshop

R. Searle will contact M. Sinha to ask for a summary of site selection requirements for the quantification of fluxes aspects of the Meso-Scale Project.

It was suggested that some biologists be included in the 4-D Architecture of the Oceanic Lithosphere Workshop. R. Lutz suggested L. Mullineaux, C. Cavenaugh, and K. Juniper as possible candidates.

The Steering Committee charges the convenors of the 4-D Architecture of the Oceanic Lithosphere Workshop with defining the critical experiments which require international co-operation as the product of the Workshop. This product should be a carefully enunciated feasible list of experiments to be carried out over 3-5 years, that lead to the answers of a well posed set of compelling scientific questions. This will make site selection much easier to resolve.

The Steering Committee charges C. Mével, H. Elderfield and M. Sinha with the development and organisation of a workshop: "Quantification of Fluxes at the Second-Order Segment Scale."

- Back-Arc Basin Database

A letter from the Steering Committee will be sent to those participants in Back-Arc Basin Studies Workshop who agreed to work on the various databases enquiring about their progress and suggesting the WWW Global Digital Atlas as an effective way of moving forward.

The Steering Committee Charges the Meso-Scale Working Group to follow up on the recommendations made by participant in the BAB Workshop to create a BAB petrological, multi-beam bathymetry, and geophysical database.

6.3 Active Processes

A summary of the report presented by the Chair on behalf of J. Delaney. See Appendix E for the full text of the report.

Discussion and action summary

- Active Processes Working Group Chair

The Chair recommended and the Steering Committee agreed that J. Delaney's suggestion that J. Cann replace him as liaison to the Active Processes Working Group, be put in abeyance temporarily until J. Cann's position is clearer.

- The Steering Committee was brought up to date on the SOSUS Array by R. Detrick:

The US Navy has proposed to shut off the Burmuda and Keflavík arrays of the SOSUS System eliminating monitoring in the Atlantic, south of Iceland. Efforts are underway headed by C. Doorman, (former head of WHOI) and Deutch (US Sect. of Defence) who have set up a committee to develop a set of recommendations to keep these arrays in operation. Their committee is due to report their recommendations at the end of September. It is conceivable that these arrays may be shut off by the end of 1994. This process would be permanent since the arrays would be distroyed. In order to prevent this, the operational cost of US$ 2-3 million must be found in a very short time. Presently, this effort involves only US programs and agencies so that for the time being InterRidge intervention is not deemed necessary.

InterRidge will keep a watching brief on the development of the situation.

- Event Detection and Response

The Steering Committee agrees that the level of knowledge of the duration and activity of events is at present, insufficient to warrant immediate development of observatory deployment. The role of InterRidge in establishment of a ridge crest observatory requiring international co-operation is

obviously one of co-ordination. When it comes to instrument deployment and recovery from ships of opportunity, the need for international collaboration is also clear.

In the Atlantic, an event detection and response program requires international co-operation in order to bring it to the level of development which exists in programs focusing on the Northeast Pacific. Logistical and weather conditions in the Atlantic will necessitate a greater co-operative effort and more accurate detection methods. The role of InterRidge could be to: 1) help to develop co-ordination between detection and response and 2) to co-ordinate the international effort required to execute it.

- Action on the Active Processes Working Group

The Steering Committee charges the Active Processes Working Group to define their goals and develop a set of experiments that are compatible with the InterRidge objectives and philosophy and to determine what the role of InterRidge might be in such a program in view of the report presented here.

The Active Processes Working Group is charged with development of a strategy for repeated time series measurements or event monitoring and developing novel methods of event detection taking into account the potential destruction of the SOSUS Array.

6.4 Biological Studies - R. Lutz, appointed alternate for D. Desbruyères

Membership of the Biological *Ad Hoc* Committee:

D. Desbruyères	(France; Chair)
P. Dando	(UK)
J.R. Delaney	(US)
D. Dixon	(UK)
A. Fiala-Médioni	(France)
C. Fisher	(USA)
H. Fricke	(Germany)
F. Gaill	(France)
J. Hashimoto	(Japan)
K. Juniper	(Canada)
R. Lutz	(USA)
D. Nelson	(USA)
S. Ohta	(Japan)
A.-L. Reysenbach	(USA)
K.O. Stetter	(Germany)
V. Tunnicliffe	(Canada)

R. Lutz recommends that 1 or 2 geologists be added to the Biological Studies Ad Hoc Committee and nominates J. Delaney as an excellent addition.

The *Ad Hoc* Committee has been charged to focus on issues which are specific to ecosystems at the mid-ocean ridges with the aim of integrating them with interdisciplinary aspects of the InterRidge Program. In general terms the objectives of the Biological Studies Working Group have been stated as follows:

A. Understand and quantify the relevant biological production pathways and organic mater exportation to the deep-sea.
B. Understand the evolutionary biology of the vent organisms and their dispersal mechanism at different time-space scales.
C. Determine the relative influence of biological interactions and physical chemical and geological processes on the distribution and abundance of organisms.

In more detail, the objectives of the *Ad Hoc* Committee are to:

A. Promote the exchange of samples and results which is critical to development of Biological Ridge Studies. In order to accomplish this it will be necessary to:
   - foster activity which has been taking place both formally and informally over the last 2 years and expand it to encompass inclusion of international, interdisciplinary scientists on each cruise and
   - form an international databank of those samples which have been collected over the last 10-15 years.
B. Multi-year survey of biological communities - dependent upon locations of geologic surveys
C. Promote interdisciplinary operations at sea

A meeting of the *Ad Hoc* Committee has been tentatively scheduled for early 1995. Taking into account expense and the potential value of a meeting held at that time, it would be advisable to consider delaying the meeting and expanding it to include several other pertinent members of the international ridge biology community. This would promote the production of a valuable and concrete result.

One meeting which took place in the last year, actively involved an interdisciplinary effort from both geologist and biologist. It concerned biogeography/gene flow on global and meso-scales. This RIDGE-organised workshop entitled "Larval Dispersion", was convened by Lauran Mullineaux and Donal Manahan on 19-21 May, 1994 at Lake Taho, USA. This workshop was attended by the NSF Program Chair indicating a substantial interest on his part in the development of a co-ordinated integrated effort constructed by the biological community that fits into the context of the RIDGE Initiative.

International Biological Databank

The necessity for developing an international databank and the benefit it would bring is recognised throughout the community. It will require a mechanism for sample exchange to broaden distribution and avoid duplication of effort.

Frozen/preserved collections are concentrated at the following institutes:

IFREMER (Desbruyères, Segonzac)
JAMSTEC/ORI (Ohta, Hashimoto)
Rutgers (Vrijenhoek, Lutz)
Scripps (Felbeck)
Banyals (Fiala-Médioni)

IMAX (Documentary film and HDTV Broadcast)

Planning and production of a wide-screen film tentatively entitled "Origins" is currently underway and is due for release in late 1995-6. Two MIR submersibles will be used as the camera platform. It will focusing on the on-going programs of the submersibles Shinkai 6500, Nautile and Alvin as they investigate the biota/ "ecologies" at 6 hydrothermal vent sites, provisionally:

TAG
Juan de Fuca (Godzilla)
9°-10°N (Oct-Dec 1995)
Southern EPR
A back-arc basin site, possibly Manus, Lau or Marianas
Kamchatka.

Production of this film presents a unique opportunity to the InterRidge community to bring to the public a presentation of the work being carried out at the mid-ocean ridges. In addition, the simultaneous deployment of two or more submersibles creates the possibility of carrying out experiments which would otherwise be impossible.

NSF requests the recommendation of a finite group of key individuals who will be able to give some guidance to the NSF concerning investment of their education funding. They would also like some advice concerning the best educational and scientific approach to maximise the exposure of the public and funding agency officials to the on-going programs of mid-ocean ridge research.

Discussion and action summary

- The Biological Studies component of InterRidge

It was decided that the Biological Studies facet of InterRidge remain interwoven with the three principal scientific themes and that the Program Plan should reflect this. It was recognised that there should be greater representation of the biological research community on the Steering Committee and at meetings and workshops. D. Desbruyères will be asked to nominate an additional biologist as ad hoc member on the Steering Committee and future workshop and meeting announcements will target biologists as well as geoscientists. The difficulty of developing a plan for biological research within a geosciences dominated program was recognised and it was restated that the intent of creating the Biological Studies *Ad Hoc* Committee was to give biologists a venue in which to develop biological studies objectives and implementation plans which could be integrated into the InterRidge Program.

- Biological Sample Databank

The Steering Committee endorses the creation of an international databank of biological samples from hydrothermal vents and charges the Biological *Ad Hoc* Committee with the creation of a mechanism for exchange of samples.

- "Origins"

The Steering Committee recognises the value of this opportunity and requests to be kept informed of its development. R Lutz is charged with writing an announcement of opportunity for publication in the Fall/Winter issue of the *InterRidge News*.

7 Interaction with other organisations

7.1 Report of SCOR WG 99

A summary of the report presented by the Chair on behalf of M. Sinha. See Appendix F for the full text of the report.

Discussion and action summary

The Chair and Steering Committee formally thank M. Sinha for the effort he has put into setting up the SCOR WG 99.

- SCOR WG 99 History and Relevance

C. Langmuir raised the question as to the purpose of the SCOR WG 99 and expressed some doubt as to the relevance of any documentation produced by the Working Group and questioned the advisability of spending the funds required to support its meeting.

R. Detrick expressed agreement with C. Langmuir and suggested reducing the number of Working Group members from countries with major sea-going programs and increasing the number of members from those with minor communities which are not already involved with InterRidge.

D. Needham responded that establishment of this Working Group had taken three years and that at its inception, a link with SCOR was seen as particularly valuable. This is still considered to be the case in terms of attracting nations with relatively small deep-sea research programs to become Associate Members. In addition, several beneifts may be gained by affiliation with SCOR by means of a working group. These benefits include international visibility, publicity and SCOR-InterRidge pamphlet circulated to an immense mailing list.

- Recommendation to Meso-Scale Working Group

The Steering Committee recommends that M. Sinha be advised of this discussion and that he take it into consideration in future activities of the SCOR WG 99.

7.2 FARA - C. Langmuir and D. Needham

The field programs for FARA are scheduled to finish in 1995. It was always planned to convene a symposium at the end of the Project. Funding has been granted by LDEO to hold a Ewing Symposium to mark the end of the Project in the Spring of 1996. This Symposium might take place in Iceland and be combined with field trips. It seems appropriate that this meeting not remain simply a FARA Symposium, but that it be organised as a FARA/InterRidge Meeting and provide a venue for presentation of all the results from investigation of the North Atlantic during the last 3-4 years. A published volume in the Ewing Series would result from the meeting. The FARA Co-Chairs request the opinion of the Steering Committee Members as representatives of their national programs, as to the acceptability and feasibility of such a proposal.

Discussion and action summary

- Recommendation to the FARA Co-Chair

R. Searle recommends that any firm decision wait on further consultation with the BRIDGE Community. The FARA Co-Chairs will consult with the national program heads concerning their national community's contribution and report back to the Steering Committee.

7.2 ODP

InterRidge and ODP - R. Searle

R. Searle as Chair of InterRidge made formal contact with B. Lewis, Chair of ODP earlier this year. This contact was most timely as ODP are in the process of drafting their Long-range Plan for the next 10 years. ODP is extremely keen to collaborate with programs such as InterRidge since

they are looking for new direction in which to steer ODP in its next phase of existence and would like to have the input of thematic programs, including InterRidge, to that document. R. Searle presented the structure and objective of the InterRidge Program at the P-COM Meeting in Cardiff this Spring. This presentation was very well received.

One specific action to be taken to increase ODP-InterRidge interaction is publication of respective columns or news items in the JOIDES Journal and InterRidge News. Such columns or news items have existed in the past and steps have been taken by the InterRidge Office to maintain this contact.

InterRidge perception of the requirements of "zero-age" drilling and the importance of developing that capability within ODP was presented. The P-COM gave the very clear response that ODP is a proposal-driven organisation. If InterRidge wants ODP to continue as a program and to develop on-axis drilling capabilities, the InterRidge community must produce and submit good quality proposals whether or not the tools to implement them exist at present.

H. Dick is considering convening a meeting on drilling the ridges and the oceanic crust. InterRidge's interest in co-organising or cosponsoring such a meeting was expressed to him. His reaction to collaboration with InterRidge was positive.

ODP Historical Background - J. Fox

Starting in 1989 there was a movement to create liaisons with thematic programs. InterRidge hadn't been constituted yet but RIDGE was asked to make a presentation. Once InterRidge got going, RIDGE dropped out. The Global Seismic Network is an example of another group asked to participate. On a yearly basis, P-COM has a presentation from each group involved.

Conceptually it was a good system but it failed to have any influence on drilling in any significant way. There still existed a misfit between the drilling objectives of the Lithosphere and Tectonics Panels and the inability of the drill to solve the problems identified by these Panels. This was largely because drilling programs were either technologically limited compared to the complexity of the geological environments and the task required to find a solution, or the data matrix into which the drill was placed was inherently two-dimensional in nature and did not provide constraint at the level that was needed to fully understand the drilling results.

Faced with drafting the Long-range Plan to look at the Program from 1998 to 2001 or 2, P-COM began to realise that the Program must change. Business as usual with a 30 year old program plan was insufficient for survival. One message that has clearly emerged is that one way to maximise the drilling results would be to develop more meaningful links with thematically-driven programs. Ultimately, this will improve the science that the ODP does. This is specifically pertinent to the Tectonics and Lithosphere Panels and to some degree convergent margins, fluxes and paleo oceanography.

In this context, the P-COM was charged with going beyond the informational meetings which had taken place in the past. The Chair of P-COM is presently putting together an outline of a Long-range Plan and creating a letter which will invite thematic groups like InterRidge to help define specific mechanisms by which we can influence drilling trough these thematic programs.

The hope was that a draft would be available for presentation at this meeting but that was not possible. However, the 4-D characterisation of the oceanic crust experiment to be addressed at the end of September in an InterRidge workshop, will, hopefully, have as its final movement a crescendo of drilling legs to test and calibrate the geophysical and surface experiment that will have preceded it. This is an exciting opportunity for InterRidge to begin to factor in this magnificent facility. At the same time the capabilities of the InterRidge community and those cruises with InterRidge co-ordination, can lead to a data matrix which will better constrain the use of the drill. This is the opportunity to create a project in which the pre-drilling experiments are interwoven with drilling objectives.

We should be prepared to conduct a discussion by e-mail some time in late September or early October because the Long-range Plan working group of P-COM will meeting Washington to write a draft of the Long-range Plan which has to be on the desk of the Executive Committee in December. Time is extremely short. The InterRidge Steering Committee should start thinking of ways in which to influence this process.

ODP and Active Processes

Please see the Active Processes Working Group Report, Appendix E.

8 InterRidge Program Plan

It was noted that the Initial Program Plan has never been formally accepted. Several modifications to the text listed below were agreed upon by the Steering Committee. The version appearing in Appendix B was accepted by the Steering Committee as the definitive InterRidge Program Plan. It is intended that this document will not be further modified in future years, but will have an annual addendum attached, as has already done for 1993. At the end of each calendar year, the updated Co-Ordinator's report will become the yearly addendum to the Program Plan.

The terms "National Correspondent" and "National Representative" have caused some confusion. It was established that both these terms indicate the same person/function and that the term "National Correspondent" will be used in the future.

The term "Standing Committee" may impart too permanent an impression to bodies which may be ephemeral. The term "*Ad Hoc* Committee" will be used to designate temporary committees in the future. Biological Studies have been moved into the *Ad Hoc* Committees section.

Discussion as to whether InterRidge should continue to offer Associate Membership will be renewed at the 1995 Steering Committee Meeting in Kiel.

The following revised version of section 7.1 Membership, 7.2 InterRidge Office and 7.3 Steering Committee were accepted by the Steering Committee. Modifications made during this meeting are in **bold**.

7.1 Membership

Two types of membership in InterRidge are proposed, as follows:

- Principal Member: Guaranteed membership of Steering Committee for two voting representatives; responsibility and opportunity to host the InterRidge Office during the coming years; **guaranteed membership on all working groups, voting and proportional representation at all general InterRidge meetings; and entitlement to receive all information, newsletters and data catalogues.**
- Associate Member: **Guaranteed membership of Steering Committee for one non-voting representative; guaranteed membership on at least one working group, with total representation approximately in same proportion as Steering Committee membership; entitlement to representation at all general InterRidge meetings;** and entitlement to receive all information and newsletters and data catalogues.
- **Corresponding** Member: Entitlement to receive information, newsletters and data catalogues, on request.

"Principal" membership requires a higher level of support of InterRidge running costs than "Associate" membership. Each country will be asked to propose its own affiliation. **Countries may combine into consortia who would constitute a Principal Member.**

7.2 InterRidge Office

The functions of the InterRidge Office include preparing and publishing program documents; coordinating InterRidge planning activities, including meeting support; managing the program budget; and providing other support as required. Such an office would comprise several components: routine office operations, technical support, coordination of event detection and response, production of a newsletter (see Section 7.7), and an executive administrator and a program assistant. **The InterRidge Office will normally be sited at the institution of the Chair of the Steering Committee, who will have day-to-day responsibility for running the Office, subject to the overall approval of the Steering Committee.**

Routine office operations:

- Limited meeting support (documents and on-site co-ordination), with increased support in subsequent years
- Communications (telephone, fax, telemail, mailings)
- Document production (meeting reports, program plans, newsletters)

Technical support:

- Development of database of cruise tracklines and station positions
- Creation of international directory of addresses and specialities of ridge researchers

Co-ordination of event detection and response:

- Co-ordination of fast-response procedures: potential participants, paths of authority, equipment locations, ship locations
- Co-ordination of computerized response package
- Co-ordination of RRIP development (see Section 4.3)

Personnel:

- Executive administrator (Co-Ordinator)
- Program assistant

Rotation:

The InterRidge Office and Chair shall normally rotate every three years. The Steering Committee shall choose the next host country and Steering Committee Chair on the basis of bids, including a projected budget, which they will invite from Principal Members

7.3 Steering Committee

The InterRidge Steering Committee will co-ordinate and promote InterRidge activities. It will:

- **define and from time to time update the Program Plan;**
- **propose and oversee specific InterRidge projects;**
- **consider and prioritise proposals for new program elements, workshops and other appropriate activities;**
- **liaise with the leaders of national ridge research programs;**
- **determine the membership of InterRidge and its working groups and committees;**
- **approve the InterRidge budget and oversee the operation of the InterRidge Office;**
- **select the InterRidge Chair and the host country for the InterRidge Office.**

Membership of the Steering Committee will be determined annually, as follows:

- **Each paid-up Principal Member nation will be entitled to two positions on the Steering Committee, of which one may be nominated by the member country, and the other will be chosen by agreement between the member country and the Steering Committee. It is desirable that the nominee be the head of the national program or be official representative of that program. These representatives will usually also act as the National Correspondent and his/her alternate (see 7.4).** Either position may be temporarily taken by a replacement if the nominated member is unable to attend. In the case of the Member hosting the InterRidge Office, one of the Steering Committee positions shall go to the Chair and the other will normally be the National Correspondent.
- **Each paid-up Associate Member nation will be entitled to one non-voting position on the Steering Committee, to be nominated by the Member Nation and agreed by the Steering Committee. This person will usually also act as the National Correspondent (see section 7.4).** This position may be temporarily taken by a replacement if the nominated member is unable to attend.
- Additional members may be from time to time co-opted on the basis of their scientific expertise, affiliation to other international programmes, etc., to provide appropriate balance and coverage. Such members should total no more than four, or one third of the total Steering Committee, whichever is smaller.

No individual member, whether a National Correspondent or otherwise, may serve more than four consecutive years. Normally members will be expected to serve at least two years.

The Steering Committee will normally work by consensus. However, in the event of a vote, each principal member of the Steering Committee shall have one vote, except that in the case of a tie the Chair shall have an additional, casting vote.

In the absence of the designated Chair, the Committee shall elect a temporary Chair from its members.

The InterRidge Co-Ordinator shall normally act as secretary to the steering committee, but shall not have a vote.

Chairmen of the InterRidge Working Groups will normally be invited to attend meetings of the Steering Committee, but will have no vote. Each working group Chair, if unable to attend, may be temporarily replaced by another member of his or her working group.

In the case of a vote in the course of a Steering Committee meeting at which only one of a principal member's representatives is present, only the representative present may vote.

The following revised version of section 7.8 Data management was accepted by the Steering Committee. Modifications made during this meeting are in **bold**.

7.8 Data management

In the first phase of InterRidge, information concerning cruise tracklines and station co-ordinates will be requested from member countries. The InterRidge Office will keep a record of this information, and will make the data available to the community.

All InterRidge program components will benefit greatly from the development, in later phases of InterRidge, of standardized databases comprising geophysical, geochemical, bathymetric, and biological data. Current technology allows such databases to be distributed across the Internet.

An Ad hoc Committee will be established including a representative from each of the Principal Member nations. Each member of the ad hoc committee will be responsible for encouraging the development of banks of relevant ridge data in his or her country in a common format accessible via the Internet. Participating scientists will be expected to bid for funds from their national funding agencies to support this work. The InterRidge Office will co-ordinate the efforts of the committee members and will make the data available to the community through the World Wide Web.

A first step in this direction has already been taken by researchers at Lamont-Doherty Earth Observatory funded by the US RIDGE program. To avoid duplication of effort, the InterRidge Office will work closely with the developer of the LDEO database as well as with committee members from other nations.

9 Change of Representatives

The Steering Committee recommends the following changes to Committee and Working Group membership:

9.1 Steering Committee

T. Urabe is welcomed as a new member of the Steering Committee.
J. Delaney* and R.S. Detrick* will be rotating off.
D. Needham* will serve as an *ad hoc* member.
A biologist will be appointed as a new *ad hoc* member.

9.2 National Correspondents

J. Malpas* will be replaced by S. Scott*
J.R. Delaney* will be replaced by P.J. Fox*

9.3 Working Groups

Global Working Group
H. Bougault will be replaced by P. Patriat*

J.-C. Sempéré will be replaced by C. German*
T. Urabe* will be replaced by T. Matsumoto*

Meso-Scale Working Group

M. Sinha will be replaced by J. Lin (If necessary R. Detrick will take the Chair of the Meso-Scale Working Group until someone else can be found).
P. Gente* and J. Hashimoto* will be new members

Biological Studies Ad Hoc *Committee*
J. Delaney will be added to the Committee

*Acknowledgement received by the InterRidge Office as of 10 November, 1994.
A full summary of the InterRidge Constitution is given in Appendix A.

10 Provisional InterRidge Calendar

1994

4-D Architecture of the Oceanic Lithosphere
Boston, MA, USA; 23 & 24 Sept., 1994

SCOR 99 Working Group Meeting: Mass and Energy Fluxes at Ridge Crests
Cambridge, UK; 10-12 Oct., 1994

Arctic Ridges: Results and Planning Workshop
Kiel, Germany; 15-17 Nov, 1994

Steering Committee Meeting 1994 bis
San Francisco, CA, USA; 6 Dec., 1994

1995

Active Processes Workshop: "Event Detection and Response & A Ridge-Crest Observatory"
Paris, France; 16-18 January, 1995

Biological Studies Workshop
Jan/Feb, 1995

Meso-Scale Workshop: "Quantification of Fluxes at Mid-Ocean Ridges: Design/Planning for the Segment-Scale Box Experiment."
May/June, 1995 (provisional)

InterRidge Steering Committee Meeting: End of Phase I - Beginning of Phase II to be held in parallel with a Meeting of DeRidge
Kiel, Germany; Oct/Nov, 1995

Discussion and action summary

- Provisional Calendar

An extraordinary meeting of the Steering Committee will be convened on Tuesday evening 6 December, 1994 in San Francisco.

The Steering Committee accepted the provisional calendar as presented above.

- General InterRidge Meetings but no need for such a meeting was seen for 1995.

General Meetings may be held from time to time as the occasion warrants.

- Beijing in 1995

R. Searle raised the issue of an invitation for InterRidge to convene a Mid-Ocean Ridge Geology Symposium at the 1996 meeting of the International Geological Congress in Beijing, China. In view of the number of items on the provisional calendar, the Steering Committee did not wish to accept this invitation.

11 Meeting Organisation

R. Detrick raised the issue of meeting organisation asking that a protocol for InterRidge meeting organisation be established based on the responses to the following questions:

- What is the mechanism by which a meeting or workshop is proposed?
- Who decides whether or not to hold a proposed meeting or workshop?
- Who is responsible for meeting organisation?

- Who decides who is invited to a meeting?
- What are the products expected from a meeting?

We have to recognise that resources to send people to meeting are limited. As the number of meetings increase we will have to prioritise and choose which are essential and which might be delayed.

R. Searle responded to these points as follows:

- Most proposals for meeting come through the recommendation of the Working Groups and the InterRidge Office then proceeds with organising the meeting. If a proposal were to come from outside the InterRidge structure it would be brought before the Steering Committee for approval.
- Convenors are usually suggested from within the InterRidge structure and, in conjunction with the InterRidge Office, they are responsible for meeting organisation.
- Invitation lists are produced by agreement between the convenors and the InterRidge Office. Occasionally, national representatives are consulted concerning composition of invitation lists.

Discussion and actions summary

Convenors and organiser will in the future, work in conjunction with national programs which provide funding for meeting participation so as to insure proportional representation and not to create funding demands which cannot be meet.

All future proposals to hold meeting or workshop should be made to the InterRidge Office. The Steering Committee would then be given the opportunity to comment on the topic, size, venue, and travel support available for proposed meeting. National correspondents on the Steering Committee would be asked for their input concerning representation on the invitation list and the level of their nation's support for the meeting. This consultation could be carried out around a virtual round table on the Internet. It was also suggested that the representatives of the national programs on the Steering Committee indicated the amount of funds designated in their program budget to support participation in international meetings.

12 InterRidge Phase 2

12.1 SWIR Project

InterRidge Steering Committee identified the SWIR as a unique supersegment with particular and very important scientific interest, that of a super-slow spreading ridge, and invites the InterRidge community to participate in an international, interdisciplinary project of investigation of this supersegment. The objectives of this project are examination and characterisation of a super-slow-spreading end-member of the global mid-ocean ridge system which integrates interdisciplinary investigation at all scales. This program of research is by nature interdisciplinary, beyond the scope of any one country's capabilities and require a high level of co-ordination making it a priority for an InterRidge project.

Each member country will be consulted by the InterRidge Chair to sound the response of their national community to the proposed project. The Chair will relay the responses to C. Langmuir. If the reaction is positive, the Global Working Group will be charged with detailing the design of the project plan, particularly dealing with the aspect of ensuring complete mapping coverage of the entire supersegment. C. Langmuir will present the project plan to the Steering Committee in an extraordinary meeting in San Francisco on the evening of 6 Dec, 1994.

12.2 InterRidge Global Digital Atlas Project

The Global Digital Atlas which transcends the three InterRidge Program themes will be initiated by the Steering Committee. It will consist of digital databases compiled and maintained in various countries. These databases will be accessible via an InterRidge home page on the World Wide Web.

Data standards, archive location, and maintenance, contribution and availability policy should be addressed by the small number of people already involved in such projects in isolation. It was agreed that an *ad hoc* committee be created made up largely of these people, with a member of each InterRidge member nation, who would oversee that country's contribution, to the InterRidge Global Digital Atlas. A country's contribution to the Global Digital Atlas might be, but would not

necessarily be, defined by geographic area. The database should contain all data residing in that country which is currently in the public domain. As new datasets are collected or pass into the public domain, they would be added to the Atlas. The following people were suggested as members of the Global Digital Atlas Project *Ad Hoc* Committee:

K. Tamaki	(Japan, Chair)
P. Blondel	(UK)
D. Needham	(France)
B. Ryan	(US)
H. Schenke or J. Theide	(Germany)

ACTIONS:

- R. Searle was charged with writing to each of the perspective *ad hoc* committee members and, once the committee is established, charging them with the creation of a project plan, a draft of which will be circulated to the Steering Committee.
- Following ratification of the project plan by the Steering Committee, the InterRidge Office was charged with contacting the National Correspondents asking them to consider inviting proposals for funding within their own country to establish an on-line database.
- The InterRidge Office was charged with developing an InterRidge home page which will link the individual on-line data archives in various countries and contacting the individuals identified as key to database compilation on a national level.
- Funding already exists to initiate a BAB database in Japan. Japan proposes that they contribute this database to the InterRidge Global Atlas database. The Steering Committee encourages this proposal and thanks InterRidge Japan.

InterRidge
Steering Committee Meeting 1994
Report

APPENDIX B:

Co-Ordinator's Report

I InterRidge Update Summary 1994

In January of 1994, the InterRidge Office completed the first of its scheduled rotations moving from the University of Washington in Seattle, WA USA, to begin its new three year term of residence at the University of Durham in the United Kingdom. Since then efforts have been focused on publication of a series of workshop reports and the planning and organisation of a number of meetings and workshops scheduled for 1994 (see below). In addition, InterRidge has been working to strengthen formal links with such international ridge-crest research organisations as the Ocean Drilling Project (ODP), the Scientific Committee on Ocean Research (SCOR) and its parent body, the International Council of Scientific Unions (ICSU), as well as with a number of national ridge-crest research organisations.

As 1994 draws to a close, so does Phase I of the InterRidge Program Plan. This first phase in the decadal program was dedicated to improving co-ordination of on-going independent national and international cooperative projects. InterRidge set out to achieve this goal by enhancing, encouraging and actively facilitating exchange of ideas and information at a series of workshops attended by a broad spectrum of the international ridge-crest research community. These workshops fostered interdisciplinary, international approaches to problems in ridge-crest study. Their aim was to bring the best available expertise to bear on problems too large or logistically complex to be within the capabilities of any single national program. The success of this effort is partly reflected in the number of national ridge-crest study programs which have sprung into being over the last few years. These programs are now helping to co-ordinate research on both national and, in conjunction with InterRidge, international levels.

In 1994, InterRidge has become the community-supported international research initiative envisaged by scientists from 11 nations who attended the first formal InterRidge meeting held in France in 1989. InterRidge now counts 4 principal Member Nations: France, Japan, the United Kingdom and the United States. Germany and Spain have also indicated their intention to join as Principal Members this year. Canada, Iceland and Portugal have expressed their intention to join as Associate Members in 1994. In addition, InterRidge maintains an active correspondence with ridge-crest researchers in Australia, Italy, Korea, Mexico, Norway, Russia and Sweden. It is hoped that India will soon enter into this correspondence and eventually become an InterRidge Member. InterRidge is also being brought to the attention of ridge workers in other countries as apportunities arise.

As InterRidge enters into the second phase of its program, the scope of its activities will broaden to include planning for international and interdisciplinary InterRidge Projects focusing on temporal variability and spatial characterisation of the ridge-crest. In addition to information made available to the community through the publication of InterRidge News and workshop reports, InterRidge will establish an electronic database catalogue accessible via the Internet.

Following on from the 1993 Meso-Scale and Global Workshops, three new InterRidge Workshops have been held or organised in 1994. Each is designed to pursue questions or themes identified at a previous workshop. Themes for two workshops came out of the Global Meeting held in Paris in 1993, "Indian Ocean Planning Meeting" and "Arctic Ridges: Results and Planning". The Meso-Scale Workshop held in Durham, UK, generated the subsequent "4-D Architecture of the Oceanic Lithosphere Workshop". Reports from the 1993 Meso-Scale and Global workshops have been published and are available in hard copy upon request from the InterRidge Office. Alternatively, they may be imported from the InterRidge Gopher (piglit.dur.ac.uk).

One of the main objectives of the "Indian Ocean Planning Meeting" held in Baltimore, USA on 22 May, was dissemination of information concerning scheduled field programs and further development of project co-ordination in the Indian Ocean. The other was to encourage interaction between geophysical/geochemical and biological/hydrothermal research communities. One of the outcomes of this meeting is the initiation of an "Indian Ocean Column" which will appear in the InterRidge News starting with the Fall 1994 issue.

The second spin-off from the 1993 Paris Global Workshop is the "Arctic Ridges: Results and Planning Workshop" to be held in

Kiel, Germany on the 15-17 November. The principal foci will be to familiarise the community with existing Arctic data sets, identify data gaps, and to define approaches and implementation plans to meet the scientific and logistical challenges presented by this region.

The "4-D Architecture of the Oceanic Lithosphere Workshop" held in Boston, USA on 23 & 24 September, was an expansion on the theme of spatial and temporal characterisation of second order ridge segmentation. The principal objective for this follow-up workshop was to draft a plan for co-ordinated segment-scale studies over the next five years. It is anticipated that work involving the resources of the Ocean Drilling Program will play an important role in the design of this project.

The InterRidge objective of promoting multi-national and interdisciplinary ridge-crest research also continues to develop via the activities of working groups centred around the themes of Global, Meso-Scale and Active Processes. Initiation of a new Ad Hoc Committee focusing on Biological Studies is being under-taken by D. Désbruyères.

Working Group Summaries

A General InterRidge Meeting will be hosted by DeRidge in Kiel, Germany in 1995. It will concern InterRidge policy for the most part, particularly Phase 2 of the science Program Plan; however, it will include 'state-of-InterRidge' science presentations as updates on the working groups' progress during the past 2 years.

In addition to the meetings listed above, an agreement on international data exchange formats is being sought.

Workshop reports and other pertinent InterRidge documentation, announcements and information will soon be available on an Internet-accessible "gofer". This service is a precursor to the eventual creation of data index and information directory for the global mid-ocean ridge system.

Global

Charlie Langmuir, Chair

The Indian Ocean has been identified by the Global Studies Working Group as a current focus for global-scale investigation of the mid-ocean ridge. A one day InterRidge Global Workshop aimed at facilitating collaboration and co-ordination of various investigators involved in or planning to propose ridge-related studies in the Indian Ocean will be convened. in Baltimore by Jean-Christophe Sempéré on May 22, 1994, the day before the Spring Meeting of the AGU.

The report detailing the transactions and recommendations of the 1993 Global Workshop held in Paris was published in June, 1994. One of the recommendations of this report is the compilation of a global atlas of the mid-ocean ridge system. This atlas, to be made available both in hard copy and electronically via the Internet, is expected to be one of the Global Working Group's principal foci in upcoming years.

Meso-Scale

Martin Sinha, Chair

Recommendations issuing from the two Meso-Scale Working Group Meetings held in 1993 Segmentation and Fluxes: A Symposium and Workshops and Back-Arc Basin Studies, have served as guidelines for the 1994 Working Group agenda. Significant interest demonstrated by Segmentation Workshop participants in the 4-D Architecture of the Oceanic Lithosphere has led to the development and planning of an InterRidge workshop centred around this theme to be held in Boston, 23 & 24 September 1994. Its objectives will be to design experiments, establish implementation plans and designate experiment site(s) for investigation into the 4-D architecture of the Oceanic Lithosphere at the second-order spreading segment scale. This workshop will be followed by a US national workshop focused on more detailed discussion, planned and organised by RIDGE and it is hoped that other national programs may follow suit to plan their own contributions to the InterRidge program. Organisation of a "Fluxes at the Second-Order Spreading Segment Scale Workshop" is currently under discussion. A compilation and synthesis of petrological, geochemical and geophysical data collected in back-arc basins is being discussed and planned by participants in the Back-Arc Basins Studies Workshop.

Reports from the 1993 Meso-Scale Workshops were published in a single volume in June 1994.

Active Processes

Joe Cann, Chair

The first Active Process Working Groups Meeting is scheduled 16-18 January, 1995, in Paris, France. This workshop will focus on the theoretical and technical development required to further our event detection and response capabilities and to establish a ridge-crest observatory.

Biological Studies Ad Hoc Committee
Daniel Désbruyères, Chair

This new committee is intended to meet the need expressed by biologists within the ridge-crest research community to focus on issues specific to the ecosystems found along the mid-ocean ridge such that their investigation may be more effectively integrated into the interdisciplinary scheme of InterRidge. A provisional list of Ad Hoc Committee Members has been drawn up (see page 4). It is anticipated that a workshop will be convened by this committee in late 1994 or early 1995. The objectives of the Biological Studies Ad Hoc Committee are as follows:

- Understand and quantify the relevant biological production pathways and organic mater exportation to the deep-sea.
- Understand the evolutionary biology of the vent organisms and their dispersal mechanism at different time-space scales.
- Determine the relative influence of biological interactions and physical chemical and geological processes on the distribution and abundance of organisms.

II InterRidge Structure January 1994

1 THE STEERING COMMITTEE :

R.C. Searle	(UK, Chair)
D. Désbruyères	(France)
P.J. Fox	(U.S.)
J. Francheteau	(France)
C.H. Langmuir	(U.S.)
H.D. Needham	(France; ad hoc)
M. Sinha	(U.K.)
K. Tamaki	(Japan)
T. Urabe	(Japan)
A. Biologist	(ad hoc)

2 NATIONAL CORRESPONDENTS :

+Australia :	T. Crawford
+Canada :	S. Scott, K. Juniper
* France :	J. Francheteau
✣Germany :	H. Schmincke, R. Rihm
+Iceland :	K. Gronvold
Italy :	E. Bonatti
* Japan :	H. Fujimoto
Korea :	Sang-Joon Han, Bong Choo Suk
Mexico :	J.E. Aguayo-Camargo
Norway :	E. Sundvor
+Portugal :	J.Miguel A. Miranda
Russia :	L.V. Dmitriev
✣Spain :	J. Acosta, M. Canals
Sweden :	N. Holm
* U.K. :	J.R. Cann
* U.S.A. :	P.J. Fox

* countries which have agreed to join InterRidge as Principal Members in 1993
+ countries which have confirmed or indicated their intention to become Associate Members of InterRidge in 1993 or 1994
✣ country which has indicated intention to join as Principal Member

3 WORKING GROUPS :

3.1 Global Working Group

C.H. Langmuir	(U.S. ; chair)
C. German	(UK)
J. Lupton	(US)
T. Matsumoto	(Japan)
P. Patriat	(France)
K. Tamaki	(Japan)
V. Tunnicliffe	(Canada)

3.2 Meso-scale Working Group

J. Lin	(U.S., chair)
R. Detrick	(U.S.)
H. Elderfield	(U.K.)
H. Fujimoto	(Japan)
K. Fujioka	(Japan)
P. Gente	(France)
J. Hasihmoto	(Japan)
C. Mével	(France)
R. Searle	(U.K.)
B. Taylor	(U.S.)

3.3 Active Processes Working Group

J.R. Cann	(U.K., chair)
E. Baker	(U.S.; EDR*)
P. Dando	(U.K.; observatories)
J. Delaney	(U.S.; observatories)
D. Désbruyères	(France; observatories)
P. Einarsson	(Iceland; EDR)
D. Fornari	(U.S.; EDR)
J. Honnorez	(France; observatories)
J.M.A. Miranda	(Portugal; EDR)
T. Urabe	(Japan)
M. Yamano	(Japan)

* Event Detection & Response

4 AD HOC COMMITTEES :

4.1 Biological Studies (provisional)

D. Désbruyères	(France; Chair)
P. Dando	(U.K.)
J.R. Delaney	(US)
D. Dixon	(U.K.)
A. Fiala	(France)
C. Fisher	(USA)
H. Fricke	(Germany)
F. Gaill	(France)
J. Hashimoto	(Japan)
K. Juniper	(Canada)
R. Lutz	(USA)
D. Nelson	(USA)
S. Ohta	(Japan)
A.-L. Reysenbach	(USA)
K.O. Stetter	(Germany)
V. Tunnicliffe	(Canada)

5 LIAISONS WITH OTHER PROJECTS AND ORGANIZATIONS :

Ocean Drilling Program (ODP): C. Mével
Int. Lithosphere Panel (ILP): J. Mutter
SCOR: M. Sinha

III InterRidge Publications 1994

InterRidge Meso-Scale Working Group Reports 1993:
Segmentation and Fluxes at Mid-Ocean Ridges: A Symposium and Workshops & Back-Arc Basin Studies: A Workshop, June 1994, pp. 67.
InterRidge Global Working Group Report 1993: Investigation of the Global System of Mid-Ocean Ridges, July 1994, pp. 40.
InterRidge News, 1994, 3, 1, pp. 28.
InterRidge News, 1994, 3, 2, pp. 44.

*InterRidge News presently has a circulation of 1,635.

IV InterRidge Meetings and Workshops 1994

Global Working Group:
Indian Ocean Planning Meeting,
Baltimore, MD, USA; 22 May, 1994.
Arctic Ridges: Results and Planning
Kiel, Germany; 15-17 November, 1994
Meso-Scale Working Group:
4-D Architecture of the Oceanic Lithosphere
Boston, MA, USA; 23 & 24 September, 1994.
Administrative Meetings:
Steering Committee Meeting 1994
Tokyo, Japan; 5 & 6 September, 1994.
Steering Committee Meeting 1994 bis
San Francisco, CA USA, 6 December, 1994

InterRidge
Steering Committee Meeting 1994
Report

APPENDIX C:

Report of Meso-Scale Working Group

Report of Meso-Scale Working Group of InterRidge

Martin Sinha

Over the past year, the Meso-Scale Working Group of InterRidge organised a series of scientific and planning meetings to address the three major themes - ridge segmentation, fluxes, and back-arc processes - identified in the Initial Program Plan as components of the Meso-Scale project. The meetings were:

1. Segmentation and fluxes at mid-ocean ridges: A Symposium (convenors: Jian Lin, Roger Searle, John Sinton)

2. Segmentation at mid-ocean ridges: A Workshop (convenors: Jian Lin, Roger Searle, John Sinton)

3. Quantification of fluxes at mid-ocean ridges - material, chemical and thermal: A Workshop (convenors: Harry Elderfield, Catherine Mével, Martin Sinha)

4. Back-Arc Basin Studies: A Workshop (convenors: Julian Pearce, Kensaku Tamaki)

1 to 3 were held in Durham, UK, in September 1993. 4 was held in Seattle, USA in October 1993. Reports of all of these meetings were published in a single booklet, 'Meso-Scale Working Group Reports 1993', by the InterRidge Office in June 1994. Chapter 1 of that document provides an executive summary of the outcome of all of these meetings.

In my view, this set of reports probably represents the best, considered consensus view that InterRidge is likely to be able to achieve on what the major scientific questions at a meso-scale are, and what are the best approaches for addressing them. The next stage must be to move on to implementation of the ideas expressed in this collection of reports.

One of the key requirements for at least some parts of the Meso-Scale project will be the selection of a site, or sites, for detailed study through multi-disciplinary and multi-scale series of co-ordinated experiments, including investigations of temporal variability. Up till now, InterRidge has generally not specified any geographic locations for such studies, although the properties and characteristics of suitable sites have been discussed at some length in a variety of reports and documents. I believe that the Meso-Scale project has now reached a stage where the selection of specific sites has become essential to further progress.

Of the many elements of Meso-Scale studies described in the workshop reports, the majority are in fact thematic and it is not necessarily the case that the relevant field programs have to be carried out at a limited number of sites. There are really three sections of the reports for which site selection now is needed. I will take the back-arc component (which is the least obvious case) first. The Dorman-Hildebrand seismic tomography experiment planned for the Lau Basin (October 1994), together with the large amount of data already available from it and the recent participation of researchers from many countries (France, Germany, Japan, Australia, US, UK, Russia) there, make it particularly likely that further research will become focused on the Lau Basin. This is particularly the case for studies of deep-seated processes. It is not stated explicitly in the Back-Arc Basins workshop report that selection of a single basin or spreading centre for a co-ordinated series of experiments is required for any of the science mentioned. Indeed significant parts of the program call for comparative studies of different basins and spreading centres. However InterRidge should probably consider carefully whether the benefits of concentrating a wide range of field programs in a single area would warrant the selection of such a site as an 'InterRidge Back-Arc Site'.

In the cases of the fluxes and segmentation workshops, the case is considerably more straightforward. Taking fluxes first - the idea that has been developed is to construct an imaginary box, extending from deep in the mantle up into the water column and with horizontal dimensions of the order of a segment length, and to determine all the fluxes occurring within it. Very clearly, implementation

requires site selection. The characteristics of appropriate segments are discussed in the workshop report, but no site is explicitly selected or suggested. In the case of the segmentation workshop, two parts of the report imply a need for site selection for a major series of co-ordinated experiments. The first is the '4-Dimensional Architecture of the Oceanic Lithosphere' concept; and the second is the study of temporal variability. In the latter case, there is also a clear link to the Active Processes Working Group.

Combining these constraints, I conclude that the Meso-Scale Project of InterRidge has reached the stage where it needs to select one or more segment-scale sites on the mid-ocean ridge which can be used for co-ordinated series of multi-disciplinary studies. Sites need to be selected for:
(i) 4-D architecture of oceanic lithosphere
(ii) Temporal variability at the segment scale
(iii) Quantification of fluxes at the segment scale
(iv) Deep structure of back-arc spreading centres, i.e. the influence of the subducting slab on spreading processes.

In an ideal world, the SAME sites should be chosen for (i) to (iii) above. (i) and (iii) in particular have a large overlap in the set of observations or experiments that need to be carried out. Similarly, (ii) will have much in common with the active processes group. Only if there are absolutely compelling reasons should InterRidge contemplate selecting separate sites for (i) to (iii). The workshop reports make clear the desirability of selecting both a fast and a slow spreading site for (i) to (iii). Taking all of this into account, I conclude that we should be aiming to identify:

- An InterRidge Meso-Scale Fast-Spreading Ridge Site for 4-D Architecture of the lithosphere, quantification of fluxes, temporal variability and possibly active processes.
- Ditto at a Slow Spreading Site.
- An InterRidge Meso-Scale Back-arc Site for studies of the influence of subduction on sea floor spreading processes.

All of these sites need not be actively under investigation at the same time - it may be appropriate to aim for a staged approach. However given the long lead times for ship scheduling, and the interests of different groups and countries in different oceans, in-depth study of all of these sites over a period of years may in fact prove to be more efficient.

The next meeting scheduled for the Meso-Scale project is to be held in September 1994 on 4-D architecture (East Coast US). At that meeting, it would be useful for participants to consider site selection in the light not only of requirements for the 4-D architecture study, but also the needs of the fluxes study - which especially for slow spreading entails specific requirements in terms of rift valley shape for hydrological monitoring - and also temporal variability/active processes.

No further meetings of the Meso-Scale Working Group have been arranged at present; but a joint meeting with the Active Processes working group specifically to discuss implementation and site selection in the near future may be desirable.

Martin Sinha
August 1994

InterRidge
Steering Committee Meeting 1994
Report

APPENDIX D:

Active Processes Working Group Report

Active Processes Working Group Report

John Delaney

This was to have been my last InterRidge steering committee meeting and I am deeply sorry not to have had the pleasure of interacting with each of you one last time in an InterRidge setting particularly in a location as conducive to the study of volcanic processes as is Japan. Roger had asked me to provide some commentary about Active Processes and, as neither Joe Cann nor I can attend the meeting, I have taken the liberty of sending along some viewpoints and recommendations in writing.

I formally recommend that Joe Cann succeed me on the committee as liaison to the Active Processes portion of the InterRidge.

I concur with the need for efforts to evaluate the appropriate role and cost of the InterRidge office, but we must be cautious about diminishing the effectiveness of the chair by limiting the budget too much, lest we be unable to attract active scientists who wish to continue their research while taking on a leadership role. It will be a grave mistake to underestimate the effort necessary to operate the InterRidge office with optimum efficiency. A PhD-level program assistant is an essential component of a smoothly operating office if we are to have a meaningful newsletter, as well as informed records of meetings and conferences. Further, if financial contribution is not the mechanism for identifying membership on the steering committee, then some other equally valid means of identifying serious participating nations from those who have the price of a round-trip ticket every two years will have to be found to avoid irreversible dilution of decision making processes.

Without hearing the debate which will surely ensue, I favor maintaining the status-quo at least during the period that the office is at Durham because that was the condition under which the office went there and there were no disagreements at that time. I urge those nations that wish to reduce the cost to all of us to come up with innovative bids for the office following the Durham period, in which they demonstrate that their own country will provide sufficient resources to operate the office at an effective level. This solution has the benefit of putting the responsibility of implementation of the idea in the hands of those who have suggested it, while maintaining a tacit commitment made to the current office by not changing philosophy one year into the agreement.

Announcements for a planning meeting of scientists interested in Active Processes to be held in France this coming winter have been circulated to the InterRidge community during the summer of 1994. Heather has worked with Joe Cann on preparation of these materials; she will no doubt provide the committee with all requisite information on the issues currently planned for discussion at that meeting. There is a broader meeting of earth scientists interested in instrumenting the seafloor in general that will be held in Marseilles in a similar time frame. Agendas for this meeting have also been distributed electronically during the past summer and presumably most of you have received that information as well. Joe Cann is a member of the ION planning committee, so InterRidge is well-situated to ensure close co-ordination between efforts related to active processes on ridge crests and the activities of the ION group.

My comments herein pertain to recent developments in the arena of temporal variability and interdisciplinary research at ridge crests; they fall into three categories: 1) impact of SOSUS-like systems on studies of active ridge crest processes, 2) new insights from accidental and planned responses to short-term ridge crest events, 3) the importance of entraining ODP more effectively in a program of ridge exploration/experimentation.

I recognize that some of the material below is more appropriate for expanded development at the Active Processes meetings rather than discussion at a steering committee meeting. However, if the steering committee is to wisely oversee the entire program it may be well served by a basic appreciation of some of these issues. For this reason, and because the study of Active Processes at ridges is a new field struggling to define appropriate scientific approaches for examination of a dynamic system, I have chosen to bring these issues to your attention.

SOSUS-LIKE DETECTION CAPABILITIES

Most of the programmatic rhetoric generated by the various national groups interested in ridge crest research contains some reference to the need for real-time insights into processes at spreading centers. Efforts to obtain these insights have tended to fall into two categories - an observatory approach and an

event detection approach. As outlined, the observatory approach commonly involves selection of one or more sites for long-term emplacement on the seafloor of a variety of instruments designed to collect a spectrum of concurrent deformational and flux data that would allow modelling of coupled volcano-hydrothermal processes. Event detection/ response has been more vaguely defined as the need to observe the processes involved in, and consequences of, short-term events - faulting, eruption, diking - on the seafloor. The use of SOSUS to identify a specific target in the NE Pacific during the summer of 1993 powerfully demonstrates the value of such remote detection techniques over serendipity and forces a re-evaluation of the validity of artificially distinguishing between the observatory approach and the event approach.

There is no intellectual difference between the observatory approach and the event approach - they both involve active processes and SOSUS-like capability allows us to view them appropriately as portions of the temporal variability spectrum. In fact, the instruments and experiments necessary to conduct the two approaches are very nearly identical, although not yet abundant or commonly in use. Further, the wisdom to select an appropriate local site (10's of square kms) for concentrated long-term study of the interplay between volcanic and hydrothermal activity is not yet in hand. But it may be if we accumulate sufficient information from a well-run event detection capability over the coming five to ten years.

I would argue that an appropriate international focus for the Active Processes effort might be a five- to eight-year program of co-operative event response activity during which development, construction, and use of a wide range of instrumental systems designed to study the physical, chemical and biological processes operative at ridge crests takes place at a pace and in directions determined by individual research groups or nations. In that manner, we build the instrumental and experimental capability to work effectively through time on the seafloor while we are acquiring experience with the nature and variability of seafloor activity over a wide range of ridge crest conditions. At some time near the turn of the century, we may be able to wisely select a few sites for permanent commitment of an international effort. In the meantime, individual research groups and/or individual nations will be focusing on specific sea floor sites selected for expedient scientific or political reasons to develop particular experimental approaches and perhaps to establish an identifiable presence.

At issue for international ridge crest researchers is the question of whether there will be a continuing SOSUS-like capability for a sufficient period of time should post-cold war budget cuts continue. Some discussion in the coming year of costs and benefits of setting up a modern non-US Navy listening system of hydrophones, perhaps related to the Global Seismic Network, would be advisable. Other issues for InterRidge might be to establish criteria for launching responses, to explore creative mechanisms for co-ordinating rapid-use assets necessary for effective response that are usually committed months to years in advance (ships, instruments, people), and to establish communication networking and information dissemination/archiving techniques to see that responses are optimally executed a before, during, and after the event. Another issue is whether or not the entire planetary rift system can be surveilled using SOSUS-like capability. In the US, NOAA scientists are attempting to expand existing coverage and portions of the Atlantic are accessible to scientists at the Naval Research Laboratory.

EVENT RESPONSE INSIGHTS

Although it was not clear early in 1992, it now seems obvious that ridge crest events are liable to be common - at least five have been detected by SOSUS within the last year in the NE Pacific and there are five descriptions of such events in the literature over the past 8 years. It also seems evident that the events which have been reported to date are short-term events related to eruptive/diking processes and that they do not reflect the more continuous, deeper-seated processes associated with magma chamber or post-magma chamber ridge crest activities. Yet to confidently separate these processes requires fuller understanding of the higher frequency activity, so that its effects can be removed to allow focus on the longer wave length activity. One of the most striking features of the five reported events is the fact that in each case, a voluminous outpouring of bacterial products attended the observed events. In the case of the CoAxial event, the bacterial output remained extremely high three and a half months after the event took place when we visited the site in mid October. The hypothesis that the subseafloor, indeed much of the brittle crust, may be significantly colonized by a microbial biosphere is not only testable with deep ocean drilling, but has profound ramifications at the planetary level for such issues as the development of early

life on earth, the potential for life on other planets, and the total biomass sustained by our planet, should it prove a tenable theory.

Without going into the details of the topic in this memo, we would be well advised to consider the potential utility of such an evolving paradigm in terms of focusing attention on the importance of on- and near- axis drilling. Because of the concentrated nutrient fluxes associated with ridges and the fact that the rising fluids do not easily approach the lethal boiling curve, bacterial activity is likely to flourish in the near-axis subsurface. Whereas deep, high-temperature bacteria may exist elsewhere, few places have the advantages of ridge crests. In this regard, hydrothermal vent sites on the seafloor may be view as the iceberg-like tip of a major subsurface biosphere.

The non-biologic reasons for ridge axis drilling have been articulated ad nauseum by the lithosphere panel, and diamond coring has become the stumbling block for bona fide implementation of their stated goals. Yet the drilling program may fold before DCS is a reality. The added impetus of a major biological focus to near-ridge drilling could provide renewed pressure on the DCS development, while gaining broadened support in search of innovative strategies for accomplishing intermediate goals other than drilling directly on the youngest volcanically active axis of a robust ridge. It is useful to recall that Middle valley is only 10,000 years old and there was little difficulty drilling basement. Hence it is not the absolute age of crust but the condition the crust is in that determines whether it is drillable. I do not think we know much about the crustal age-drillability relationships in near off-axis ridge systems. Perhaps we should seek alternatives to on-axis bare rock drilling that would allow exploration of the proximal environment in general, while spurring interest in continued technological development for bolder, on-axis thrusts.

I also believe that we should be very careful not to assume that because we have created a Biology Working Group within InterRidge that we have dealt with the issues of interdisciplinary research. A major component of the compelling power of studying ridge crest systems is that they are intrinsically interdisciplinary; we will not be well served by addressing the issue solely in the creation of another working group. Interdisciplinary work is more than putting people from different backgrounds on the same ship-it takes hard work to learn each others language and I believe we should maintain the initial InterRidge commitment toward disciplinary interaction in more than just words. I think the Biology Group should have a geologist or two on it and I believe aggressive efforts should be made to foster integration among the physical, chemical and biological sciences involved in InterRidge studies. This is particularly true in studies related to a deep, hot biosphere in which the intimate interplay of living and non-living components of the system is as much a surprise as it is an opportunity for development of new lines of research.

ODP AND INTERRIDGE

An aggressive and co-ordinated approach on the part of InterRidge with the goal of influencing use of the drill ship would be a well spent effort. At present we have had some success drilling sedimented ridges, and there is more to follow with another leg devoted to sedimented ridge in the near future. The TAG leg will further focus attention of ridge axis processes. But neither of these efforts allows the directness of exploration and experimentation of general ridge crest problems set forth in considerable detail in documents such as East Pacific Rise Working Group Report.

I have the sense that many additional ridge crest drilling goals are currently held in thrall to the apparently insurmountable cost of developing DCS. We as a community must seek innovative ways around this impasse. InterRidge could be an effective player in this effort, but it will require serious commitment and novel strategies to work around the current situation.

Any portions of the ridge system on which we can focus the drilling program would benefit us all. Some serious strategizing at this meeting followed by efforts to influence P-COM representatives of the countries present could pay dividends that would not be accessible to members of individual countries. For this reason, such an effort should be a high priority for InterRidge.

InterRidge
Steering Committee Meeting 1994
Report

APPENDIX E:

Report of SCOR WG 99

Report of SCOR WG 99

Martin Sinha

At the end of 1992, the General Meeting of the Scientific Committee on Oceanic Research agreed to establish a new Working Group on "Linked Mass and Energy Fluxes at Ridge Crests", to be designated SCOR WG 99. The Terms of Reference were those proposed by John Delaney and David Needham.

Some time has been taken in establishing a membership for the Working Group that meets the approval of both its members and the SCOR executive - especially as some of the originally proposed WG members felt unable to participate. The final membership of the Working Group is as follows:

Martin SINHA	UK (Chair)
Henri BOUGAULT	France
John DELANEY	USA
Pall EINARSSON	Iceland
Hiromi FUJIMOTO	Japan
Nils HOLM	Sweden
Kim JUNIPER	Canada
Charles LANGMUIR	USA
David NEEDHAM	France
Anatoly SCHREIDER	Russia

The Executive Reporter to SCOR for WG 99 is Nick McCAVE (UK)

The Working Group will hold its first meeting in Cambridge, UK over 3 days from 10th to 12th October 1994. The objectives of the meeting will be:

1. **to consider the following:**

- Background to the setting up Working Group 99, and aims and objectives as laid down in the Terms of Reference adopted for the Working Group by SCOR.

- Assessment of the current status (in terms of available data, planned or ongoing research, and suitability for further detailed study) of various sections of the global ridge system, with a view to assessing which are likely to be particularly well-suited for co-ordinated, in-depth studies.

- Assessment and identification of the scientific approaches required to address quantitatively the many mass and energy fluxes, from the mantle to the water column, involved in oceanic lithosphere accretion at ridges, and the interplay between them.

- Assessment of the scientific, technological and organisational infrastructure necessary for achieving these objectives; the prospects for a long term, focused programme of co-operative research; the role of the Working Group in facilitating and encouraging such a programme; and the relationship between the Working Group and InterRidge.

- Reports of recent, ongoing and planned research programmes of direct relevance to the objectives of the Working Group. For this we shall draw upon the body of information that is being collated by the InterRidge office, which will provide good coverage of activities being undertaken in currently active InterRidge countries; but we shall also have to rely on members of the Working Group for additional information, especially with regard to activities taking place in countries or areas of science which do not figure in the InterRidge programme.

- Future activities by the Working Group, including the convening of a SCOR symposium on mid-ocean ridge mass and energy fluxes.

2 **to prepare** an interim Report of the Working Group, to be presented to the XXII General Meeting of SCOR. The Report will cover all of the topics listed above. The General Meeting of SCOR is to be held in Canada during the week commencing October 17 1994.

The intention is that individual members of the working group will each take responsibility for some part of the group's discussions and subsequent report. Following the approach taken by the recent InterRidge workshop on quantification of fluxes at mid ocean ridges, the thematic subject area will be divided into the following: (a) magmatic fluxes; (b) chemical fluxes associated with rock-seawater interactions; (c) dispersion of the products of hydrothermal venting; (d) thermal fluxes; (e) biological fluxes and the influence of biological processes on other fluxes. There will also be some geographical division: (i) fast spreading/East Pacific Rise; (ii) slow spreading/Mid Atlantic Ridge; (iii) back-arc spreading systems; (iv) sedimented ridges; (v) other ridge systems.

To avoid duplication of the large amounts of effort that have already gone into national and international programs, the Working Group will need to start from a position of familiarity with, and recognition of, the current positions of InterRidge and of the various national and bilateral programmes. Otherwise it would be impossible for the Working Group to contribute usefully to international co-operation on research into mid ocean ridges. Areas in which the Working Group will be able to contribute include: broadening of research effort, for example by the identification of areas of science that are receiving inadequate attention from existing programmes; widening of international participation in research into mid ocean ridge processes, beyond the membership of InterRidge; and of course by offering constructive input to the other existing programmes.

Before the October meeting, members of the Working Group will need to have available relevant reports and publications produced by national and international programs up to now. Obvious documents in this category include the InterRidge Initial Program Plan, and reports of the various InterRidge Workshops that have been held to date. It would be useful for me if the InterRidge Steering Committee could suggest other documents that the Working Group should be familiar with. The intention is to avoid re-inventing the wheel without burying WG members under an avalanche of paper .....

Finally, the Finance Committee of SCOR concluded that since ridge researchers are likely to have access to other sources of funding for attending meetings, only very limited funding (around $3,000 to $4,000 per meeting) would be made available to WG 99 from SCOR.

Martin Sinha
August 1994