

September 2, 1988

To: Professor Mikhail Grachev,
Director, Institute of Limnology
Irkutsk, USSR

From: Professor Kenneth Nealson
Center for Great Lakes Studies

First, my most intense thank you for all you have done to make our expedition a success. We accomplished a great deal in many different areas; socially, politically, and scientifically. But in fact it is only the beginning, and what we have begun should not be left alone. I will work hard to make sure our relationship with the Institute of Limnology grows and that collaboration, particularly between your group and mine in the area of molecular approaches to environmental problems continues and increases.

It was only after I arrived here that I realized how much effort and time we were costing you, and it is with great appreciation that I can thank you some with this letter. I know that a written letter is only a small thank you, but for now it is what I can do.

I have had a few thoughts concerning the International Center for Baikal Studies, and I will include them below. They are only beginning thoughts, but they may be of some help to you.

The concept of the center is very good. The problems of Baikal transcend (both in scope and variety) those which any group or country can comfortably investigate. Therefore the idea of an international center is very attractive. The arguments you have made for Baikal as a system for study are very powerful and convincing, and I can add little to them. In my mind, Baikal represents the finest study site available in the world for various aspects of limnology, oceanography, biogeochemistry, ecology and evolution.

Time Series Studies: Perhaps one of the strongest arguments for an international center is that a long term data set can be established. Such long term data sets are rare for ecological studies, and almost entirely absent in limnology. Two suggestions should be made here:

1. The establishment of a computer center for data storage and analysis. All investigators who work at the center must agree to enter their findings into a data bank for storage and long term analysis by them and others.

2. The translating and entering of data from Soviet scientists who have been gathering data for many years on Baikal, and entry of these data into the bank. It is my impression that an immense amount of useful long-term information is already available if it can be transformed into useful data-bank type information. Unfortunately much of this information is in Russian, and should be translated into English. This is not a parochial view on my part, but a necessity, since at least for now, English is the accepted international language of science.

Library: It will be essential to establish an international library containing the critical journals in the following fields:

- Limnology
- Oceanography
- Microbiology
- Zoology
- Molecular Biology
- Water Chemistry
- Physical Oceanography
- Satellite Technology
- Biogeochemistry
- Modeling & Mathematics

Such a library would not only make research much easier, it would attract scholars from around the world to pursue scholarly activities at the center. It would also be a major asset for the institute of Limnology and other institutes at Irkutsk.

Communications: It will be necessary to have an open communications system with other countries and laboratories to insure international cooperation. I recommend the following:

- a FAX facility for document transfer
- a cable station or facility
- a connection with satellite information system, such as OMNET or SCIENCENET
- a satellite telephone connection for emergencies or very important communications. this latter item is very expensive, but very useful -- we now have such systems on our research vessels.

Housing facilities: It will be necessary to have adequate housing to entertain visitors for whatever times they need. Judging from what I have seen in my brief stay, if this institute is established, there will always be visitors, but especially in the summer months when research is easiest, and the lake most accessible. Housing within walking distance of the center and the research vessels will be a great advantage.

I might suggest two types of housing: first, hotel-like housing for short term visitors, who will eat at buffets or dining rooms, and second, small flats with cooking facilities for visitors who will stay for longer periods. Especially for those working long (and unconventional) hours this will be a big advantage to eat in their own flats. This type of arrangement is especially appealing to me, as I could imagine coming for some months to do intensive work, and the availability of a small flat would give considerable flexibility to such a stay. The maintenance on such flats is also considerably less, as they do not require maid service, etc. Along with these flats should be some kind of simple central laundry facility.

Laboratories: This is a very difficult part of the question of the institute, as the laboratories may be major reasons that visitors come, and it must be done right. The problem as I see it is that the laboratories must not stand empty, but they must also be available to visitors. One possible solution is to have members of the Institute of Limnology housed in these laboratories, and thus responsible for the equipment and space, and with the responsibility for making space available to visitors when they arrive. In this way, your workers will have access to excellent space and equipment, and when there are a lot of visitors, will have the advantage of direct interaction with them. The disadvantage of course is that (especially in the summers) it may be disruptive to the normal laboratory operation. I could easily imagine that Dr. Sudakova could set up and maintain an excellent chemistry laboratory which workers from my laboratory could easily move into and work. In a similar way, I'm sure that a molecular biology laboratory could be set up by your group, and we could easily co-exist there.

This kind of approach would guarantee interaction for scientists of your group with visitors, and be a source of excellent space and equipment for Soviet scientists when visitors were not present.

Ships and collecting facilities: The fleet already in place in Lisvyanka is very impressive, and with some improvements in clean facilities on the ship, and some modernization and expansion, each of the ships could be used maximally. The types of changes and additions would require some thought, but with a small group of experienced oceanographers and limnologists, the proper suggestions would come easily.

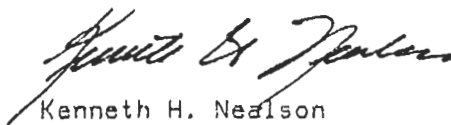
Funding: The building of the facility will of course be a major project, and if it is to be an international facility, then it would be appropriate to have funds donated by all countries who would like to be involved. The pay-off for participating would be access to the data, access to the facility, and other advantages that could be discussed. I would suggest a flat fee of some several million dollars from each country that wants to be involved, and the same fee for countries who wish to join later (perhaps adjusted for inflation). With this basic starting money, a very good facility could be initiated, and as you suggest, possibly the building could even be done by foreign contractors.

The running of the facility will also be somewhat tricky, but certainly user fees and boat fees can be assessed for use of libraries, laboratories and ships. The advantages to the Soviets will be that these fees can be paid in Rubles. For the health of the laboratory and for purchasing certain key pieces of equipment, the fees by non-Soviets should be paid in foreign currency.

Well, this is all some rambling letter, but it may be somewhat useful, and it has started my brain working in the right direction.

Again, many many thanks for a wonderful visit and experience on Baikal, and all the best. I hope to see you in February.

With best regards,



Kenneth H. Nealson
Distinguished Professor
University of Wisconsin

M E M O R A N D U M

of discussions between a delegation from Queen Mary College, University of London, UK* and Limnological Institute of the Siberian Division of the USSR Academy of Sciences⁺.

June 8-13, 1989.

1. Background

Following a visit to QMC by Academician V.Koptyug in July 1988, the College was invited to send representatives to visit the Siberian Division Institutes in Novosibirsk and Irkutsk, and in particular to send members of its Centre for Research in Aquatic Biology^{**}. The proposal to establish the Baikal International Centre for Fundamental Ecological Research⁺⁺ was discussed at QMC during Academician Koptyug's visit. Subsequently, the Royal Society agreed to act as co-sponsors of the delegation. The Royal Society have themselves formed a Working Party to consider collaboration with the USSR on Baikal, and the QMC delegation will report to the Working Party as well as to QMC. Professor Ian Butteworth, FRS, Principal of QMC, is a member of the Royal Society Working Party.

2. The Delegation

The QMC delegation comprised:

Professor J.M.Charap (Pro-Principal, Professor of Theoretical Physics)

Dr. P.Denny (Director, Centre for Research in Aquatic Biology);

Professor J.Green (Professor of Zoology, CRAB);

Professor R.S.Clymo (Dean of Science Faculty, Professor of Ecology, CRAB);

Professor J.H.P.Utley (Professor of Organic Chemistry, Head of Department of Chemistry).

/CRAB is a Research Centre within the QMC School of Biological Science.

The delegation was invited to spend two weeks 2-16 June 1989 in the USSR. Its composition was determined so as to represent both the specific interests in aquatic biology and the wider scientific possibilities for UK and QMC involvement in the Centre.

* Abbreviated hereafter to QMC

+ Abbreviated hereafter as The Institute

** Abbreviated hereafter as CRAB

++ Abbreviated hereafter as the Centre

3. The Visit to Irkutsk

After visiting Akademgorodok, Novosibirsk, where visits had been made to many Research Institutes and to the University, and where a very fruitful discussion with Academician Koptug had been held, the QMC delegation travelled to Irkutsk by the "Rossiya" train, arriving at 22.00 on 8 June 1989. The delegation was met by Professor M. Grachev and colleagues, and after a pleasant overnight stay in the Intourist Hotel were shown the present temporary laboratories of the Institute, and also their new building presently under construction. Visits were also made to various other Institutes in Irkutsk and to departments of the University (for a discussion of the DUMAND experiment) and the Institute of Surgery (to see the transmission electron microscope and for discussion of its application for the study of the seal distemper virus).

The delegation was particularly impressed by the high scientific quality of the research programmes, and would like especially to mention studies on fish phylogeny using liver extracts for protein electrophoresis and amino-acid analysis by 'Millichrome' h.p.l.c. Excellent short talks by Dr. Timoshkin, Dr. Bondarenko, Dr. Proviz gave an overview of some of the Institute's research activities.

They also very much admired some of the instruments designed and built in the USSR and wish on their return to give serious consideration to the possibility of joint commercial activity based on: a) the oligonucleotide synthesiser; and b) the Millichrome h.p.l.c. instrument.

4. Listvyanka and Baikal

The delegation were then taken to Listvyanka on the lake. There they were shown the large research vessel in the fleet belonging to the Institute, the "Vereshchagin". After an overnight stay in the Intourist Hotel at Listvyanka and a visit to the Museum and a discussion with Dr. G.F. Mazepova, the delegation were taken out on the lake in the new catamaran belonging to the Institute and on return transferred to the research vessel "Dybowski" which was to be their home for the next three days. They were accompanied by Dr. O. Timoshkin, Dr. N. Bondarenko, Dr. V. Stepanova and Mr. A. Timonin, as well as a crew of seven.

In the course of this excursion on the lake samples were taken both from the open lake and from some of the bays and useful practical

field-work was conducted. Four short excursions on land allowed a brief inspection of the catchment and streams.

At the same time the delegation had a most exciting and enjoyable opportunity to experience at first hand the unique environment of Baikal, the scale of the lake and some of its important ecological features. Mention must also be made of the grandeur and beauty of the landscape, and of the companionship and support so readily established with both scientists and crew.

5. Prospects for Collaboration

Even on this short visit it was possible to identify a number of areas for future possible collaborations involving CRAB (and other QMC research groups):

- a) Littoral zone bays (sors) and inflows - community structure, base-line studies nutrient cycling
- b) Study of carotenoids - structure, distribution and metabolism
- c) Zooplankton - horizontal variations in community structure
- d) Mathematical studies of sampling strategies
- e) Mathematical studies of applications of the DUMAND telescope techniques in limnology and oceanography
- f) Study of streams in small catchment for early warning of environmental changes
- g) Application of ESR spectroscopy to archaeological dating.

6. Summary of Recommendations

On their return the delegation will report to the Royal Society and to the College, and will recommend as follows:

- a) That the Royal Society should seek government funding in order that it may participate in the Centre as ^aFounding Party
- b) That the Royal Society should be represented at a high level at the Initiation Meeting to be held 2-5 October 1989
- c) That QMC scientists should seek funding to pursue collaborations through bilateral agreements, with the topics given above as starting points. This should be recommendations done irrespective of the outcome of the a) and b)
- d) That QMC scientists will use their best endeavours to introduce other UK groups to the Baikal project, and to assist in their involvement with continuing international collaboration.

- e) That QMC will seek opportunities to invite Soviet scientists to visit the College in furtherance of collaborative research, and that in particular such opportunities should be made available for young scientists and those in the early stages of their careers.

Signed: On behalf of the Queen Mary College

J.M. Charap

Prof. J.M. Charap

On behalf of the Queen Mary College
Centre for Research in Aquatic Biology

Patrick Denny

Dr. P. Denny

COMMITTEE ON NUCLEATION AND ATMOSPHERIC AEROSOLS

International Commission on Cloud Physics

IAMAP

IUGG

Prof. Dr. M.A. Grachev
Limnological Institute
Siberian Division of the
Academy of Sciences of the USSR

Lermontova 281
664033 Irkutsk
USSR

Vienna, 1989 09 06

Institut f. Experimentalphysik
der Universität Wien
Strudlhofgasse 4, A 1090 Wien
Austria

Ref.: Establishment of Baikal International Center for
Fundamental Ecological Research

Memorandum

The establishment of the above mentioned Research Center is highly evaluated. This center could allow studies on freshwater ecology as well as on atmospheric aerosols.

Recently possible influences of atmospheric aerosols on the global climate have attracted considerable interest. In order to establish realistic models for a global aerosol climatology, sufficient information on the actual concentration and properties of atmospheric aerosols is required on a global scale. In this connection particularly measurements of background aerosols are of great importance. Furthermore the concentrations of various gaseous components, e.g., carbon dioxide, need to be monitored.

The area of Lake Baikal appears to be very appropriate to perform measurements on atmospheric background aerosols. Prerequisite for such studies are experimental investigations on the local meteorological conditions and the development of corresponding numerical models. Furthermore the possible influence of local sources of anthropogenic aerosols needs to be investigated. Lake Baikal also offers a good opportunity to study the interaction of atmospheric aerosols with water surfaces.

Members of the Committee on Nucleation and Atmospheric Aerosols could probably help to identify important topics for studies at the above mentioned Baikal International Center. I will contact the Committee members in order to inform them about the Baikal International Center and to stimulate possible future cooperations.

29.09.1989

Recently I was visiting an experimental expedition to Lake Baikal, headed by Prof. A. Lushnikov from Karpov Institute, Moscow. During this expedition measurements of the number concentrations and size distributions of atmospheric aerosols at Lake Baikal are performed. The particular emphasis of this study is on the measurement of the ultrafine component of the atmospheric background aerosol. The measurements are performed using essentially two different instruments, a Diffusion Aerosol Spectrometer and a Laser Particle Counter. The five-stage Diffusion Aerosol Spectrometer in connection with two particle size magnifiers and optical particle counting is covering a range of particle diameters between about 2 and 50 nm. Simultaneous measurements by the Laser Particle Counter allow the determination of size distributions for particle diameters in ten size classes from 0.1 to 2 μm . The combined range of these instruments is including most of the fine and ultrafine particle size ranges. Interesting informations on the number size distributions of atmospheric background aerosols can be expected.

In future aerosol studies at Lake Baikal it would be useful to extend the scope of investigations to include mass concentrations and mass size distributions of aerosol particles. Furthermore the chemical composition of the particles should be investigated. In addition it is important to study the surface properties of aerosol particles in connection with nucleation and condensation processes of condensable vapors in the atmosphere. Also it would be interesting to obtain informations on the optical properties of the atmospheric aerosol particles, particularly including the absorption coefficient.

The continuation of these important aerosol studies could include the following steps:

1. Performing a few additional measuring expeditions in order to further investigate, what kind of aerosol data can be obtained in the Lake Baikal area. In these studies also the dependence on the local situation and correlations to meteorological conditions should be investigated.
2. Identifying proper locations for the installation of permanent aerosol monitoring stations. In this connection particularly the possible influence of local sources of anthropogenic aerosols has to be taken into account properly.

3. Installation of a suitable number of permanent aerosol monitoring stations. Equipment of these stations with various measuring instruments. In this connection previous intercomparisons and calibrations using well-defined aerosols under laboratory conditions are required.
4. The data obtained from these stations should be supplied to an international database system. Thereby the data would be available as an input for global models of aerosol transport and aerosol climatology.

Finally I want to emphasize that it is of great importance to preserve Lake Baikal in its present state. Significant anthropogenic contaminations must be prevented. Otherwise most studies planned at the Baikal International Center could be of only very limited value.



Prof. Dr. Paul E. Wagner
Chairman
Committee on Nucleation and
Atmospheric Aerosols
IAMAP - IUGG

cc/ Dr. Yu. S. Kusner

Memorandum of Intent
of the Preliminary Founding Conference
of the Baikal International Center
for Ecological Research

The preliminary Founding Conference was held in Listvyanka, Irkutsk District, on October 2 to October 5, 1989. The participants - representatives of potential Founding Parties and Members, in terms of the Draft Charter of the proposed Center, and the Draft Agreement on the establishment of the Center - included members from USA, Great Britain, Federal Republic of Germany, Peoples Republic of China, Belgium, and Canada. Soviet participants were representatives of the Siberian Division of the Academy of Sciences of the USSR, and four State Committees of the USSR - the Committee for Education, the Committee for Environmental Protection, the Committee of Hydrometeorology, and the State Forests Committee.

The main topics of discussion were: 1) identification of areas of mutual scientific interest; 2) the Draft Charter of the Center; and 3) the Draft Agreement on the establishment and activities of the Center.

On the basis of a discussion and vote, it was unanimously agreed that:

(1) The idea of the establishment of the Baikal International Center for Ecological Research (BICER) is of great interest for the scientific communities of many institutions of different countries which are intending to participate in joint international studies (both basic and applied) of Lake Baikal and other large aquatic ecosystems. The uniqueness of Lake Baikal makes it particularly important as an example of a large, potentially fragile, ecosystem, the understanding of which may lead to general knowledge applicable to the understanding of lake ecosystems throughout the world.

(2) The two documents mentioned - the Draft Charter and the Draft Agreement - may be taken as a basis for further refinement in accordance with the proposals of some of the participants; some changes have been made during the Preliminary Founding Conference.

(3) The Founding Conference of the Center should take place after the participants of this preliminary conference report the results of discussions to appropriate bodies within their countries, explore avenues for potential support according to the stipulations specified in the enclosed Draft Charter and Draft Agreement, and clarify specific issues relating to these documents (liability, patent rights, etc.). It is suggested that the Founding Conference be held as soon as is logistically feasible, and, if possible, not later than March, 1990.

(4) An Organizing Committee for the Center should be constituted, consisting of 1 or 2 members from each of the participating countries. These members should be elected as soon as possible, and the names be given to Dr. Grachev. These members will serve as the contacts for information transfer, and will be expected to render assistance to the Center until the Board of Directors is established.

(5) All participants understand that:

(i) the Center, due to the facilities belonging to and provided by the Siberian Division of the Academy of Sciences(USSR), and other organizations, will have the ability to begin operations immediately. This will be due in large part to the advanced approval of the Siberian Division of the Academy, which has committed 5 million roubles to the Charter Fund. In addition, the Academy of Sciences of USSR has agreed to match foreign contributions with Russian roubles. This is a major commitment, which should greatly enhance the success of the Center.

(ii) in consideration of the commitment by the Academy of Sciences of the USSR, all efforts will be made to obtain foreign financing, which will be necessary for the development of facilities of the Center. Such foreign funding will be necessary for the acquisition of equipment and for building the proposed research and housing structures. These facilities will benefit all participants involved in the study of the Baikal ecosystem.

(iii) The Baikal Ecosystem should include the lake itself, the lake bottom and sediments, the Baikal watershed, and the atmosphere that interacts directly and indirectly with the lake. Thus, information gathered here could be readily applied to other large lake and oceanic systems worldwide, both for baseline comparative studies and management, and with regard to the acquisition of fundamental knowledge of ecosystem dynamics and function.

SIGNATURES:

Dr. Jan Barica
Canadian Center for Inland Waters



Dr. V.G. Bereznoi
USSR State Forests Committee



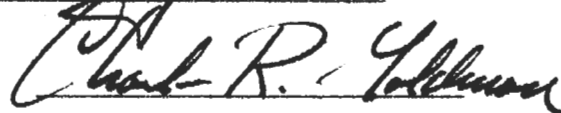
Dr. Henri J. DuMont
University of Ghent, Belgium



Dr. Ivan S. Eremin
USSR State Committee
of Hydrometeorology




Dr. Charles R. Goldman
Univ. California, Davis, USA



Dr. Jean Klerkx
Ministry Natl. Scientific
Institutes, Belgium



Dr. Valentin A. Koptug
Vice President, USSR Academy
of Sciences



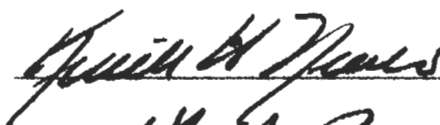
Dr. Yu. P. Kozlov
The USSR committee for
People Education



Dr. Vitaly L'Vov
USSR State Committee for
Environmental Protection



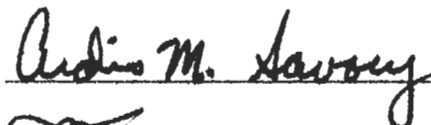
Dr. Kenneth H. Nealson
Univ. Wisconsin, Milwaukee, USA



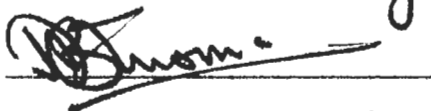
Dr. Peimin Pu
Nanjing Institute of Geography
and Limnology PRChina



Ardis Savory
Univ. of South Carolina, USA



Dr. Duncan B. Thomson
The Royal Society, UK



Dr. Max Tilzer
Univ. Konstanz, FRG



October 5, 1989

August 30, 1989

To: Whom it may concern


From: Dr. Kenneth H. Nealson
Associate Director, Center for Great Lakes Studies
and Dr. Dejan Markovich

Re: Gift of Fax Machine to the Institute of Limnology

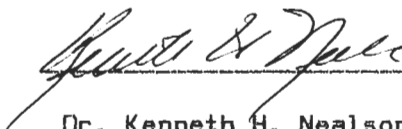
Sirs:

The signatures below are used as evidence that the Institute of Limnology in Irkutsk, USSR has received as a gift, the FAX machine (the description of which is included with this memo). The machine is given by Dr. Dejan Markovich, on behalf of the Center for Great Lakes Studies, to be used for furthering communications between the two institutes.

It is hoped that this gift will further the promising and already profitable research that has been begun between our two "Sister Institutes" of aquatic studies.



Dr. Michael Grachev
Director
Institute of Limnology
Irkutsk, USSR



Dr. Kenneth H. Nealson
Associate Director
Center for Great Lakes Studies
Milwaukee, WI, USA

Dr. Dehan Markovich
Donor

MEMORANDUM ON BICER

The objectives and the structure of the planned BAIKAL INTERNATIONAL CENTER FOR ECOLOGICAL RESEARCH (BICER) have been discussed in detail on the basis of the Draft Agreement (annexure 1). BICER will have an extremely important role to play in order to:

- *promote multidisciplinary and international research on lake Baikal*
- *facilitate access to lake Baikal through infrastructural services for the international scientific community*
- *optimize cooperation with the locally existing research capacity and competence as well as the cooperation with the Limnological Institute*
- *coordinate research programmes and evaluate their results with respect to improve the knowledge of the status quo of lake Baikal and its environment*
- *conduct Ecological Systems Research with respect of systems response to external anthropogenic and climatological influences*

The BICER will act as a link between national and international research and those organizations which are responsible for the protection of nature and environment through:

- *formulation of protective measures and actions for lake Baikal based on internationally supported results of the scientific community.*

A feasibility proposal should be set up jointly by representatives of the Academy of Sciences and the german experts with the goal to inform potential members of BICER and financing organizations.

This will cover the following aspects:

1. *Ecological research on lake Baikal*
 - 1.1 *Lake Baikal and its environment*
 - 1.2 *National and supranational research aspects*
 - Findings of past research programmes*
 - Ongoing research*
 - 1.3 *The danger of external influences, especially man-made pollution, to the system*

- 2. *Objectives of BICER*
 - 2.1 *Research - multidisciplinary and ecosystems research*
 - 2.2 *Formulation of protective measures*

- 3. *Existing scientific competence and infrastructure*
 - 3.1 *The Limnological Institute (LI)*
 - 3.2 *Service contract and fees between LI and BICER*
 - 3.3 *Other infrastructure*

- 4. *Structure and organization of BICER*
 - 4.1 *Legal aspects and structure*
 - 4.2 *Organization*
 - 4.2.1 *Managing level*
 - 4.2.2 *Research department*
 - 4.2.3 *Service and infrastructure department*
 - 4.2.4 *Logistic department*

- 5. *Man-power requirements*
 - 5.1 *Permanent staff*
 - 5.2 *Time table for permanent staff*
 - 5.3 *Seasonal man-power requirements*

- 6. *Finances*
 - 6.1 *Costs for hired infrastructure services (i.e. from LI)*
 - *transparent system for cost-sharing -*
 - 6.2 *Investment cost*
 - 6.3 *Time-table for investment cost*
 - 6.4 *Running costs (capital cost, maintenance and spare parts, consumables, man-power etc.)*
 - 6.5 *Time-table for running cost*

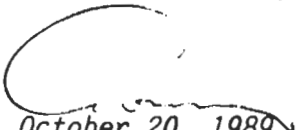
- 7. *Financing models*
 - 7.1 *Contribution of members*
 - 7.1.1 *National*
 - 7.1.2 *Foreign*
 - 7.2 *Loans (national and international)*

- 7.3 *Funds*
 Non reimboursable
- 7.4 *Contributions from external users (contracted services).*

The final formulation of the feasibility proposal will be submitted to interested scientific and financing organizations not later than January 1990. If necessary, an additional meeting of the Baikal-project members will take place. All necessary information (draft) will be sent until 15 November to K. Scharmer for coordination of final formulation with Prof. Vormbaum.

Dr. K. Scharmer (GET)

Prof. Dr. M. Grachev
Limnological Institute


October 20. 1989

M E M O R A N D U M

of the Founding Conference of the Baikal International Center for Ecological Research (BICER)

Irkutsk, December 3, 1990

1. The participants of the Founding Conference (Addendum 1) are deeply satisfied by the Decision of the Siberian Division of the Academy of Sciences of the USSR of December 3, 1990, (Addendum 2), on the official opening of BICER.

2. The participants of the Founding Conference proposed amendments to the draft Charter of BICER which were accepted by the Siberian Division of the Academy of Sciences of the USSR; the Charter (Addendum 3) was unanimously approved taking into account the possibility to amend it according to decisions of the Founding Members Council.

3. The participants came to a decision that the part of existing facilities of BICER available to Founding Members will depend on the size of their contribution to the Charter Fund; this contribution can be given as money, equipment, materials, services, as decided by agreements with BICER approved by all Founding Members. A tentative proposal is that minimum charter contribution to become a Founding Member should be equivalent to 100 000 US dollars.

4. The participants which have come from other countries as well as the delegations that were not official participants of the Conference but were present as observers will report the results of the Founding Conference to appropriate bodies in their countries and will inform BICER on the situation preferably before June 1, 1991.

5. The following Parties become the co-founders of BICER:

(1) Siberian Division of the USSR Academy of Sciences which appointed the Limnological Institute as its official representative and contributed 5 million roubles to the Charter Fund of BICER

(2) Organizations of USA. The University of South Carolina agrees to give 100.000 US dollars to the Charter Fund of BICER in accordance with a separately signed

PARTICIPANTS AND OBSERVERS OF THE FOUNDING CONFERENCE
OF THE BAIKAL INTERNATIONAL CENTER FOR ECOLOGICAL RESEARCH

(Irkutsk, December 2-3, 1990)

LIST OF PARTICIPANTS

Dr. I. ANOKHIN
Head, Natural Environment and Climate
Monitoring Laboratory, USSR State
Committee for Hydrometeorology, Moscow,
USSR



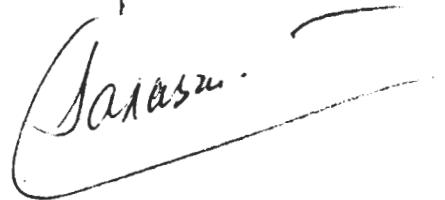
Academician N. DOBRETSOV
Deputy Chairman of the Siberian
Division of the Academy of
Sciences of the USSR, Director
of the Institute of
Geology & Geophysics,
Novosibirsk, USSR



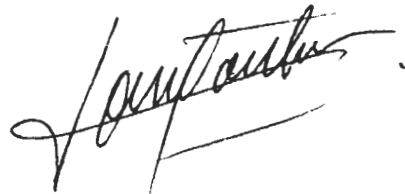
Dr. ERMIKOV
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Management, Presidium of the
Siberian Division of the Academy
of Sciences of the USSR,
Novosibirsk, USSR



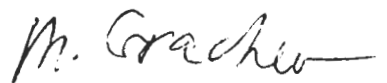
Prof. G. GALAZY
Director of the Baikal Ecological
Museum of the Siberian Division of the
Academy of Sciences of the USSR,
Irkutsk, USSR



Dr. J. VAN GOETHEM
Royal Belgian Institute
of Natural Sciences, Head of the
Department of Invertebrates,
Brussels, Belgium




Prof. M. CRACHEV
Director of the Limnological Institute
of the Siberian Division of the
Academy of Sciences of the USSR,
Irkutsk, USSR;
Organizing Director of BICER



Prof. J. GWYNFRYN JONES
Director of the Natural Environment
Research Council, Institute of
Freshwater Ecology, Ambleside,
Great Britain



Prof. G. KALABIN
Dean of the Department of Chemistry
of the Irkutsk State University,
Irkutsk, USSR



Ms. T. KAZAKOVA
The Directorate for International
Scientific and Technological
Cooperation, Ministry of Foreign
Affairs of the USSR, Moscow, USSR



Prof. O. KOZHOVA
Director of the Institute of Biology,
Irkutsk State University, Irkutsk, USSR

Academician V. KOPTYUG
Vice-President of the Academy
of Sciences of the USSR,
President of the Siberian Division
of the Academy of Sciences of the USSR,
Novosibirsk, USSR



Prof. L. LEVIN
Vice-Director of the Institute
of Biophysycs of the Siberian
Division of the Academy of Sciences of
the USSR, Krasnoyarsk, USSR

Prof. M. KUZMIN
Director of the Institute of
Geochemistry of the Siberian
Division of the Academy of Sciences
of the USSR, Irkutsk, USSR



Academician N. LOGACHEV
Chairman of Irkutsk Scientific Center,
Director of the Institute of Earth's
Crust of the Siberian Division of
the Academy of Sciences of the USSR,
Irkutsk, USSR



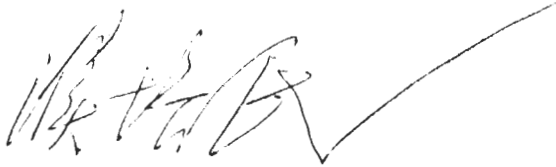
Prof. K.NEALSON
Associate Director, Center for
Great Lakes Studies, University
of Wisconsin-Milwaukee,
Milwaukee, USA



Prof. L.PEVZNER
Vice-Director for Research of
Nedra Corporation, Yaroslavl, USSR



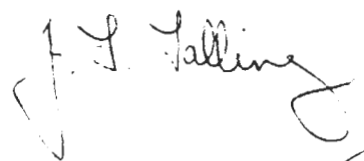
Prof. PU PEIMIN
Deputy Director of the Nanjing
Institute of Geography and
Limnology, Academia Sinica, Nanjing,
People's Republic of China



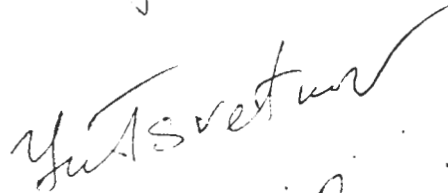
Prof. R.SALYAEV
Director of the Institute of
Physiology and Biochemistry of
Plants of the Siberian Division
of the Academy of Sciences of the USSR,
Irkutsk, USSR



Dr. J.TALLING
Royal Society, Freshwater Biological
Association, Ambleside,
Great Britain



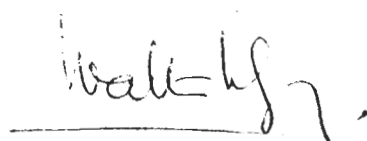
Prof. Yu.TSVETKOV
Major Scientific Secretary
of the Siberian Division of the
Academy of Sciences of the USSR,
Novosibirsk, USSR



Dr. A.TULOKHONOV
Head of the Baikal Department of
Environmental Management, Buryat
Scientific Center of the Siberian
Division of the Academy of
Sciences of the USSR,
Ulan-Ude, USSR



Prof. W.VERHEYEN
Chairman, Scientific Research
Board of the Royal Belgian Institute
of Natural Sciences, University of
Antwerpen, Brussels, Belgium



Prof.D.WILLIAMS
Deputy Director for Global Change
Research, Baikal Drilling
Project, James F.Byrnes
International Center,
Columbia, USA

Williams

L I S T O F O B S E R V E R S

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Director of the Institute of
Geography and Geocriology,
Ulan-Bator, Mongolia

Jigj

Dr. J.KOSCO
Institute of Landscape Ecology,
Bratislava, Czecho-Slovakia

John Kosco

Dr.N.MESHKOVA
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Scientific Council of the Siberian
Division of the USSR Academy of Sciences,
Novosibirsk, USSR

Meshkova

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Research Assistant, Center for
Great Lakes Studies, University of
Wisconsin-Milwaukee, Milwaukee, USA

M. Nealson

Mr. G.BESHOR PLUG
Third Secretary,
Royal Netherlands Embassy

G. Plug

Ms. J.PRICE
Research Associate, James
F.Byrnes International Center,
University of South Carolina,
Columbia, USA

Jade Price

Prof. Y.TOMODA
Observer. Limnological Society of Japan,
Tokyo, Japan

Y. Tomoda

Mr. E.WEYENS
Embassy of Belgium

E. Weyens

MEMORANDUM of the visit of Professor D. Williams, University of South Carolina, Columbia, to the Limnological Institute of the Siberian Division of the Academy of Sciences of USSR, Irkutsk, 20 March 1991.

Professor D. Williams visited Irkutsk to attend a meeting of the Baikal International Center for Ecological Research (BICER) , and a scientific seminar on the results of international research on Lake Baikal of 1988-1990. The following topics were discussed and agreed upon:

1. Participants of BICER from abroad do not have objection against the idea to regard the James F. Byrnes International Center of the University of South Carolina as an organization which will represent BICER abroad. Feasibility of this proposal will be studied further. In this connection National Geographic will be asked to transfer to the Byrnes International Center payment for the services of BICER in organization of an expedition to Lake Baikal in order that part of this contribution be used for compensation of the cost of tickets of American, Belgian, and English scientist from Moscow to Irkutsk and back.

2. Professor D. Williams informed Professor M. Grachev on his intention to come to Irkutsk in 1991 for a long time period in order to prepare publications together with Soviet scientists and to take part in expeditions. This intention was acknowledged. Professor Williams informed on the intention to invite to the US Dr. Shimaraeva, Dr. Karabanov, Ms. Tanya Bunaeva, and Dr. Mats in order to prepare a paper on the sediments of Lake Baikal. This suggestion will be discussed, and reply will be given by telex.

3. Professor D. Williams has been given a draft of a paper

on a presumable dramatic change of the ecosystem of Lake Baikal in Holocene as revealed by bottom sediments. This paper is to be published in "Dokl. Akad. Nauk SSR." In two weeks Professor Williams will inform Professor Grachev whether American scientistis will add their data to be presented in the draft; he will indicate what kind of data these are, and provide names of the co-authors.

4. Professor M. Grachev asked Professor Williams to select the structures of oligonucleotide primers for polymerase chain reaction as a method for rapid scanning of the bottom microbial community in Frolikha Bay. These probes may be synthesized in LIN, and used for PCR during the joing expedition of 1991 to identify methane bacteria, sponge microbial simbiants, etc.; together with results of analysis for stable isotopes ratio, methods of molecular biology may help to understand the food webs of the bottom community.

MEMORANDUM

on the cooperative research of Japanese scientists with those in Limnological Institute of Siberian Division, Academy of Sciences of USSR.

September 10, 1991

Agreement on the promotion for the cooperative works of Japanese scientists with those of Limnological Institute of Siberian Division, Academy of Sciences of USSR was made between the director Dr.M.Grachev and Prof.K.Numachi, University of Tokyo, on the following subjects during the stay of K.Numachi at Irkutsk and the lake Baikal region:

1. Studies on genetic distance among three reproductively isolated populations of *Cottocomephorus grewingki*, by the fragmental length polymorphisms of mtDNA.

Participants: M.Grachev, S.Ja.Slobodyanyuk, V.Sideleva, A.Novitsky, K.Numachi and T.Kobayashi.

2. Genetic relationships among the species of *Cottidae* in the lake Baikal and in Japanese waters, by biochemical and molecular genetic approaches.

Participants: M.Grachev, S.Ja.Slobodyanyuk, V.Sideleva, A.Novitsky, A.Skryabin, A.Goto (Hokkaido University), M.Nishida (Ryukyu University) and K.Numachi.

3. Genetic survey of the ringed seal complex including Baikal seal, *Pusa sibirica* and Caspian seal *Pusa caspica* and seals of Arctic ocean by FLP analysis of mtDNA.

Participants: M.Grachev, N.Malikov, K.Numachi and N.Miyazaki (National Science Museum)

4. Physiological study and diving behaviour of Baikal Seal

Participants: E.Petrov and Y.Naito (National Polar Institute)

5. Organochlorine pollution in the lake Baikal area.

Participants: G.Ivanov, R.Tatsukawa (Ehime University), S.Tanabe (Ehime University) and N.Miyazaki.

6. Isozyme, multi-loci analysis of Amphipoda species in the lake Baikal and the species distributed in Japan, especially of *Eulimnogammarus* and *Poekilogammarus*.

Participants: R.Kamaltynov, D.Sherbakov, K.Mashiko (Taikyo University), H.Morino (Ibaragi University) and K.Numachi.

7. Determination of carbon and nitrogen isotopes ratio in particulate matter, phytoplankton and sediment in the lake Baikal.

Participants: E.Wada (Kyoto University); Technical staff of Limnological Institute.

8. Biochemical and molecular approach to genetic relationships of *Gastropoda* distributed in the lake Baikal and Japanese water.

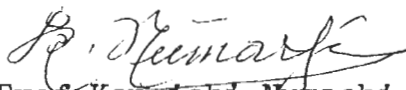
Participants: T.Sitnikova, R.Ueshima (University of Tokyo) Y.Watanabe.

9. Study on bottom diatoms of East Siberia and Japan

Participants: G.Pomazkina and T.Nagumo (Nihon Dental University)



Dr.Michail Grachev
Director of Limnological Institute,
Academy of Sciences of USSR



Prof.Ken-ichi Numachi
Ocean Research Institute
University of Tokyo

Memorandum of cooperation

Memorandum of cooperation in Research between between the Belgian Scientific Institutions, the Irkutsk Limnological Institute and the Department of Archaeology, I.S.U.

1. All parties agree to develop various research initiatives in the field of archaeology.
2. All parties consider the following projects to be the main ones : prospections, archaeological investigations of Baikal-region, especially for the period from middle Palaeolithic to Neolithic (last one included) and studies of palaeoenvironment.
3. The cooperation will begin with following topics : prospection-campaign of Baikal-region, archaeology of the Pleistocene and Holocene period and the palaeoecology of the region during these same periods.
4. The specific research will be executed within the territory of the Sovjet Union and Belgium and within the financial and personnel capacities of each party.
5. Both parties agree to hold meetings in Irkutsk and Belgium alternatively to make decisions in relation to research, including the financial provision and scheduling of the research which will be confirmed by the relevant authorities

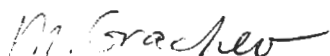
6. Both parties appoint authorized representatives to validate and discuss this pre-agreement.
7. The travel information of the visiting party in relation to research shall be given to the hosting party at least 2 months before desired date of arrival.
8. The exchange of specialists as a form of cooperation shall be done on the basis of non currency transaction. The hosting side shall cover all expense of accomodation, including room and board, travelling allowances, medical service and necessary means of internal transportation required for the work. The life and accident insurance shall be covered by the visiting party.
9. This pre-agreement contains no limit for the duration of the joint scientific research.
10. Each party will make all necessary preparations in keeping with one's own internal laws and regulations governing archaeological research in one's country.
11. Preparations should be made to allow exchange of archaeological and other materials needed for research between the two countries and for a limited period of time.
12. The results of the research shall be published jointly in both countries.

13. To enable the prompt use of the results of research both parties agree to prepare and publish the interim progress reports as soon as possible.
14. This pre-agreement permits to invite third party or parties to joint research whenever desirable including specialists in DNA-analysis and palaeo-anthropology.
15. This memorandum is modifiable in accord of both parties. It shall be discussed by Dr Grachev of the Irkutsk Limnological Institute and Dr. Klerkx and/or Dr. Van Noten of the Belgian Scientific Institutions.

Irkutsk, September 6, 1991

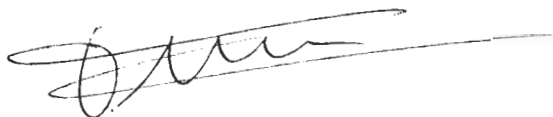
for the Irkutsk Limnological
Institute :
Director of BICER

Professor Grachev M. A.



for the Belgian Scientific
Institutions :

Drs. Steenhoudt F.



for the Archaeological Department
of I. S. U.



Professor Medvedev G. I.

MEMORANDUM

of the meeting of the Founding Members Council of the Baikal International Center for Ecological Research

Irkutsk, December 9-11, 1992

1. Participants

The meeting was attended by the following members of the Council:

Dr. J.Klerkx, Royal Museum of Central Africa, Belgium

Dr. B.Goddeeris, Royal Belgian Institute for Natural Sciences

Dr. T.Kawai, Japanese Association for Baikal International Research

Programs

Ms. L.Hare, Royal Society of London (observer)

Dr. M.Grachev, Limnological Institute, Siberian Division of the Russian Academy of Sciences, Irkutsk

Dr. N.Logatchov, Institute of Earth Crust, Siberian Division of the Russian Academy of Sciences, Irkutsk

Dr. D.Imboden, Swiss Federal Institute of Technology, c/o ETH/EAWAG, Duebendorf, Switzerland took part in the meeting in order to discuss the possibilities of institutions of Switzerland to join BICER. The meeting communicated by fax and E-mail with Dr.D. Williams and Dr. P.Hearn who represent organizations of USA which are ready to join BICER.

2 .Activity of BICER in 1992.

An outline of these activities is given in Addendum 1. This is a draft which may contain errors; BICER members are asked to check the report in their countries and to send a revised copy to Dr.M.Grachev before February 1, 1993. During 1992, BICER helped to fulfil 22 inter-

national expeditions and projects. More than 70% of the navigation time of the 6 research vessels of the Limnological Institute was used on international projects (Addendum 2). Due to the high activity of BICER, the total expenses of the Limnological Institute in 1992 were 2-3.5 times greater than those necessary to pay salary to its staff (450 people, of which 150 are scientists; see Addendum 3). However these expenses if expressed in hard currency do not exceed 35,000 US \$ per month (Addendum 4). The Siberian Division of the Russian Academy of Sciences covered the majority of Limnological Institute + BICER expenses of 1992; however, a considerable part of financing also came from foreign sources (contracts with USA institutes for use of ships, and compensation for increase of fuel costs - 35,000 \$; cash support of JABIRP - 31,000 \$ + 100,000 Y; cash support of BRINS, Belgium - 20,000 \$; see Addendum 5). This cash currency support was of great importance because it facilitated international expeditions without delays which may have been caused by a temporary lack of funds for ship use, etc. The participants of the meeting agree that cash financing of BICER is of crucial importance during the economic crisis faced by Russia, particularly, in 1993. Dr. M. Grachev informed colleagues of the proposals of tourist companies to use some ships during the summer of 1993 as a possible way of raising hard currency in support of BICER activities. BICER Founding Council Members advised against this option since it is contrary to the aims of BICER. They are willing to investigate all the possibilities of cash financing of BICER in their countries. In this connection, BICER Founding Members Council decided by consensus that cash currency, not only currency for purchase of equipment, and other facilities, can be considered as part of BICER Founding Contribution. However, every transfer of cash currency must have the approval of all BICER Members (by fax).

In the meantime, they agreed to consider the 20,000 \$ contribution

of the Royal Belgian Institute for Natural Sciences to be transferred to the Limnological Institute in 1993 as part of the Founding Contribution of RBINS. They also acknowledged the promise of Dr. Kawai to transfer 9,000 \$ for support of the international activities of the Limnological Institute.

A list of contributions from abroad given up to this date is presented in Addendum 5.

The parties decided that for the future the Founding Members will have priority use of all existing facilities of the Limnological Institute the host organisation of BICER. Non-member participants of international research on Lake Baikal may be asked to compensate the expenses of the Limnological Institute for the use of its facilities. Expenses incurred for facilities not belonging to the Limnological Institute (such as additional ships, helicopters, special equipment etc), must be covered by all organizations, taking part in project using such facilities, including BICER members and the Limnological Institute.

3. The parties discussed the possibility of institutions of Switzerland joining BICER, as suggested by Dr. D. Imboden. It was decided by consensus that they could join on the condition that 20,000 \$ will be paid to BICER Founding Account every year, for 5 years, starting from 1993.

4. The parties discussed the directions of BICER activity, and the role of the Scientific Advisory Board. Three major directions emerged:

- Past Global Change (paleolimnology, quaternary geology, traces of glaciation, modelling of past climates, understanding of the physical lim-

nology of Baikal in the past, ect.);

- Present State of the Baikal Ecosystem (physical limnology, aerosols, food webs, organic and inorganic pollutants, functioning of plankton, role of thermal vents, new analytical techniques, etc.);

- Speciation of Aquatic organisms in Baikal and in the Northern Hemisphere (including evolution nucleic acids and proteins).

It was decided that the members of the Scientific Advisory Board will be revised. The Scientific Advisory Board may refer to outside experts in the three main subject areas, when necessary. The Russian members of the Scientific Board have been approved: Prof. N. Logachev; Prof. M.Kuzmin; Prof. O.Koshova; Prof.M. Grachev; Dr. A.Avrarin; Dr. K.Levi). Other members will confirm their nominations to the Scientific Advisory Board by February 1993 to Rolf Kipfer, who will compile a final list.

Dr. Kawai stressed that a data base for Baikal has to be created as soon as possible for common use by BICER members; this work requires special additional financing; Dr.Grachev informed participants that a database of references of Baikal scientific literature starting from 1965 and consisting of ca. 20,000 paper titles is now being compiled at the request of Dr. P. Hearn (USGS) who supplied a PC for this purpose; 4,000 titles have been put onto the database to date. The parties decided to seek funds for the completion of this Baikal data base; these efforts will be coordinated by Dr. Kawai.

5. The parties discussed the plan of expeditions for the coming year (Addendum 6). This provisional plan must be complemented by members of BICER and sent to Dr. M. Grachev before February, 15, for finalization.

6. The parties discussed the Baikal Drilling Project launched by Russian American, and Japanese scientists. This project, if more aspects are added, like climate models, paleolimnology, physical limnology, on-land geology, etc. will become of great scientific importance for global climate modeling, and it will be very useful if European scientists (particularly from Belgium, Great Britain and Switzerland as BICER members) take part. It was decided that a meeting with American scientists will be organized in Irkutsk at a time suitable for all, in winter of 1993 in order to coordinate the efforts of all potential participants.

7. On the confirmation of Swiss membership Rolf Kipfer will act as a distributor of BICER research proposals among the members. Each member has nominated a person who will act as a contact point for Rolf Kipfer, and who will ensure what the information is disseminated widely in his/her own country. These will be:

Dr. Avrorin - Russia

Dr. Kawai - Japan

Dr. Goddeeris - Belgium

Mr. L.Mole - UK

Prof. Williams - USA

Prof. Imboden - Switzerland

The aim of this is to facilitate as far as possible, greater international collaboration within the BICER research projects.

Prof. Williams' memorandum of the expenditures of members and non-members was considered. Approval was given, by consensus, to: -

Japanese expenditure

UK expenditure

Belgian expenditure.

The members agreed that on receipt in Irkutsk of the Perkin-Elmer C-H-N-S elemental analyzer (35,000 US \$) and the microbalance (16,000 US\$) these items will be accepted as constituting part of the \$ 100 000 membership contribution. In addition freight costs up to \$2 000 for these items will be accepted. The status of other expenditures as potential parts of BICER Founding Contribution will be a matter of future negotiations. Taking into account the difficult, changing economic situation in Russia, it was agreed that cash contributions would be most beneficial. Instruments will only count as a part of founding contribution with the full agreement of the BICER Founding Members Council.

M. Grachev



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A. L. L. L.



宮崎信之

J. Kawas



Equipment and Funds Contributed by the University of South Carolina
In Support of BICER-sponsored Research Activities

| | USC Bicer Fund | USC |
|---|-------------------|-----------|
| Baikal Drilling Project | | |
| computer equipment and supplies (Nedra, I. Geochem.) | 30,000 | 25,000 |
| Drilling expenses (Nedra) (sent 11/92) | 20,000 | |
| Modems and ether net boards | | 1,500 |
| Software, misc. computer supplies (diskettes, paper supplies) | | 2,000 |
| freight charges (excess baggage for above items) | | 1,400 |
| living expenses and US airfares for scientist exchange (3 LIN, 1 Geochem.) | | 10,000 |
| Equipment of Stable Isotope Facility (isotope ratio mass spectrometer, vacuum supplies and equipment)(to be shipped 5/93) | | (125,000) |
| Perkin-Elmer C-H-N-S elemental analyzer (ordered) | (35,000) | |
| microbalance (ordered) | (6,000) | |
| freight charges for above three items (projected) | (5,000) | |
| total expenditures/commitments | \$96,000 | \$164,900 |
| Outstanding balance of USC BICER Fund | \$4,000 | |

Equipment and Funds Contributed by USGS and NSF
In Support of BICER-sponsored Research Activities

| | USGS | NSF |
|---|------------|--------|
| Computers and printers (2 to LIN, 1 to Inst. Geochem.) | 9,000 | |
| Modems | 1,500 | |
| Software | 2,000 | |
| Equipment for Vereschagin | | |
| toilets | 2,200 | |
| freezer | 962 | |
| dishwasher | 1,370 | |
| fuels costs for 1992 expeditions | 10,000 | 5,000 |
| coring equipment (piston, box corers, winch cable) | 15,000 | |
| GPS units (2 to LIN, 1 to Earth's Crust) | 9,000 | |
| GPS marine antenna | 1,000 | |
| Baikal Drilling Project | | |
| logistical support in cash to Kuzmin | 7,000 | 12,000 |
| core liners for hydraulic corer | 11,500 | |
| clothing for drillers | 4,000 | |
| NSF infrastructure grants | | |
| Doug Williams, South Carolina | | 9,700 |
| Sam Bowring, MIT (to Earth's Crust) | | 10,000 |
| total expenditures/commitments | \$111,232* | |

(*not including 1991-92 scientist exchange costs)

Expenditures In Support of BICER-sponsored Research Activities
by The Royal Society of London

| | |
|------------------------------|----------|
| Fluorescent microscope | L 15,000 |
| Spectrophotometer | L 10,000 |
| Misc. chemicals and reagents | L 5,000 |
| total | L 30,000 |

Expenditures In Support of BICER-sponsored Research Activities
by The Institut Royal des Sciences Naturelles de Belgique

| | |
|--|----------|
| General support of BICER field work (1992) | \$20,000 |
|--|----------|

Expenditures In Support of BICER-sponsored Research Activities
by Japanese Association for Baikal International Research Program (JABIRP)
as of 12 Oct. 1992

| | | Yen | US \$ |
|--------------------------------|------|-------------------|------------------|
| money | 1991 | 4,013,668 | 30,847 |
| video deck, etc. | 1991 | 560,011 | 4,308 |
| an outboard motor | 1992 | 202,601 | 1,558 |
| motor's propellers | 1992 | 18,540 | 143 |
| cooking tools | 1992 | 36,492 | 280 |
| 8mm video deck & GPS | 1992 | 1,090,255 | 8,387 |
| 2 heater pots | 1992 | 24,984 | 192 |
| copy machine | 1992 | 113,236 | 871 |
| spare cartridges | 1992 | 38,625 | 297 |
| 3 computers (notebook) | 1992 | 989,418 | 7,611 |
| hot plate | 1992 | 15,800 | 122 |
| rice cooker | 1992 | 29,800 | 229 |
| microwave oven | 1992 | 59,800 | 460 |
| refrigerator | 1992 | 240,000 | 1,846 |
| washing machine | 1992 | 55,000 | 423 |
| 285 liter freezer | 1992 | 158,000 | 1,215 |
| 155 liter freezer | 1992 | 113,000 | 869 |
| image scanner | 1992 | 258,118 | 1,986 |
| microcomputer | 1992 | 123,188 | 948 |
| business OS | 1992 | 56,653 | 436 |
| color indexes | 1992 | 26,000 | 200 |
| polypeptides | 1992 | 380,000 | 2,923 |
| pipette tip | 1992 | 6,300 | 48 |
| GPSes etc. | 1992 | 614,807 | 4,729 |
| pH meters | 1992 | 200,000 | 1,538 |
| fluorescent microscope | 1992 | 3,500,000 | 26,923 |
| sampling nets, diskettes, etc. | | 30,000 | 231 |
| freight charges | 1991 | 250,000 | 1,923 |
| freight charges | 1992 | 335,036 | 2,577 |
| freight charges | 1992 | 40,304 | 310 |
| freight charges | 1992 | 35,300 | 272 |
| freight charges | 1992 | | 1,100 |
| freight charges | 1992 | | 146 |
| Totals | | 13,614,873 | \$105,976 |



Grachev copy

THE UNIVERSITY OF SOUTH CAROLINA
COLUMBIA CAMPUS

Department of Geological Sciences

Columbia, SC 29208

BICER MEMORANDUM
6 January 1993

Dr. Takayoshi Kawai
Global Environment Division
The National Institute for
Environmental Studies
16-2 Onogawa Tsukuba Ibaraki

Dr. Boudewijn Goddeeris
Royal Belgian Institute of Natural Sciences
Freshwater Biology, Vautierstraat 29
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Dr. Leonard U. Mole
Royal Society of London
International Relations
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ENGLAND

Dr. Paul P. Hearn, Jr.
Chief for Russian and CIS Programs
Mail Stop 917
United States Geological Survey
Reston, VA 22092, USA

DR. R. KIPFER and Dr. D. Imboden
Swiss Federal Institute of Technology
Environmental Physics
EAWAG/ETH
CH-8600 Duebendorf, SWITZERLAND

Dr. Jean Klerkx
Department of Geology
Musee Royal de l'Afrique Centrale
B 3080 Tervuren BELGIUM

Dear Colleagues,

I have just received the minutes of the December BICER meeting thanks to Dr. Kawai. I congratulate you on your hard work. Unfortunately I could not be there and now I leave for Moscow in a few short hours so I have not had time to study the document closely, so this letter will be brief but I hope informative in terms of the discussion about "USA" expenditures in support of BICER activities.

Firstly please find attached the memorandum which Dr. Grachev signed on 6 December 1990 authorizing and approving the initiation of the development of the Baikal drilling system by NEDRA drilling enterprise using \$50,000 in BICER Charter Fund from the University of South Carolina. Dr. Grachev and I signed this memorandum soon after the initial signing of the BICER charter as shown in the accompanying photograph where I, along with President of the Siberian Branch and Academician Koptyug, are signing the BICER Charter.

Secondly, along with the other Charter members, I also summarized the expenditures made by the USGS and NSF but I did not see mention of how these expenditures are to be considered by the Founding Members Council. Attached is that summary for your attention.

I hope to you all had a pleasant New Year's holiday, and I look forward to seeing you in the near future and to continuing our BICER work together. Wish us the best of luck in drilling this winter!!

My best wishes,



Douglas F. Williams
Deputy Director for Global Change Research
Baikal Geoscience Project (BGP)
Fax: 807-777-6610
Email: doug@epoch.geol.sc Carolina.edu

cc: Prof. Mikhail Grachev

4 pages of attachments

AGREEMENT ON THE CONDITIONS FOR MEMBERSHIP OF THE UNIVERSITY
OF SOUTH CAROLINA AS A CO-FOUNDING MEMBER OF THE BAIKAL
INTERNATIONAL CENTER FOR ECOLOGICAL RESEARCH (BICER)

The Baikal International Center for Ecological Research is pleased to acknowledge the efforts of the University of South Carolina in securing funds in support of US-USSR cooperative research at Lake Baikal. The Baikal Drilling Project (BDP) which was originally proposed by Dr. Douglas Williams of the University of South Carolina in May of 1989 is one of the most important scientific cooperative programs between scientists from the USSR and US and will most probably become a top-priority project of BICER.

We agree that the \$100,000 which the University of South Carolina has received from the Jennie R. and Oliver S. Donaldson Charitable Trust is a timely and important contribution to the BICER Charter Fund for those US institutions who are affiliated with a future US/USSR research association. This contribution also guarantees the University of South Carolina a permanent membership on the Founding Member Council and Scientific Advisory Board of BICER as described in the BICER Charter and Memorandum of 3 December 1990..

We are pleased to accept the contribution of \$100,000 from USC. \$10,000 of this contribution may be used for operating expenses by BICER or in some other manner as decided by the Founding Member Council. \$50,000 will be used by USC to purchase computer equipment for the NEDRA Enterprise in support of NEDRA's development of drilling equipment for the Baikal Drilling Project. The remaining \$40,000 will be used to purchase scientific equipment and components to be used in the USSR in support of BICER projects, preferably in the area of modern sedimentation and limnological processes such as sediment trapping.



Byrnes International Center
University of South Carolina

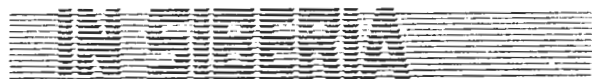
DEC 6, 1990



Organizing Director
Baikal International Center
For Ecological Research

December 6 1990

Baikal International Centre for Ecological Research



The Baikal International Centre for Ecological Research (BICER) was established in December, 1990 at a founding conference held in Irkutsk with participants from 9 countries. At the conference it was granted the status of an international non-governmental organization – an open institute.

BICER is hosted at the Irkutsk Limnological Institute of the Siberian Division of the USSR Academy of Sciences.

BICER arranges joint research work of scientists from the USSR and other countries on the following major topics:

multidisciplinary studies of the ecological system of Lake Baikal by the methods of classical and physico-chemical biology, hydrochemistry, hydrodynamics, climatology, applied mathematics, oceanology and limnology, satellite and other methods of remote sensing;

studies of the mechanisms and chronology of the formation of endemic biological species of Lake Baikal by methods of classical and physico-chemical biology, molecular genetics, paleolimnology and biochemistry as important constituent parts of paleobiogeography;

studies of the global cycling of elements (carbon, nitrogen, sulphur, heavy metals, etc.) as well as of global transfer of the most important ecotoxicants (polychlo-



Opening ceremony of BICER in December, 1990

Academician V.A. Koptug (Sib.Div., USSR Ac. of Sci.) – left;

Prof. D. Williams (Univ. of South Carolina, USA) – right;

T.G. Kazakova, representative of the USSR Ministry of Foreign Affairs – centre.

Equipment and Funds Contributed by USGS and NSF
In Support of BICER-sponsored Research Activities

| | USGS | NSF |
|---|------------|--------|
| Computers and printers (2 to LIN, 1 to Inst. Geochem.) | 9,000 | |
| Modems | 1,500 | |
| Software | 2,000 | |
| Equipment for Vereschagin | | |
| toilets | 2,200 | |
| freezer | 962 | |
| dishwasher | 1,370 | |
| fuels costs for 1992 expeditions | 10,000 | 5,000 |
| coring equipment (piston, box corers, winch cable) | 15,000 | |
| GPS units (2 to LIN, 1 to Earth's Crust) | 9,000 | |
| GPS marine antenna | 1,000 | |
| Baikal Drilling Project | | |
| logistical support in cash to Kuzmin | 7,000 | 12,000 |
| core liners for hydraulic corer | 11,500 | |
| clothing for drillers | 4,000 | |
| NSF infrastructure grants | | |
| Doug Williams, South Carolina | | 9,700 |
| Sam Bowring, MIT (to Earth's Crust) | | 10,000 |
| total expenditures/commitments | \$111,232* | |

(*not including 1991-92 scientist exchange costs)

Equipment and Funds Contributed by the University of South Carolina
In Support of BICER-sponsored Research Activities

| | USC Bicer Fund | USC |
|---|-------------------|-----------|
| Baikal Drilling Project computer equipment and supplies (Nedra, I. Geochem.) | 30,000 | 25,000 |
| Drilling expenses (Nedra) (sent 11/92) | 20,000 | |
| Modems and ether net boards | | 1,500 |
| Software, misc. computer supplies (diskettes, paper supplies) | | 2,000 |
| freight charges (excess baggage for above items) | | 1,400 |
| living expenses and US airfares for scientist exchange (3 LIN, 1 Geochem.) | | 10,000 |
| Equipment of Stable Isotope Facility (isotope ratio mass spectrometer, vacuum supplies and equipment)(to be shipped 5/93) | | (125,000) |
| Perkin-Elmer C-H-N-S elemental analyzer (ordered) | (35,000) | |
| microbalance (ordered) | (6,000) | |
| freight charges for above three items (projected) | (5,000) | |
| total expenditures/commitments | \$96,000 | \$164,900 |
| Outstanding balance of USC BICER Fund | \$4,000 | |



The Royal Society

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Ext.246

*From the Foreign Secretary and Vice-President
Dr Anne McLaren, F.R.S.*

21 April 1993

Our ref: 638077.P602/LUM/TH

Dear Dr Grachev,

I would like to thank you, both personally and on behalf of the Royal Society, for the warm hospitality that you showed to me and my colleagues during our recent visit to Irkutsk. The apartment was very comfortable, and our two ladies were kind and efficient. I found our discussions very useful, and the day at Lake Baikal was beautiful. Please thank Galina for her kindness and attention to us.

We are taking out a 1993 subscription to Nature for BICER (but from Royal Society funds, not BICER money, since we reckon that BICER expenditure should be authorised by the Founding Members' meeting). Nature for 1992 should be in our Moscow office, with Louise Hare, by the end of April. It is a gift from a colleague of mine in Cambridge.

I was interested to see in the BICER charter that there was a reference to a Scientific Advisory Board meeting each year, in addition to a meeting of Founder Members. With the present level of BICER activity, we would like to suggest that there is no need for two separate meetings. If scientists not representing BICER Founder Members need to participate in the discussions, they could perhaps attend a final session of the December Founder Members' meeting.

I enclose some notes that I made following our talks, and would be interested to receive your comments.

With best wishes to you and your colleagues.

Yours sincerely,

Anne McLaren

Dr M.A. Grachev
Director
Limnological Institute
PO Box 4199
664033 Irkutsk
Russia

1. On Monday, 5 April 1993, Dr A. McLaren accompanied by Mrs M.L. Thompson and Ms L. Hare, held useful discussions with Professor M. Grachev on the organization and functioning of BICER. The Royal Society party saw something of the work of the Limnological Institute and met staff members who were collaborating with British colleagues on BICER projects, and the following day were taken on an enjoyable and instructive visit to Lake Baikal.
2. It was agreed that scientific study and conservation of Lake Baikal and its flora and fauna were of vital importance, not only for Russia but for the entire world.
3. More coordination of BICER projects would be desirable, to promote collaboration between participating countries, to avoid duplication, and to facilitate forward planning. RS will approach Dr Imboden (Zurich) to see if he will undertake this coordinating role.
4. The present situation of the BICER budget, and how it relates to the budget of the Limnological Institute, is unclear. Professor Grachev would be prepared to provide all account books for inspection by a BICER representative visiting Irkutsk. Dr Imboden should be consulted on this also.
5. The Royal Society contribution of \$100K (of which some \$27K remains) should be kept for capital equipment (and some small items of consumables) that can only be purchased with foreign currency. Living expenses in Irkutsk, and basic scientific support, should be provided by the Limnological Institute. Travel costs of British participants should be provided, at least for 1993, by the Royal Society. Additional research costs (e.g. for helicopter flights) should be met by project funding for British participants.
6. Ship time will be free of charge for all BICER Founding Members, provided that notice is given of what ship time is required, for what dates and for what purpose, by 4 December of the preceding year. These BICER ship requirements will be given priority and will be provided reliably. Additional ship time, which has not been requested by the time of the December BICER Founders meeting, would be subject to negotiation and would be charged for at agreed rates.
7. BICER Founders representatives will meet in Irkutsk each year in December, not March, to facilitate planning for the coming year.
8. Professor Grachev agreed that it would be desirable for him to have a deputy in Irkutsk who could oversee the day-to-day running of BICER work and take charge when he was away, but no appropriate person could be identified at the present time.
9. Professor Grachev is planning to approach some British Universities to see if undergraduate students could participate in Baikal projects, perhaps during the Summer vacation. He also hopes to approach the British Chemical Standards Division to see if water from Lake Baikal could be used as reference material.
10. The RS will assist as far as possible to expedite the issue of British visas to Russian participation in BICER projects.



MEMORANDUM

of the meeting of the Founding Members Council of the Baikal
International Centre for Ecological Research (BICER)

Irkutsk 12 - 14 December 1993

Present:

Founding Members Council:

Chairman: Professor M. Grachev, Limnological Institute, Siberian Division of
the Russian Academy of Sciences, Irkutsk, and Managing Director, BICER

Dr B. Goddeeris, Royal Belgian Institute of Natural Sciences

Dr D. Jewson, Royal Society of London

Dr T Kawai, Japan Association for Baikal International Research Project
(JABIRP)

Dr. R. Kipfer, Swiss Federal Institute of Technology

Dr B. Goddeeris, Royal Belgian Institute for Natural Sciences

Dr. J. Klerkx, Royal Belgian Museum for Central Africa

Mrs L. Thompson, Royal Society of London

Professor E Wada, JABIRP

Professor D. Williams, University of South Carolina, U.S.A.

Academician N. Logatchov, Institute of Earth's Crust, Siberian Division of
the Russian Academy of Sciences, Irkutsk

Dr M. Kuzmin, Institute of Geochemistry, Siberian Division of the Russian
Academy of Sciences, Irkutsk

Dr V. Fialkov, Baikalian Museum of Irkutsk Scientific Centre

Observer:

Dr Helmut Müller, Director, Institute for Lakes Research, Langenargen,
Germany

Representative of the Presidium of the Siberian Division of the Russian
Academy of Sciences:

Dr V.D. Ermikov

1. Memorandum of the Last Meeting

Members accepted the Memorandum of the last meeting. It was agreed to combine

for the present the meetings of the Scientific Advisory Board with that of the Founding Members Council.

2. Report of Professor Grachev on BICER activity in 1993.

Since the last meeting, The Swiss Federal Institute of Technology (ETH/EAWAG) had been accepted as a Founding Member. The German Institute for Lakes Research, Langenargen, had also expressed an interest in joining, and Dr Müller had been invited to attend the meeting.

The question of USA membership needed to be addressed, and Professor Williams was attending the meeting in order to clarify the Membership of the University of South Carolina, U.S.A.

3. Financial Report 1993

The Chairman reported on the financial contributions of each Founding member. BICER had received in 1993 \$50,000 US from foreign members, and \$20,000 from foreign non-members, which amounted to approximately 18% of the total expenditure of \$400,000 US. Of the Founding Members, Japan (JABIRP) had completed its initial contribution (a sum of \$100,000 was set for contribution of each Founding Member), The Swiss Federal Institute of Technology (ETH/EAWAG) and the Royal Belgian Institute of Natural Sciences had each contributed \$20,000 in 1993 and would be making further cash contributions of \$20,000 each in 1994.

By prior agreement, the Royal Society's contribution was in the form of equipment donation, which had so far reached a value of approximately \$60,000. A summary of the financial expenditure of each country member was circulated, with figures expressed in roubles. Since the economic situation had not improved in the last twelve months, and inflation was serious, the Chairman asked for understanding by Council members in interpreting the figures. He reminded those present that although the original intention had been to use the Founding Members contributions for infrastructure support and purchase of equipment, an emergency appeal had been made in 1992, to allow some contributions towards Founding Members fees to be used for essential running costs, without which activities in BICER would be severely curtailed. Founding Members contributions would still be required in the foreseeable future for running costs. A request was made by the Members for separation of expenses of non-members from that of Members.

4. Presentation of Scientific Activities by Each Member

Dr H. Müller - introduced the activities of the Institute for Lakes Research. As the funding of this Institute was from the German government, which precluded contribution to non-German organisations, it was not possible for a contribution to be pledged now, but Dr Müller was interested in the activities of other members, and hoped that the Institute would join BICER as soon as it was possible. This was welcomed by all members.

Dr D. Jewson - British scientists took part in two main projects (lake sediments and population dynamics of main diatoms), which were good examples of joint collaboration with Russian scientists. Other projects on seal virus studies and on biology of harpacticoids were continuing although no visits had been made to Irkutsk in 1993. There was now sufficient evidence from

various research groups to show that interdisciplinary studies among teams from various countries could be successfully integrated.

Dr B. Goddeeris - Belgian programmes were in two directions, geological (hydrothermal activity related to active faults) and biological (benthic animals and chironomids).

Dr M. Kuzmin - presented a proposal, focussed on the Baikal Drilling Project (BDP) to link a number of international research centres in Irkutsk with BICER, to form a united international centre. Members were unsure of the advantages to BICER of such a proposal, and invited Dr Kuzmin to submit a written proposal for consideration.

Dr E. Wada - Projects in 1993 were in
a) phylogeny (to end in March 94) and
b) water and material movement in Lake Baikal.

Continuation of projects were dependent upon successful applications for Japanese government funding. The University of Kyoto Ecological Research Centre has just started a major project on Biodiversity. Dr Wada would be applying for support to attend an I.U.B.S. Symposium on Biodiversity in France in September 1994.

Dr T. Kawai - reported on the BDP. In March 1993, Russian and USGS scientists already involved in the project agreed that JABIRP would be accepted on the drilling project upon a donation of \$30,000 US. Two Japanese groups are taking part, one is Hohrie's group and another is the Tokyo University group. Dr Kawai is applying to the Science and Technology Agency (STA) in Japan for funding to pay for further drilling, to obtain a 1km core from Lake Baikal.

Dr R. Kipfer - reported on the work on water mixing and circulation, which had taken place with collaboration of Russian and Japanese scientists.

Dr D. Williams - reported on the Baikal Drilling Project. This project predated BICER and involved a number of universities in the U.S.A. as well as the US Geological Survey. Its structure was as follows:

- steering committee
- scientific activity committee
- logistical/technical committee

BDP was now in the process of planning its next stage of activity. The special circumstances of the US funding cycle prevented any drilling to be paid for this winter, so the next stage of drilling was expected to take place next year, and to continue for 5 years. Dr Williams had obtained a grant from the US National Science Foundation (NSF).

In a discussion on the position of BDP in BICER, it was agreed that as it was clearly a BICER activity, a representative from each Founding Member should be invited to attend future meetings of the BDP Steering Committee.

The discussion on programmes of 1993 highlighted the need for improved exchange of information among members.

Agreed

- i. to establish an acting Scientific Advisory Board which included Founding

Members as well as ad non-members, among them scientists not necessarily active participants in BICER projects.

ii. the appointment of Dr Kipfer as coordinator, to collect and disseminate all research reports and proposals among Founding Members.

iii. that all project proposals should be collected and distributed among the Founding Members of BICER and Scientific Advisory Board by November each year, and that a meeting of the Scientific Advisory Board should be held in each January of the following year to evaluate proposals and to plan the activities for that year. In March, a final version of the plan would be released.

5. Discussion of Shortcomings and Problems in connexion with BICER projects

i. Financial matters - agreed that greater effort should be made to present accounts of BICER in such a way that expenditure on BICER activity could be shown as distinct from Limnological Institute expenditure, and that serious consideration should be taken of suggestions to introduce differential daily rates for non-Russians visiting BICER. This would help to alleviate the serious shortage of funds for the daily running of the institute and of BICER activities.

Agreed to charge, for a trial period, \$30 US per day for BICER Founding Council Members and \$60 US per day for others visiting Irkutsk and Baikal region for research. Dr Jewson reiterated the hope of the Royal Society that clear accounts be shown to Members each year, to ensure successful fundraising in the future.

ii. Shipboard Matters - agreed to tighten up management of ships, and to make clear lines of responsibility for scientific work, for safety, and for hygiene matters. Sanitation, supply of clean drinking water, sufficient food, and cooking facilities should be improved, as well as security, since thefts had occurred on board ships. Ship-to-shore communication should be installed, and equipment such as winches should be in good working order.

iii. Insurance for personal accident, property and health - Agreed to inform visitors that, although they should themselves take care of adequate insurance cover for activities connected with their research, especially in view of dangers of working on water, ice in taiga on mountains, and of the danger of tick-borne encephalitis, only inviting (visa-supporting) institutes and Russian leaders of expeditions are responsible administratively and legally for safety matters according to Russian laws.

iv. 'Pisces' - Agreed to investigate the possibility of transporting to Baikal the submersible 'Pisces'.

v. Publications - agreed that individuals to be named as co-authors should give their consent in writing (or by E-mail) before papers were sent to journals or published in any other way. In the case of large expeditions, a general report could be published in the name of the whole expedition, individual names only coming elsewhere within such a paper with an indication of contributions of each participant. Agreed that Dr Jewson would circulate a paper on best practice to all Founding Members and report their reaction

before formal guidelines were drawn up.

6. Legal Status of BICER

Professor Grachev outlined the difficulty of making moves to establish BICER as an independent legal entity, separate from the Limnological Institute. The consequences of such a move now would not be advantageous for BICER. Members agreed to postpone for a further year any moves towards organisational separation between BICER and the Limnological Institute, but agreed that this did not preclude the presentation of separate accounts for the Limnological Institute and for those activities specific to BICER.

7. US Membership of BICER

Agreed that since it had not been possible for the US government to be represented on BICER, the meeting should consider only membership of the University of South Carolina. On the record of past contributions from the University (mostly in the form of equipment and instruments presently housed at the Institute of Geochemistry) agreed that it had qualified for inclusion as Founding Member. Professor Williams also assured Members that he had already received on behalf of the University the sum of \$50,000 US from the Donaldson Charitable Trust towards the refitting of the ship 'Ulan Ude'.

8. The Ship 'Ulan Ude'

The Chairman informed the meeting that in view of the urgent need for a ship in addition to and in readiness to replace the 'Vereshchagin' he had decided to purchase a disused 400 tonnes tug 'Ulan Ude' for conversion to suit BICER needs, in particular the Baikal Drilling Project.

The original estimate for the purchase and refitting had been \$500,000. Half of that sum had already been spent on the purchase, which had been completed with much difficulty. Members expressed their gratitude to Academician Koptug for his assistance in making the purchase possible, and thanked Professor Grachev for his efforts in concluding the purchase.

The refitting of the ship would present many problems, but Members agreed to accept the estimate of Flotek, the company which will undertake the work. 230 million roubles was estimated for a two-stage reconstruction. The first to include making the ship seaworthy, and to extend the bow by 5m, and the second stage to fit it with adequate living quarters, laboratory, kitchen etc. Agreed that Professor Kuzmin should be responsible for managing the expenditure of funds in connexion with the refitting of the 'Ulan Ude', that Dr Fialkov, on behalf of the Limnological Institute (owner of the ship), be responsible for supervising the work in progress, and that Flotek company would undertake the entire refitting operation.

The shortfall in the amount necessary for the reconstruction would be met in part from the donation of \$50,000 US from the Donaldson Charitable Trust to the University of South Carolina, in part from contributions from Founding Members. All present agreed that a letter should be sent to thank the administrators of the Donaldson Trust for their gift, and that further attempts would be made to raise funds for the ship. The Royal Society representative agreed to actively seek contributions towards essential pieces of equipment on board.

9. Planning of Activity for 1994

Members presented their requirements for logistical support for following 12 months, and agreed that there was great interest in integrating their separate programmes. In discussion, members reiterated the need for increased communication and prior circulation of research plans. Agreed that all proposals for 1994 not yet submitted to the meeting should be sent to Dr Kipfer by 15 February 1994, for him to coordinate and circulate to members. Agreed that each proposal should include logistic requirements as well as the details as set out in the attached proposal form, (attachment number 1), and that each visitor's date and place of birth, passport number and dates of visit be included for visa purposes.

Details of the time schedule for use of ships, vehicles and equipment are shown in attachment number 2.

10. INTAS Meeting on Baikal as Natural Laboratory for Global

Change

Chairman announced that 80,000 ECU had been promised by the International Association for the Promotion of Cooperation with Scientists of the Independent States of the former Soviet Union (INTAS). It was hoped that members would submit names of proposed participants and invited speakers to Dr Klerkx as soon as possible, in order to begin planning at once for the meeting to take place in March or April 1994.

10 Date of Next Meeting: January 1995

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Limnological Institute
Irkutsk, December 1993

Managing Director of BICER

M. Grachev

M. Grachev

MEMORANDUM

on the joint Russian-Japanese expedition on Lake Baikal of August 19-29,
1994 on R/V Vereshchagin

Participants: A.Badardinov, O.Khlystov, E.Goldberg, E.Kornakova,
V.Kochetkov, E.Berezikov, I.Khanaev (Limnological Institute)
T.Kawai, M.Soma, Y.Inouchi, S.Yasumatsu, K.Horiuchi, T.Sato, T.Oda (JABIRP).
Purpose of expedition: to take samples of bottom sediments and of water for
paleoclimate studies.

The following samples were obtained:

Four cores taken with a 12 m piston corer (PC)

Eight cores taken with a 5 m gravity corer (GC)

Nineteen samples of surface sediments were taken by a Japanese dredge (for
14C dating).

Eleven samples of water were taken by a 10 l GO-FLO bottle for filtering and
subsequent analysis of photoosynthetic pigments in Japan.

Samples for X-ray holographic analysis in Japan:

VER94-5 ST4 GC, 52°19'57 N, 106 10'2 E, z= 65 m l-unknown; for X-ray hologr.
VER94-5 ST9 GC, 51°45'12 N, 105°15'1 E, z= 1480 m, l-unknown; for X-ray hol.;
VER94-5 ST10 GC, 51°35'3 N, 104°40'7 E, z= 850 m, l-unknown, for X-ray hol.;
VER94-5 ST14 GC, 53°10'12 N, 107°45'52 E, z= 1670 m, l-unknown, for X-ray hol.;
VER94-5 ST17 GC, 54°00'2 N, 108°30'3 E, z= 360 m, l-unknown, for X-ray hol;
VER94-5 ST 21 GC, 54°50'1 N, 109°14'56 E, z=920 m, l-unknown, for X-ray hol.;

Remark: depth (z) is given according to echo-sounder and is greater
than real depth; has to be corrected by Russian side.

Request: after holographic studies in Japan, it is requested that one
tube is sent to Limnological Institute for studies in Novosibirsk with
synchrotron radiation.

these samples are requested for further analysis in
Tokyo Univ. (It is important to find ~~some~~ a
suitable tube, in which the sample measured
by X-ray.

Samples for studies of Holocene-Upper Pleistocene sediments by means of separation of diatom frustules in Limnological Institute followed by 14C dating in Japan:

- VER94-5 ST20 GC, 53°33'30 N, 108°00'52 E, z= 350 m, dating of diatoms;
- VER94-5 ST22 GC, 55°19'04 N, 109°32'09 E, z= 825 m, dating of diatoms.

Samples for microbiological studies in Limnological Institute:

- VER94-5, ST 25 BC, 55°31'39 N, 109°45'21 E, z=385 m;
- VER94-5 ST26 BC, 55°31'21 N, 109°46'36 E, z= 410 m.

For joint studies, cut into two halves on the ship:

VER94-5, ST16, PC, 53°42'50 N, 108°22'56 E, z=360 m; l = 11 m

Limnological Institute: diatom analysis (Japanese student invited), uranium analysis, biogenic silica, palinological analysis, etc.; JABIRP: 14C dating, paleomagnetic, geochemical analysis, etc.

For joint studies, taken intact to Japan:

VER94-5 ST19 PC, 53°33'30 N, 108°00'52 E, z= 350 m.

JABIRP: paleomagnetic, geochemistry, 14C, etc.; after cutting into two halves in Japan, O.Khlystov will be invited (tickets paid by Limnological Institute) to take sub-samples in tubes, and to take part in description; Limnological Institute will make diatom analysis (Japanese student invited), palinological analysis with cubes after paleomagnetic studies, uranium analysis, etc.

difficult to arrange reasonably. We need further discussion about the period.

For studies in Russia (Japanese colleagues are invited to take part):



VER94-5 ST 15 PC, 53°33'18 N, 108°00'42 E, z= 365 m, l= 8 m, cut into two halves;

VER94-5 ST18 PC, 53°39'51 N, 108°15'36 E, z= 390 m, l-unknown, intact.

Water samples for pigment analysis, and samples of surface sediments obtained by a Japanese dredge are described in cruise report by T.Kawai (see Addendum).

Participants promise to exchange all data of analysis, to publish results of jointly studied samples jointly, and not to invite any third parties to study these samples without mutual agreement in a written form.

Signatures:

| | |
|------------|---|
| M. Grachev |  |
| T. Kawai |  |

MEMORANDUM
of the meeting of the Founding Members Council
of Baikal International Center for Ecological Research
Brussels, December 14, 1994

The Founding Members Council agrees that Baikal International Center for Ecological Research (BICER) established due to an initiative of the Siberian Branch of Russian Academy of Sciences has become an active international institution focusing on the world largest fresh-water ecosystem of Lake Baikal. BICER has promoted establishment of a unique international framework to provide multidisciplinary scientific research using Baikal as a Natural Laboratory for Global Change. At present, the activities are focused on three particular fields: (i) past global change (including the large Baikal Drilling Project); (ii) present global change (including understanding of the present state of the ecosystem of Lake Baikal and the effect of pollutants in the water body, and aerial transfer of pollutants and aerosols over Baikal and East Siberia in general); and (iii) biodiversity and speciation of aquatic organisms (including application of the methods of classical and new biology).

The progress in understanding of Lake Baikal in the context of Global Change is the result of joint efforts of all the Founding Members. Foreign Founding Members are highly satisfied by the contribution given in 1994 by Russian partners who demonstrate that advanced scientific research is still going on in Siberia, even in this hard time of changes.

The meeting has discussed and approved the scientific report of 1994 prepared by the Managing Director, and approved a plan of actions for 1995.

For and on behalf of the Founding Members:

Prof. D. Williams
University of South Carolina, USA

Dr. T. Kawai,
Japanese Association for Baikal International Research Programs, Japan

Miss L. Thompson
Royal Society, London, UK



Prof. D. Jewson
Royal Society, London, UK

Prof. B. Goddeeris
Royal Belgian Institute of Natural Sciences, Belgium

Prof. J. Klerkx
Royal Belgian Museum of Central Africa, Belgium

Dr. R. Kipfer
Swiss Federal Institute of Technology, Switzerland

Prof. M. Grachev
Siberian Branch of Russian Academy of Sciences, Russia

MEMORANDUM CONCERNING THE BELONGING OF BAIKAL DATA BASE PREPARED BY
JAPANESE-RUSSIAN COLLABORATION FROM 1995 UNDER BICER

May 18, 1995

This memorandum is prepared for the memory of the agreement about the belonging of the Baikal data base planned and prepared by the Japanese-Russian collaboration under BICER from 1995. Contributing participants have agreed on the users and distribution of this data base as follows:

- (1) This data base is named "Baikal Data Base", and originally constructed on the memory of the server computer of Irkutsk Computing Center, SB RAS.
- (2) The literary property of this data base belongs to the Baikal International Center for Ecological Researches (BICER)
- (3) A copy of the newest version of this data base is given to the representative of any contributor (above ? %) on his/her request, and on closing this data base, on a suitable recording medium (floppy disk, MO etc).
- (4) Any participants of BICER can access this data base by paying the cost decided by the BICER FMC. The income is consumed for developing this data base with the agreement of BICER FMC.
- (5) The Director of the Irkutsk Computing Center can offer a copy of this data base to a suitable scientific organization with the agreement of the BICER FMC.

Prof. Stanislav N. Vassiliev
Director, Irkutsk Computing
Center, SB RAS

Dr. Takayoshi Kawai
Senior Researcher,
Natl. Inst. Environ. Stud.
Environmental Agency, Japan

Prof. Mikhail A. Grachev
Director, BICER
Limnological Institute, SB RAS

M. Grachev

Takayoshi Kawai

M. Grachev

BICER MANAGEMENT COMMITTEE

MINUTES

At a meeting of the BICER Management Committee held on 12 October 1995 at 10.00 am at the Limnological Institute (L.I.), Irkutsk.

Present: Professor M.A. Grachev
Dr R. Kipfer
Dr B. Goddeeris
Dr D. Jewson
Miss S. Kvesic
Dr T. Kawai (representing also Dr D. Williams)
Professor Wada

1. MINUTES

Confirmed the Minutes of the BICER International Management Meeting held in December 1994.

2. BICER FINANCES

(i) Professor Grachev presented a verbal report of income received in 1995 and expenditure. 20,000USD had been received each from Switzerland and Belgium and had principally been used against the repair of ships. 50,000USD had been received from Mr Murray (US) and had been used for repairs/restoration of the ship Ulan-Ude which was now almost ready for winter drilling. 10,000USD from Dr Kawai (Japan) had been used on the ships and general purposes and a further 5,000USD from Japan had been used for unexpected expenditures.

The UK had contributed 20,000 USD which had been used for equipment and other items (chemicals, expeditions, sampling etc...).

(ii) Income/expenditure related to expeditions were reported by Prof. Grachev pending provision of a full account as follows:

- (a) UK had paid for several joint Anglo-Russian expeditions in Summer, although no UK participants had been present during sampling.
- (b) Non-BICER members had paid 5,000USD for a seal expedition.
- (c) Professor Wada had led a large expedition and had paid 50USD per diem.

- (d) Dr Makidi plus 2 Japanese and Dr Sheberkov participated in an expedition and paid the 50USD per diem.
- (e) Sponges expedition had been fully paid.
- (f) Large Belgian, Russian and German expedition was fully paid. (Note that the samples had been transported to Belgium as no Russian counterpart had been found in Irkutsk but Professor Grachev offered to rectify this).
- (g) Picoplankton expedition was fully paid.
- (h) Dr Kawai and Dr Shimaraev had participated in an expedition on physical aspects and this was paid.
- (i) Large expedition involving Jan Klerkx and Dr De Batiste was paid and included Russian participation. The Russians had been self-financing.
- (j) Fridges purchased by the Russians with Belgian financing were in use.
- (k) Two Japanese expeditions (seismic survey and another led by Dr Kowin) were fully paid.

Professor Grachev noted that seven late expeditions initiated by Japanese collaborators had caused considerable organizational difficulties with the necessity to find Russian partners and deal in dollars (not legal). 5,000USD had been provided by a private foundation in Japan for Russian salaries (note that the Japanese Ministry for Science & Technology does not allow for salary payment), per diems and consumables eg. fuel.

All projects and expeditions had been successful with foreign partners covering approximately 50% of total costs in all cases.

(iii) Other projects/income

- (a) International Atomic Energy Agency had provided 5,000 USD.
- (b) INTAS (Belgium collaborators) had brought 40,000 ECU of which 8,000 ECU had been sent to Novosibirsk.
- (c) Japanese Filming Company had provided 10,000 USD for a behaviour of seals project.
- (d) TACIS had provided 42,000 ECU in 1995 for an assessment of a programme of bio-monitoring on Lake Baikal. The funds were for Russians and 2 UK advisors.
- (e) Swiss INTAS had provided 40,000 USD which had been used for CTD equipment.
- (f) ICPMS will cost 150,000 USD and will be purchased using contributions from the Russian Academy and Belgian founding members fee (1996).
- (g) The ship "ULAN-UDE" had cost 600,000 USD. This had been paid for from some of the EAWAG contribution had been used and 150,000 USD from the Freeman Foundation (USA) with the remainder from Russia. 10 million roubles had been contributed from the Siberian Branch of the Russian Academy of Sciences.

The Limnological Institute had spent 2.5 billion Russian roubles in 1995 of which approximately 1 billion Russian roubles had come from foreign sources. Of the latter about 50% had been provided by BICER contributions.

A full account would be provided by Professor Grachev for each partner by mid December.

3. SALARIES, FEES AND SUBSCRIPTIONS RATES

To note that the Charter states that Russian partners in BICER activities should seek their own finances (ie. expedition costs) and to note in particular that Professor Grachev was unable to take on the responsibility for securing financial support for Russian participants outside the L.I. To note also that those Russian partners unable to secure funding should seek support from foreign partners. For (Russian) participants of non-L.I. organizations, it was suggested that overseas partners should contact the Directors of these Institutes/departments directly concerning collaboration.

Agreed that the per diem of 50USD for BICER activities, particularly relating to the time spent on expeditions should remain at the same level and be calculated on the number of nights. Agreed that the sum of 50USD would be sufficient to cover accommodation, food and laboratory costs in Irkutsk and expedition costs while using boats. [Professor Grachev pointed out that 50USD actually covered about 50% of expedition/boat costs].

Agreed that non-BICER members wishing to carry out research using boat time should pay a per diem of 100USD but where this was not possible, discretion should be used and the minimum fee should be 50USD.

Agreed that students taking part in expeditions should be charged at least 25USD per diem (Japanese) and depending on the level of their participation the charge of 50USD might apply.

Noted that long term students/undergraduates primarily based in Irkutsk would be financed by the L.I. and that their participation in expeditions should be the same as for Russian participants. Agreed that unclear non-BICER or student cases be referred to the BICER secretary (Dr Kipfer).

[Noted the suggestion of Dr Kawai that Directors of other Russian Institutes be invited to join BICER but that this may prove impractical.]

4. ADMINISTRATIVE SECRETARIAT AT THE L.I.

Agreed that it was vital to have a reliable and fully available secretariat for the support and coordination of BICER projects. Noted that the Charter stated that founding member fees could be used against items connected with the infrastructure of the L.I. and it was suggested that in 1996, a proportion of the fee be allocated to establishing a secretariat at the L.I. Noted also that the L.I. would contribute to such a venture.

Agreed therefore that the following would be required:-

- (i) To allocate a full-time secretary devoted to BICER activities only, initially for a one year period (from November/December 1995 to 1996).

- (ii) That the cost of the secretariat be paid by the founding members in the form of a grant and be set at a rate of 500 USD monthly. Agreed that Professor Grachev would explore any relevant legal issues, such as taxation and payment of the grant.
- (iii) That the secretary be given a monthly budget of 200 USD for the payment of BICER incidental costs (visas, faxes, customs, fuel for transport etc.)
- (iv) That a car be purchased for sole use of the secretary for BICER activities. Agreed that such transport be used to collect scientists from airports, travel to and from customs, travel to and from Listyvanka etc... Agreed that Prof. Grachev would investigate the cost of a car, and issues of ownership and insurance. Agreed that that L.I. would act initially as the owner and that a sum (payable by BICER founding members) of 8 000 USD be put aside for the purchase of the car and incidental associated costs.
- (v) Agreed that the job specification for the secretary should include the following duties:-
 - (a) Visa support
 - (b) Coordination of BICER programmes but that the programmes must be specified in advance by partners.
 - (c) Communications point (inc. delivering faxes to project leaders).
 - (d) Logistic arrangements for scientists and liaison point between visiting scientists and the L.I.
 - (e) Transfers, accommodation and meals, before and after expeditions (Moscow/Novosibirsk, Irkutsk). Collection of subscription rates for time spent in Irkutsk. (Not responsible for time or costs on expeditions.)
 - (f) Custom arrangements and the provision of advice. Noted that the sending side must bear the costs of transport of equipment and should send in advance (14 days notice required) a full description of item(s) and costs. In case of uncertainty, members should seek advice from BICER secretary in advance.

It was suggested and agreed that the most suitable person for the BICER secretarial post would be Nadia Cherepanova. Noted that the Japanese were employing a secretary (Tanya) in the Institute of Geochemistry for Baikal Drilling Project (BDP) but that the L.I. (Nadia) was also involved in BDP work.

Agreed that Tanya should concentrate on BDP work but that surplus work/arrangements on the project would be taken on by Nadia by mutual agreement. Noted the offer from the Japanese that their fax machine be transported from the computer centre in Irkutsk to the L.I. for use by Nadia.

Noted also that Professor Grachev agreed that the L.I. contribution would be office space for the secretariat.

Agreed that in the first year the figure of 20K be set aside for total costs of such a secretariat but that the actual costs would probably be lower. Agreed that all founding members would share the costs of the secretariat.

5. IMPORTING RESEARCH EQUIPMENT

Agreed that the following suggestion by Dr Kipfer be used in the future: the use of the carrier Lufthansa (to Novosibirsk) for the transportation of all equipment. That the local firm Transiba be used and that the BICER secretary would handle local arrangements. A notice period of 4-6 weeks would be required.

6. DATE AND PLACE OF NEXT BICER INTERNATIONAL MEETING

Agreed to consider the suggestion that the next BICER meeting be held in London at the Royal Society on 12 & 13 December and that this would be finalized by correspondence.

Scientific Activities

1. REVIEW OF SCIENTIFIC ACTIVITIES IN 1995 FOR EACH COUNTRY

Noted the suggestion that a summary of scientific activities and results be produced annually by each founding member and submitted before the annual BICER meeting. Agreed that such a publication would initially be for internal use only. Agreed also that papers published in any one year should be sent to the Managing Director of the L.I. (Professor Grachev) who would put them together and produce a journal.

2. BICER Database

Noted the offer made by Dr Kawai that the Japanese would investigate the possibility of setting up a database.

3. REVIEW/SUMMARY OF ACTIVITIES

Dr Goddeeris, David Jewson, Rolf Kipfer, Dr Kawai, Professor Wada (summaries to follow).

4. 1996 RESEARCH SCHEDULE FOR BICER ACTIVITIES

Agreed that the following schedule and use of ship time in 1996 be implemented:-

- (i) Sediment mooring:- 2 sequential traps be moored at the end of November and that 2 days use of the Vereschagin would be required (Switzerland). Professor Grachev to act as coordinator.

The Swiss would also require a ship (Vereschagin) for 3 weeks from the last week in June to remove the sediment trap and to take small cores (in gaps not already taken in by the UK). Participants would include Werhli and Granina.

Fish sampling Moscow When which boat?

2 weeks from the last week in May - sampling (Granin)

- (ii) David Jewson would participate in an ice expedition in February/March requiring use of the Vistihod and also sampling at the end of May/June..
- (iii) A group led by Dr Goddeeris to Frolicha Bay would require the Vereschagin for 2 weeks from the 2nd or 3rd week in June. The fish group from Moscow, also on expedition at this time could use the Ulan-Ude. The Swiss microstructure group (May/June) could use the Titov.
- (iv) Expeditions led by the Japanese would take place from mid July through in August.
- (v) Regular sampling would continue on the lake (UK/Russia).
- (vi) Boat time required in December (96) to remove sediment traps.

Professor Wada (Japan) had enquired whether anyone wished to participate in their project.

Agreed that final research proposals be submitted to Dr Kipfer by the end of the year.

5. ANY OTHER BUSINESS

Aquarium

Agreed that the use of aquarium facilities would be advantageous and noted the possibility of sharing such facilities with an Institute in Baikalsk as well as the use of an apartment.