

Originally Processed With FOIA(s):
2005-0336-F

FOIA Number:
2005-0336-F

FOIA MARKER

**This is not a textual record. This is used as an
administrative marker by the George Bush Presidential
Library Staff.**

Record Group/Collection: George H.W. Bush Presidential Records
Collection/Office of Origin: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files - Country Files

OA/ID Number: 62067
Folder ID Number: 62067-007

Folder Title:
International: USSR [2 of 2] [1991]

Stack:	Row:	Section:	Shelf:	Position:
	0	0	0	0

"CORRESPONDENCE TRACKING"

JUL 15 1991

TYPE: INFORMATION

DOCUMENT NUMBER: 9121499

FROM: VELIKHOV, E.P.: I.V. KURCHATOV INSTITUTE OF ATOMIC ENERGY

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/22/91

SUBJECT: LETTER TO VELIKHOV FROM WALTER GIBSON REGARDING THE
STATUS OF THE JOINT PROGRAM ON THE DEVELOPMENT AND
APPLICATIONS OF X-RAY & NEUTRON OPTICS AND SEVERAL
ENCLOSURES OF THE WORLD LABORATORY.

ASSIGNED TO:

*Reaction: Karl Erb
John R. Bell
Comments
please
JRS*

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTI DUE DATE:

DATE COMPLETED: _____

COPIES TO: **D. Allan Bromley**
INTERNATIONAL/POLICY

WHITE HOUSE TRACKING #:

CONTACT PERSON:

CLOSED

REMARKS: Gibson seems to be doing fine - no evidence that he needs
our help. *K&E 7/5/91*

*An exceptionally enthusiastic report - Gibson is doing fine.
As for the "World Laboratory" we need to keep alert. The
USSR scientists and politicians see this as an entrée to
U.S. (gov't) funds, as was clear in our recent talks in USSR.
No comment. EW 7/13/91*

DATE RECEIVED: 05/23/91

FILE: P-INTERNATIONAL-USSR

*An excellent and worthwhile effort. We should
certainly be supportive wherever possible, but nothing
immediately suggests itself. WOB 7/18/91.*

THE WHITE HOUSE
WASHINGTON

July 24, 1991

Dear Walter:

Many thanks for sending me the copy of your letter to Academician E.P. Velikhov and the copy of your joint paper **New Neutron Optics with Wide Angular Aperture** written by yourself and Professor Kumakhov. This looks like a very interesting and important new development and I congratulate you on it.

As you know, we now have a formal Joint Commission on Basic Research established bilaterally between the US and the USSR. I serve as the Chairman of the American side and Academician Nikolay Laverov, who is Chairman of the State Committee for Science and Technology, Vice President of the Soviet Academy of Sciences, and Deputy Prime Minister, serves as Chairman of the Soviet side. We have had only one meeting in Washington something over a year ago and, most recently, in May of this year met in Moscow.

In contrast to some of the earlier bilaterals, the focus now is on a bottoms-up approach where we are doing all that we can to encourage the development of individual-to-individual and institution-to-institution linkages with the thought that the Commission's primary function is to facilitate such interactions. In the past, the activities had much more of a top-down character where the areas of cooperation were decided upon by very high level committees and then implemented through existing agencies in the two countries.

The project in which you and Professor Kumakhov are involved seems like an excellent one that draws on special expertise from both sides. So let me only say that if we on the Commission can be of any assistance to you as you proceed with these activities, please do let us know.

It has been much too long since our paths crossed but it is clear from this material that you are having an exciting time at Albany.

With warmest best wishes,

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'D. Allan Bromley', with a long, sweeping horizontal line extending to the right.

D. Allan Bromley
The Assistant to the President
for
Science and Technology

Professor Walter M. Gibson
Department of Physics
State University of New York at Albany
Albany, New York 12222

UNIVERSITY AT
ALBANY
STATE UNIVERSITY OF NEW YORK

RECEIVED

91 MAY 23 P 5: 07

OFFICE OF THE
DIRECTOR

April 22, 1991

Department of Physics
518 442-4501
Fax: 518 442-5260

Dr. E.P. Velikhov, Director
I.V. Kurchatov Institute of Atomic Energy
Moscow 123881, USSR

Dear Dr. Velikhov:

I am writing you to summarize the status of our joint program on the development and applications of X-ray and neutron optics and to indicate some of the discussions that Professor M.A. Kumakhov and I have had with scientists and administrators during his two month visit in the United States.

Professor Kumakhov arrived in the United States on February 22, 1991 together with Dr. I. Ponomarev and Ms O. Filina. Dr. Ponomarev has been very active and effective in helping us to establish an X-ray optics laboratory and in setting up and conducting a demonstration of X-ray focussing with a Kumakhov Lens (as I have called it). Dr. Ponomarev will remain in the United States for two more months (he will be joined for this period by Dr. M. Gubarev). Ms Filina, (who joined Professor Kumakhov on this trip at my suggestion) has been invaluable in translating for the large amount of written and verbal communication that we have been involved with during this period.

Almost immediately after his arrival we began, with Professor Kumakhov, to visit university, government and industrial research centers to describe the new optics in order to: a) Inform specialists about the work that had been done in the Soviet Union; b) Provide opportunity for public examination and critical review of the optics by recognized specialists; c) Identify the most important areas of application of the optics in science, medicine and industry and; d) Begin to identify possible collaborators with whom to pursue selected applications.

This has been a most exhausting, exhilarating and productive experience. We have talked individually or in small groups of two or three with about sixty specialists, Professor Kumakhov (sometimes assisted by me) has given 14 formal presentations to groups averaging 20 or more in addition to a major press conference and a number of meetings with university and governmental administrators. The response has been enthusiastic and positive. If you are

Physics 215
Albany, New York
12222

interested, Professor Kumakhov, I am sure, would be happy to share with you detailed lists of people that we have talked with. I have attached some copies of some of the newspaper articles and a few of the presentation announcements.

Perhaps it would be useful for me to list the major places that we have visited and some of the collaborations and programs that have been initiated.

BROOKHAVEN NATIONAL LABORATORY (two visits)

We met with Denis McWhan, Director of the National Synchrotron Light Source; John Axe, Assistant Director for Basic Energy Services, and Director, High Flux Beam Reactor; Darrel Joel, Chairman, Medical Department and F. Avraham Dilmanian, Head, Medical Physics Program. We have already planned joint studies of the use of Kumakhov Optics in the Stanford-Brookhaven Angiography project (with the encouragement and assistance of Dr. E. Rubenstein of Stanford who is leader of the project and who we met with in Stanford). We also will be conducting measurements (as early as the first week in May) on the Synchrotron in a X-ray microanalysis experiment and some initial studies of thermal neutron focussing.

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (three visits)

We met with the very strong X-ray groups headed by R.D. Deslattes, Chief, Quantum Metrology Division, and T. Lucatorto, Group Leader, Photon Physics Group as well as the National Cold Neutron Research Facility headed by H.J. Prask and J.M. Rowe. We are planning some single fiber or fiber bundle studies soon with cold neutrons (the Scientific Director of the Advanced Neutron Source Project at ORNL, Dr J.B. Hayter has offered to support these studies)

OAK RIDGE NATIONAL LABORATORY

Meetings with B.R. Appleton, Associate Director for Physical Sciences; J.B. Hayter, Scientific Director, Advanced Neutron Source; and B.C.. Larson, Section Head, X-ray diffraction led to two days of detailed discussions resulting in tentative agreements for collaborative efforts to design optics for the Advanced Neutron Source (to be built at ORNL beginning in 1995) together with Hayter and for the focussed beam X-ray facility at the Advanced Light Source to be built at Argonne National Laboratory together with C.T. Sparks from ORNL who is in charge of that project.

STANFORD UNIVERSITY

We spent several days at Stanford University meeting with people from Stanford Synchrotron Radiation Laboratory

(SSRL), the Department of Physics, Electrical Engineering and the School of Medicine. Of particular note are invitations from H. Winick, Deputy Director for joint work at SSRL to investigate radiation damage effects, and X-ray microscopy, from E. Rubenstein for angiography studies at NSLS (as noted above) and from A. Macovski for exploration of the use of Kumakhov optics for medical imaging of soft tissue. Professor Macovski is the recognized US expert on medical imaging (including MR and ultrasound). He indicated that these optics may very well revolutionize mammography and other soft tissue imaging of early stage cancer formation.

LAWRENCE BERKELEY LABORATORY

We met primarily with David Attwood, Director, Center for X-ray Optics and members of that center. That Center has been in existence since 1985 and has developed some and phase plate lenses for microscopy, multilayer reflective optics and grating optics for spectroscopy and other applications. These are all complementary optics to the Kumakhov optics and Dr. Attwood expressed interest in working with us on X-ray optics studies and applications of mutual interest.

HARVARD UNIVERSITY

Meetings with J. Golovenchko at the Department of Physics and P. Gorenstein at the Harvard-Smithsonian Center for Astrophysics has resulted in an agreement to carry out a preliminary design for an X-ray Telescope for 10-100 Kev photons. We have already been joined in this effort by Dr. M Joy of the NASA Marshall Space Flight Center in Huntsville Alabama.

NATIONAL INSTITUTES OF HEALTH

During two visits to NIH we have met with program leaders at the National Heart Institute (A. Berson), the National Cancer Institute (F. Mahoney and J vander Geijn) and the Interinstitute Technology Development Center (M. Eden, H. Eden). We also met with G. Goldstein, Program Director for Medical Science of the Department of Energy. These meetings have given us considerable information on the programs, funding and research strategies and key players for X-ray imaging and X-ray and neutron therapy in the relevant US federal agencies. We now have met the central funding administrators who will be likely to manage proposals and have obtained a list of additional key people to contact. In these meetings as well as others we made use of a video tape recorded demonstration of X-ray focussing that I understand has also been shown on Soviet television.

We also talked with people at Lawrence Livermore Laboratory, Naval Research Laboratory, Rensselaer Polytechnic Institute, Catholic University, IBM, AT&T Bell Laboratories, General Electric, Kevex Instruments, Scientific Research Laboratory, Adelphi Technology, Huges Optical Systems and of course, The University at Albany where eleven faculty, four technical staff and a number of students have already committed to work as active members of the Center for X-ray Optics at Albany.

Finally, I would like to report on a long and detailed discussion that we had with Professor Wolfgang K.H. Panofsky at Stanford University. Incidentally, he sends you his kindest regards. After discussing the new optics, about which He was very perceptive and enthusiastic, and some puzzling channeling phenomena, we discussed the World Laboratory. Professor Panofsky was extremely interested in our experience in setting up an Institute in Moscow as part of the Moscow Branch of the World Laboratory. He asked for details both about the Moscow Branch and about the World Laboratory organization which I promised to send him. He would like to discuss this with you if the occasion to do arises. I also got an indication of strong interest from Alvin Trivelpiece, Director of Oak Ridge National Laboratory. Science Magazine has also expressed interest in publishing a major article on the World Laboratory. A discussion of this exciting and important concept seems to be starting in the US. I will be looking forward to discussing this with you during my visit to Moscow in May and June if that is possible.

This note is over long but I hope that you can get a sense from it of the excitement and momentum that the X-ray and neutron optics is generating in the United States as a result of our joint effort. I am dedicated to helping it become an effective tool for scientific, medical and industrial progress in the Soviet Union, the US and throughout the world. I am convinced that the benefits from doing this well and in the right way are significant in terms of economic growth and stability as well as political and social stability and understanding.

Thank you for your support and encouragement.

Sincerely,

Walter M. Gibson

Walter M. Gibson

encl.

Nuclear Methods Group Seminar

Wednesday, April 17, 11.00a.m.

New Neutron Optics with Wide Angular Aperture

Prof. Muridan A. Kumakhov

Director, Institute for Roentgen Optics Systems, Moscow, USSR
Head, Radiation Physics, Kurchatov Institute of Atomic Physics, Moscow

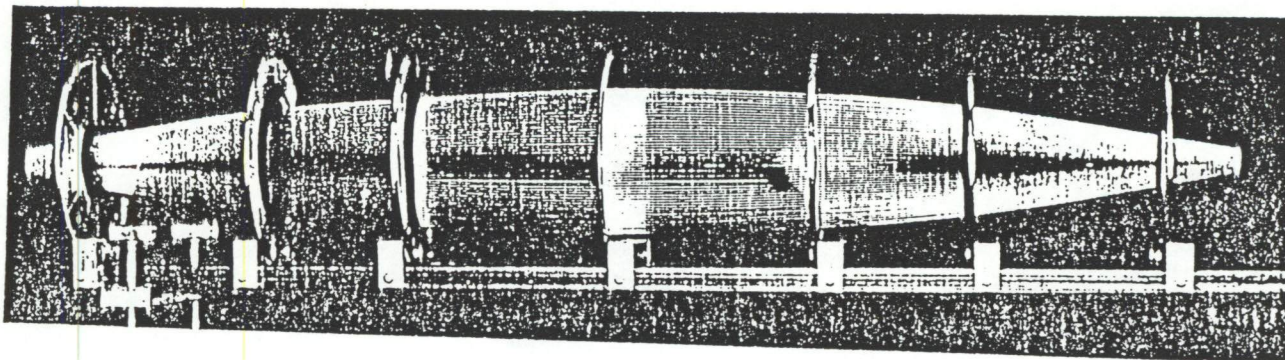
and

Prof. Walter M. Gibson

Physics Department, State University of New York at Albany

Using special optical geometric structures which take advantage of high reflectivity of cold and thermal neutrons from smooth surfaces at small incident angles, neutron beams can be focused and controlled. Although most of the properties of these new optics have been demonstrated with photons in the X-ray region, preliminary tests with thermal neutrons show that this experience can be translated to neutrons if special high purity materials are used in lens construction. Principles and some applications of these new optics will be discussed.

Old Conference Room B100, Reactor Bldg. Wednesday April 17, 1991
11.00 a.m. (NIST contact: D.F.R. Mildner 975-6366)



*National Institute of Standards and
Technology*

Seminar Announcement--Please Post

The Kumakhov Lens: A New X-Ray and Neutron Optics for Medical Imaging and Therapy

Dr. M. A. Kumakhov
Institute for Roentgen Optical Systems, and Kurchatov Institute for
Atomic Energy, Moscow

and

Dr. W. Gibson
Center for X-Ray Optics
SUNY, Albany

**10:00 a.m.
Thursday, April 18, 1991
BEIP Conference Room, NIH
Building 13, Room 3W07**

A new optics for x-rays and neutrons with large angular aperture and wide energy bandwidth will be discussed. These optics, under development at the Institute for Roentgen Optical Systems in Moscow and the Center for X-Ray Optics in Albany, are based on multiple total external reflection in special geometric systems and have the ability to control and focus x-rays from 600 ev to 100 kev, as well as subthermal neutrons. Overall efficiency of greater than 40% over collection angles as large as 30 degrees from small isotropic sources allows production of high x-ray intensity in highly parallel beams and in focussed spots. The possible use of such beams for radiation therapy and medical imaging will be discussed.

National Institutes of Health

SPECIAL SEMINAR

APPLICATIONS OF X-RAY OPTICS IN MEDICINE,
SCIENCE AND INDUSTRY

BY

Professor Muridan A. Kumakhov
Institute for Roentgen Optical Systems
and
I.V. Kurchatov Institute of Atomic Energy
Moscow, USSR

Friday, April 19, 1991

1:00 P.M.
STATE UNIVERSITY OF NEW YORK AT ALBANY

Physics Room 129

ALL ARE WELCOME

THE DEPARTMENT OF PHYSICS
THE CATHOLIC UNIVERSITY OF AMERICA

SPECIAL SEMINAR

PROFESSOR M.A. KUMAKHOV

Kurchatov Institute of Atomic Energy

Moscow, USSR

Channeling Radiation of Electrons Passing
Through Crystals - Discovery,
Development and Prospective Uses

ABSTRACT

Professor Kumakhov is the theoretical discoverer (in 1976) of channeling radiation (the radiation given off by electrons or positrons as they move through the channels of a crystal lattice). Experimentally, this radiation was observed in 1979: for low energies at Livermore (Berman, Datz et al.) and for high energies at Erevan (Agan'yants et al.) and at Stanford (Avakyan et al.). The further development of this topic has taken place in the Soviet Union mainly theoretically (about 300 publications) and in the U.S., France, and Denmark mainly experimentally (about 100 publications). Channeling radiation is the most intense known radiation source for X and γ rays, rivaling synchrotron radiation X-rays while being generated by electrons of more than two orders of magnitude lower energy.

Wednesday, April 17, 1991

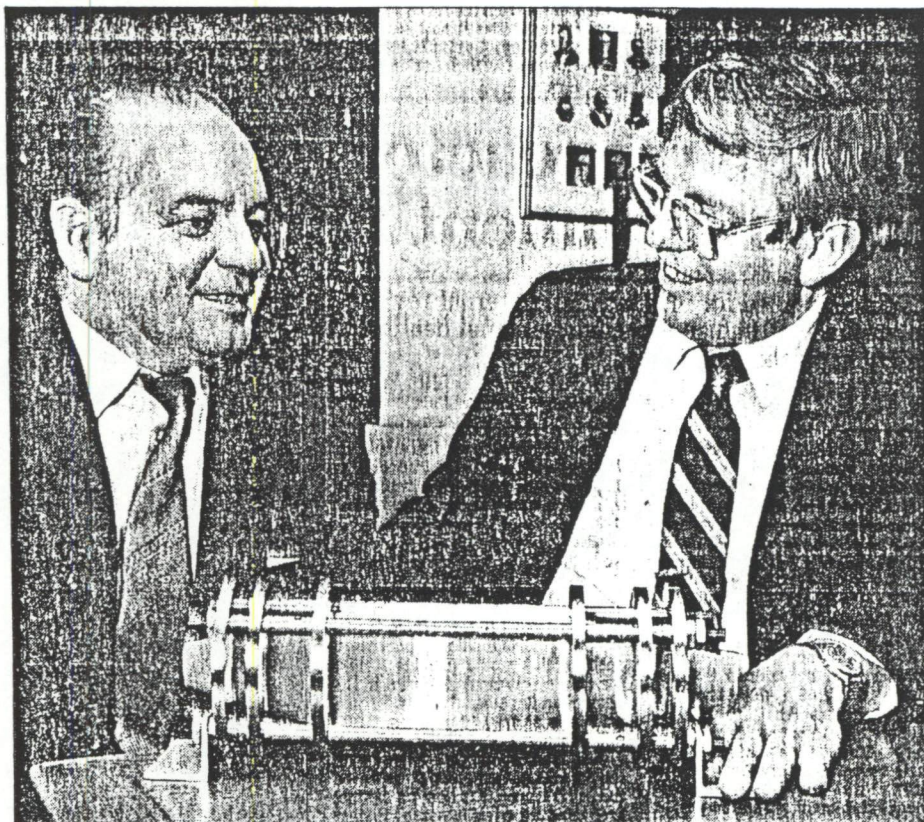
3:00 PM

Room 108 Hannan Hall Herzfeld Auditorium

COFFEE SERVED AT 2:45 PM

THE DAILY GAZETTE

The Independent Voice of the Capital Region



JIM CASSIN Gazette Photographer

Soviet physicist Muradin A. Kumakhov, left, and SUNYA Physics Professor Walter Gibson unveil the "Kumakhov lens," a new X-ray controlling

device. Kumakhov, who developed the lens, and Gibson will work together to fine-tune the technology for research and medical applications.

Soviet/SUNYA X-ray project could pay off in many ways

By KAREN ROACH
Gazette Reporter

ALBANY — Scientists from the Capital District and throughout the United States said new X-ray controlling technology, developed by a Soviet physicist and expected to be fine-tuned in a joint project with the State University at Albany, holds tremendous potential for both research and medical applications.

Muradin A. Kumakhov, of the I.V. Kurchatov Institute of Atomic Energy in Moscow, developer of the "Kumakhov lens," unveiled the device yesterday at a news conference with SUNYA Physics Professor Walter Gibson. Head the newly formed Center for X-ray Optics, Gibson was chosen by the Soviet scientist to help develop the technology further.

"You understand there will be a line of people outside looking for these things," said Timothy H. Hayes, chairman of the physics department at Rensselaer Polytechnic Institute.

The Kumakhov lens is filled with thousands of hollow fibers that guide X-rays to converge upon one point, or along a parallel course. The X-ray beam that emerges from the other end can be focused on a single spot and is 100 times more intense than

the divergent beams scientists normally have had to work with.

"The research implications are substantial," Hayes said. "The device is so simple in concept that it's hard to imagine what could go wrong that would make this not produce great benefits."

Kumakhov and Gibson said the medical benefits of the technology could be tremendous, because radiation can now be focused in the treatment of cancerous tissue without endangering healthy tissue. Inability to control X-rays has been a major drawback in their use to diagnose and treat tumors, especially in the brain, where surrounding tissue is so sensitive.

Gibson said yesterday, however, that it may take some time for the technology to be ready for medical applications. "I think it's quite a long time before this will appear in a doctor's office or in a local hospital. I hope it's not a long time, however, before this is being used in medical research centers, and we are actively pursuing collaborations and partnerships in developing those kinds of applications."

Other scientists point to the research potential of being able to condense X-rays in the laboratory. Now,

scientists wishing to experiment with intense X-rays have to use a synchrotron, a \$25-\$50 million electron accelerator only available at three research facilities in the United States.

"There's a whole community of scientists who work with laboratory sources of X-radiation who are excited about the possibility of being able to make that radiation more intense," said David Mosher, a senior staff scientist with the Naval Research Laboratory in Washington, D.C.

Mosher has experimented with X-rays in his studies on how satellites would be affected by radiation emitted from the detonation of nuclear warheads in space. "This certainly is a new way of handling X-rays, which could potentially be very important," he said.

The Center for X-ray Optics at SUNYA will work with the newly formed Institute for Roentgen Optical Systems in Moscow to develop the lens and its applications.

Gibson and his son have established a private company, X-Ray Optical Systems Inc. in Voorheesville, to manufacture the optical components for the lens for scientific as well as commercial uses.

The New York Times

NEW YORK, WEDNESDAY, APRIL 3, 1991

Technology

A new type of X-ray lens that can be used in manufacturing a new generation of extremely powerful computer chips has been developed by an American and a Soviet scientist. [D3.]

New Soviet-U.S. X-ray Lens Is Developed

By JOHN MARKOFF

An American and a Soviet scientist said yesterday that they had developed a new type of X-ray lens capable of focusing powerful beams that can be used in manufacturing a new generation of extremely powerful computer chips. The lens can also be used in a variety of other scientific and medical applications.

Muradin A. Kumakhov, a physicist at the I. V. Kurchatov Institute of Atomic Energy in Moscow and Walter Gibson, director of the Center for X-Ray Optics at the State University of New York at Albany, said that Soviet researchers had created the lens by bundling thousands of tiny hollow glass capillaries that guide X-rays. The bundling permits X-rays to be focused in tight beams or to be projected in parallel. Normally, X-rays tend to diverge outward from a source and to lose intensity over distance.

Developed Over Five Years

The basic technology was developed over the last five years by Dr. Kumakhov and other Soviet researchers. The Soviet and American scientists recently formed a partnership to commercialize X-ray optics technology. "It will take some development effort," Dr. Gibson said, "but we don't see any barriers to applying this to manufacturing semiconductors."

A number of United States and Japanese corporations have been exploring the use of X-rays as a light source for making extremely dense

semiconductor chips.

The scientists call the new device a Kumakhov lens and demonstrated a working model consisting of 2,000 glass capillaries. Physicists have long known that X-rays can be reflected off solid smooth surfaces at a very low angle. However, Dr. Kumakhov first suggested the "bundling" of thousands of capillaries to focus and control X-rays.

Finer Than a Human Hair

Although the researchers said they had fabricated capillaries finer than a human hair, about 70 microns, the capillaries are generally several hundred microns in diameter.

Both the Japanese corporations and the International Business Machines Corporation have been developing semiconductor lithographic systems using an extremely bright X-ray source known as synchrotron radiation. Several start-up companies in the United States have also been experimenting with alternative laser-based X-ray sources.

Industry researchers said yesterday that information about the Kumakhov lens was preliminary, but that such a technique, or a variation, might have applications in both synchrotron and single-source X-ray lithography applications.

Great Deal of Debate

"The basic physics of what they say is sound," said John M. Warlaumont, manager of X-ray and ion beam research at I.B.M.'s Yorktown research laboratory. "They've done research that has caught our interest. It's worth investigating."

There is still a great deal of debate over how soon X-ray technologies will be needed for advanced semiconductor chips. It was once widely thought that conventional light sources lacked the resolving power to produce chips as dense as 64 million bit memory devices. But now many in the industry believe that advances in conventional semiconductor manufacturing techniques will facilitate going at least to 64 million and perhaps to 256 million bit memory chips without relying on X-rays.

That would be desirable because using X-rays would require that exotic mask-making techniques be developed, a thorny problem. Indeed, many in the industry are skeptical about X-rays as a result.

In addition to semiconductor manufacturing, Dr. Gibson said yesterday in a telephone interview, the Kumakhov lens could potentially be used to treat localized tumors, in the diagnosis of cardiovascular malfunction, in three-dimensional imaging and in analysis of complex biological and other systems and to improve many other processes in which X-rays are used.

Dr. Gibson said that he had worked with Dr. Kumakhov for almost two decades. They have studied the channeling of high-energy particles through crystals, for example.

Applications are pending for both United States and international patents on the work done so far by the Soviets. Dr. Gibson said that with his son David he had set up a company, X-Ray Optical Systems Inc., in Voorheesville, N.Y., and that Dr. Kumakhov was a consultant to the company.

35 cents
Albany, N.Y.

THE TIMES UNION

Taking a closer look

U.S., Soviet scientists develop new X-ray optics technology

By Mark S.R. Suchecki

Staff writer

ALBANY — Physicists from the State University at Albany and a Soviet atomic energy institute Tuesday jointly trumpeted a new X-ray optics technology that may revolutionize the diagnosis and treatment of tumors and contribute to the development of a new generation of computer chips.

The technology controls and focuses X-rays and neutrons by means of a special lens consisting of about 2,000 minute glass capillaries. It can concentrate extremely high densities of X-rays in small spots.

"We're very enthusiastic about the potential applications," said Walter Gibson, physics professor at SUNYA. "Indeed, we feel that every area of scientific, medical and industrial applications of X-rays will be affected by the introduction of the new optics."

Gibson, director of the newly created Center for X-ray Optics at Albany, introduced the technology at a news conference with Muradin A. Kumakhov, the inventor of the special X-ray optical system.

Kumakhov initially worked out the technology with fellow researchers at the I.V. Kurchatov Institute of Atomic Energy in Moscow. He and Gibson, longtime research associates, have formed a partnership to further develop the technology and develop commercial applications.

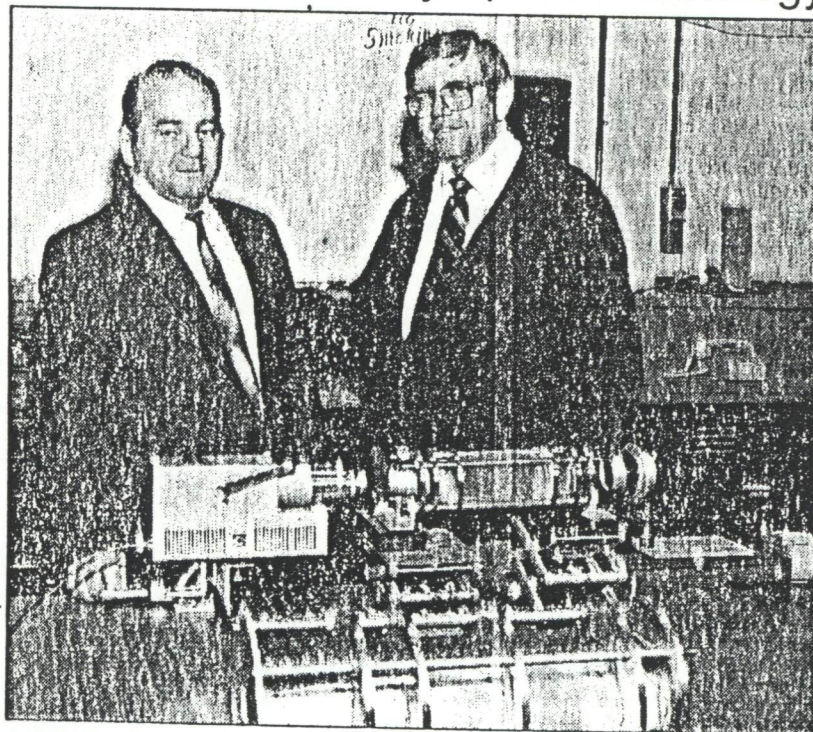
According to Gibson, the X-ray optics "will provide the possibility for new investigations, most of which we don't have any idea about because they will evolve as people begin to think about X-rays in the context of being able to control them, and that's entirely new."

That the technology makes possible the concentration of X-rays in small spots holds the promise, among other things, of far more precise irradiation of tumors.

X-ray equipment used now is imprecise and its use can result in healthy tissue receiving more radiation than cancerous tissue.

"I think it's quite a long time before this will appear in a doctor's office or a local hospital," Gibson said. "I'm saying that because I have a sense that medical developments take a long time."

According to Kumakhov, the technology also promises far greater image resolution, which could lead to earlier detection of cancers and the use of substantially lower doses of radiation for diagnostic purposes.



JOINT VENTURE — Muradin A. Kumakhov, left, and Walter Gibson display new X-ray equipment Tuesday that could revolutionize the diagnosis and treatment of tumors.

The technology meshes well with the search by the computer industry for ever-smaller integrated circuit components to build more powerful computers, the researchers said.

Computer manufacturers such as IBM have already explored the use of X-rays to produce circuit lines, said Gibson, a professor of physics at SUNYA since 1976.

A joint research program on the technology is to be conducted at the Center for X-ray Optics and the Institute for Roentgen Optical Systems in Moscow, according to university officials, who

will provide support for close collaboration between Soviet and American scientists. Gibson said the collaboration between the two scientists developed gradually over a long period of correspondence and visits.

U.S. and international patents have been sought for work done by Soviet scientists. A Voorheesville-based company, X-Ray Optical Systems Inc., with Gibson as a director and his son David as president, has been established to pursue commercial applications.

Kumakhov is a consultant to the firm.

THE WALL STREET JOURNAL

© 1991 Dow Jones & Company, Inc. All Rights Reserved.

WEDNESDAY, APRIL 3, 1991

World-Wide

* * *

Soviet and U.S. physicists unveiled a new lens for X-rays that could reduce the cost of making advanced computer chips, improve medical diagnosis and aid in the treatment of localized tumors. (Story on Page B8)

* * *

TECHNOLOGY & MEDICINE

Soviet, U.S. Physicists Unveil X-Ray Lens That May Have Computer, Medical Uses

By LAURENCE HOOPER

Staff Reporter of THE WALL STREET JOURNAL

Soviet and American physicists unveiled a lens for X-rays that could reduce the cost of making advanced computer chips, improve medical diagnosis, and aid in the treatment of localized tumors.

The lens, a six-inch long collection of tiny glass tubes, seems to solve cheaply a problem that has dogged researchers for years: how to create an intense, focused source of X-ray radiation. But while other scientists confirmed the basic validity of the physicists' work, they cautioned that further experiments are needed to determine its commercial viability for several possible uses.

"The physics is correct, these guys are bright—there's nothing fundamentally wrong anywhere," said Gwyn Williams, a physicist at Brookhaven National Laboratory on Long Island, N.Y. "What's needed now is a lot more basic research and development on possible applications. It's so early to be announcing something like this."

Far-Reaching Implications

Walter Gibson, a physicist at the State University of New York at Albany and one of the X-ray lens' developers, gave a seminar on the new technology at Brookhaven last month.

If the new lens proves out, it will have far-reaching implications in several fields. In the computer industry, for example, the tiny electrical circuits on silicon chips are etched in much the same way photographs are developed—by shining light through a "mask" onto a light-sensitive material. But for circuits to get tinier and denser,

experts expect X-rays will have to replace light as the source of illumination for future generations of chips.

Until now, research on X-ray lithography, as such a chip-making process is called, has been stymied by the difficulty of channeling enough intense X-rays to expose a chip quickly. As a result, most efforts have focused simply on making sources of X-rays more powerful—a very expensive approach that has led to the building of several synchrotrons, huge ring-shaped devices that produce intense X-rays and can cost as much as \$50 million each. This approach has also led smaller chip-makers to fret that only giant companies will be able to afford to make the dense chips of the future.

But now, said Dr. Gibson, the prospect of an effective X-ray lens should level the playing field by allowing chip makers to use conventional X-ray sources for lithography. "This makes [X-ray lithography] available for many small manufacturers that can't afford to spend huge sums of money," he said.

Further Exploration

A spokesman for International Business Machines Corp., which has already built a synchrotron in East Fishkill, N.Y., and is considered a leader in X-ray lithography, said the company had been briefed by Dr. Gibson on the new X-ray lens. "It falls into the category of ideas that are important to explore further," the spokesman said. He noted that producing intense X-rays is only one of several major problems faced in X-ray lithography, and that an X-ray lens would magnify the abilities of a synchrotron.

In the medical arena, focusing X-rays would likely allow doctors to take more precise pictures of small features like arteries. Scientists said the lens would also aid in cancer therapy, because the ability to concentrate X-rays in a particular location would greatly reduce the dangers of radiation therapy. Current X-ray therapy often exposes healthy tissue to more radiation than is absorbed by a local tumor, Dr. Gibson said.

Moreover, no further experimentation needs to be done to prove the value of the lens in therapy, said Dr. Williams of the Brookhaven National Laboratory. "They have demonstrated that they can concentrate X-ray energy," he said. "I'm satisfied that [the lens] would be useful there."

On a more mundane level, effective X-ray focusing might mean, for example, that dental patients wouldn't need to wear bulky lead shields when they get their teeth X-rayed. "In the future, every machine in which X-rays are used will include some [of the new] optics," said Dr. Gibson.

The X-ray lens, invented in the early 1980s by a Soviet physicist named Muradn Kumakhov, doesn't use any radical technology. The main principle employed by the device—that X-rays can be reflected off smooth surfaces at very slight angles—has been known for decades, and is the basis for several large X-ray telescopes.

Dr. Kumakhov's insight was that the phenomenon could channel X-rays through large bundles of tiny glass fibers, each of which would bend a small amount of X-ray energy by "bouncing" it off the fiber's smooth walls. By tapering the fibers toward one another, the energy could then be focused on a small spot.

35 CENTS
SCHENECTADY, N.Y.

TUESDAY
APRIL 2, 1991

THE DAILY GAZETTE

The Independent Voice of the Capital Region

Soviet physicist to unveil new X-ray device at SUNYA

By KAREN ROACH
Gazette Reporter

ALBANY — A Soviet physicist who has developed new X-ray and neutron controlling technology, which is expected to revolutionize the treatment of localized tumors and the capability of computer chips, will

unveil the technology at the State University of New York at Albany this afternoon.

Muradin A. Kumakhov of the I.V. Kurchatov Institute of Atomic Energy in Moscow has asked SUNYA Professor Walter M. Gibson to collaborate in developing the technology through a U.S.—Soviet research program.

"We were approached by Kumakhov during my spring visit to the Soviet Union," Gibson said in an interview yesterday. "Because of our long acquaintance and because of his knowledge of my background, he asked if we'd be interested in developing this technology further."

The critical element in the technology is what Gibson calls the "Kumakhov lens." The lens consists of thousands of tiny glass capillaries that can focus X-ray beams into convergent or parallel courses.

One of the most dramatic uses of the new technology is expected to

come in the treatment of inoperable tumors.

Current equipment used for medical applications does not have the capability to focus the X-ray beams, and often healthy tissue receives more radiation than the cancerous tissue that's being treated.

Kumakhov's technology is also expected to have far-reaching implications for the computer industry, Gibson says. X-ray optical devices could reduce the size of integrated circuit components, producing more powerful computer chips.

Gibson and Kumakhov have shared an interest in "particle channeling" since 1970, when Gibson was doing research at AT&T's Bell Laboratories.

Kumakhov, then a graduate student at Moscow State University, had also become interested in the field and the two have since collaborated on several projects.

INTERNATIONAL CENTRE FOR SCIENTIFIC CULTURE - WORLD LABORATORY

Purposes

1. To promote East-West and North-South technical and scientific co-operation for research without secrecy and without frontiers.
2. To favour the free circulation of scientific information, scientists and researchers, in particular by means of fellowships and visiting scientists programmes.
3. To carry out projects in the scientific, technical and medical fields, in particular for the benefit of the developing countries, associating thereto researchers from other organizations and institutions without any discrimination, whether geographical, political, ideological, religious or racial.

Structure

The organs of the International Centre - World Laboratory are the following:

- (a) The General Assembly
- (b) The President
- (c) The Executive Committee
- (d) The Scientific Committee
- (e) The Committee of Project Managers
- (f) The Auditing Body

Associated Institutions and Geographical Coverage

The following institutions are amongst the founding members of the International Centre - World Laboratory:

Academia Sinica (Academy of Sciences of the People's Republic of China)

African Academy of Sciences

Third World Academy of Sciences

International Centre for Scientific Culture "Ettore Majorana"

International Centre for Theoretical Physics (International Atomic Energy Agency)

International Centre of Insect Physiology and Ecology (Nairobi)

Permanent inter-state Committee for Drought Control in the Sahel (CILSS) grouping the following countries: Burkina Faso, Cape Verde, Chad, Gambia, Guinea-Bissau, Mali, Mauritania, Niger, Senegal

Foundation Jean Monnet for Europe

Foundation Galileo Galilei

Institute of Fundamental Studies - Sri Lanka

Through the above associated Institutions, about 380 institutes and laboratories in 86 countries participate in the activities of the International Centre - World Laboratory.

Officers and Composition of Constituent Bodies

President of the International Centre - World Laboratory

Professor Antonino Zichichi (Italy)

Executive Committee

Professor Henri Rieben (Switzerland), University of Lausanne, economist, founder and Director of the "Centre de Recherches Européennes"

Professor Blaise Knapp (Switzerland), jurist, former Dean of the Faculty of Law of the Geneva University

Professor Pietro Adonnino (Italy), University of Rome, jurist and economist, Chairman of the People's Europe ad hoc Committee of the European Community in Brussels

Scientific Committee

Professor Antonino Zichichi (Italy), President

Professor Abdus Salam (Pakistan), Nobel Prize for Physics, Vice-President

Professor Sam C.C. Ting (China-USA), Nobel Prize for Physics, Vice-President

Professor S.K. Bergström (Sweden), Nobel Prize for Medicine

Sir John Eccles (Australia), Nobel Prize for Medicine

Professor L. Esaki (Japan), Nobel Prize for Physics

Professor Michel Gourdin (France), University of Paris

Professor Mervyn Hine (United Kingdom), former Director for Applied Physics, CERN

Professor R. Hofstadter (USA), Nobel Prize for Physics

Professor H. Isliker (Switzerland), Director of the Institute of Biochemistry, Lausanne

Professor T.D. Lee (China-USA), Nobel Prize for Physics

Professor R.L. Mössbauer (RFA), Nobel Prize for Physics

Professor Giovanni Motta (Italy), University of Naples

Professor Donato Palumbo (Italy), Director of the Programme for Nuclear Fusion of the European Community, Brussels

Professor Cyril Ponnampерuma (Sri Lanka), Director of the Institute of Fundamental Studies, Colombo

Professor K.M.B. Siegbahn (Sweden), Nobel Prize for Physics

Professor Bernard Vittoz (Switzerland), President of the "Ecole Polytechnique Fédérale" (EPF), Lausanne

Professor E.P. Wigner (USA), Nobel Prize for Physics

Professor Zhou Guangzhao (China), President of the Academia Sinica

ICSC - WORLD LABORATORY



SYNTHESIS

Lausanne, Palais de Rumine, Switzerland

ICSC(*) - WORLD LABORATORY

- *The World Lab is a Non-Governmental International Organization, recognized by the United Nations. Its sole purpose is to promote and realize projects of collaboration in Science, Technology, Medicine and other fields of human knowledge, without secrecy and without frontiers. It was established in Geneva (July 1986) thanks to a group of Scientists and Institutions, as a follow-up of the ERICE STATEMENT, signed by 10'000 Scientists, the world over.*
- *Freedom and a minimum of bureaucracy are the basic principles of the World Lab structure. In accordance with these principles, the World Lab administration is organized in such a way as to avoid centralization burdens. Each country takes care of its contribution for the project, or part of it, which is implemented in its own area.*

(*) International Centre for Scientific Culture

- *The World Lab is not a funding Agency for projects to be implemented by other Institutions. The World Lab is its own source of projects to be directly carried out, without need of intermediaries.*
- *The President's Office is in Lausanne (Switzerland), where the main Coordination Centre is located.*
- *There are World Lab Branches, in Moskow for the USSR, in Beijing for the People's Republic of China, in Trieste for Central Europe, in Erice for the Mediterranean Area. Various offices are located in the following countries: Argentina, Brazil, India, Pakistan, and Sri Lanka.*

10'000 Scientists: ERICE STATEMENT

*Science and Technology
without secrecy and without frontiers*

**WORLD
LABORATORY**

PROJECTS

EAST-WEST-NORTH-SOUTH
as many countries as possible

Purposes of the World Laboratory

- 1. To promote East-West and North-South technical and scientific cooperation for research without secrecy and without frontiers.*
- 2. To favour the free circulation of scientific information, scientists and researchers, in particular by means of fellowships and visiting scientists programmes.*
- 3. To carry out projects in the scientific, technical and medical fields, in particular for the benefit of the developing Countries, associating thereto researchers from other organizations and institutions without any discrimination, whether geographical, political, ideological, religious or racial.*

Founding Institutions and Scientists

INSTITUTIONS

Academia Sinica

African Academy of Sciences

"Ettore Majorana" International Centre for Scientific Culture

"Gallileo Gallilei" Foundation

Institute of Fundamental Studies - Sri Lanka

International Centre for Theoretical Physics

International Centre of Insect Physiology and Ecology

Permanent Inter-state Committee for Drought Control in the Sahel (CILSS)

Third World Academy of Sciences

SCIENTISTS

Sir John Eccles - Nobel Laureate, EMCSC, Erice, Italy

Professor M. Gourdin - University of Paris, France

Professor R. Hofstädter - Nobel Laureate, Stanford, USA

Professor H. Isliker - University of Lausanne, Switzerland

Professor G. Motta - University of Naples, Italy

Professor D. Palumbo - University of Palermo, Italy

Professor H. Rieben - "Jean Monnet" Foundation for Europe

Professor A. Salam - Nobel Laureate, Oxford, UK

Professor K.M.B. Siegbahn - Nobel Laureate, Uppsala, Sweden

Professor S.C.C. Ting - Nobel Laureate, MIT, Boston, USA

Professor B. Vittoz - EPFL, Lausanne, Switzerland

Professor A. Zichichi - CERN, Geneva, Switzerland

The Main Groups of Projects

A - *ARCHIMEDES*

E - *ELOISATRON*

I - *IMPROVEMENT
OF MODERN LIFE*

N - *NEW SAFE AND
CLEAN ENERGY
SOURCES*

T - *TRANSFER OF
SCIENTIFIC AND
TECHNOLOGICAL
KNOWHOW*

A

ARCHIMEDES

*A World-wide Network for Seismological,
Nuclear, Chemical, Meteorological,
Climatological, and Global Monitoring.*

ARCHIMEDES

= A

A-I	=	PROMETEUS	DEVELOPMENT MODELLING	(1)
A-II	=	TERRA	RISK MODELLING	(1),2
A-III	=	AUGUR	GLOBAL MONITORING	(1)
A-IV	=	PLATO	SEISMOLOGY	1,2,3,4,(5)
A-V	=		VOLCANOLOGY	
A-VI	=	EMME	METEOROLOGY	1,2
A-VII	=		CLIMATOLOGY	
A-VIII	=	PITAGORA	RADIOACTIVE MONITORING	(1)
A-IX	=		POLLUTION	
A-X	=	HERMES	COMPUTER COMMUNICATION	(1)
A-XI	=	HYPOCRAT	HEALTH FROM THE SKY	(1)
A-XII	=	HEFEST	EM SOUNDING WITH MHD GENERATORS	1
A-XIII	=	YANUS	EARTHQUAKE PREDICTION	(1),(2),3,4

* Numbers on the right represent programmes started
() project being reviewed

E

ELOISATRON

*Cooperation in Basic Science and
Technology*

ELOISATRON

= E

E0	=	Eloisatron	Eurasiatic Long Intersecting Storage Accelerator	
E1	=	FBLJA	Forward-Backward Lepton Jet Analyser	1
E2	=	CCAST	China Centre for Science And Technology	1
E4	=	CAPS	Centre for Astrophysics Studies	1
E5	=	HED	High Energy Detector Research and Development	1
E6	=	GSS	Cosmic and Gamma Ray Studies	1
E7	=	CRGS	Cosmic Ray Studies at the Gran Sasso Laboratory	1
E8	=	The Fifth Force	Experiments in China to prove the force's existence	1
E9	=	STRING	Computer simulation of string structures.	1
E10	=	ESM	Electron Spectroscopy for Materials	1
E11	=	WLI	World Laboratory Section in India	1
E12	=	NLD	Non-linear Dynamics	1
E13	=	HEPC	Centre for High Energy Physics and Cosmology in Pakistan	1
E14	=	MSU	Modern Science in Uganda	(1)
E15	=	NEWS	Cooperation in Basic Science	(1)

* Numbers on the right represent programmes started

(1) project being reviewed

I**IMPROVEMENT
OF MODERN LIFE**

*Food, Medicine and the Preservation of
Works of Ancient Civilizations*

IMPROVEMENT OF MODERN LIFE

= **I**

I-I	=	FIP	FOOD IMPROVEMENT	1,2,3,(4),5,6
I-II	=	IDK	INDUSTRIAL DESIGN	1
I-III	=	LAND	ENVIRONMENT, ECOLOGY	1,2,3,4,5,6
I-IV	=	MCD-1	Advanced Biotechnologies in China	1
I-IV	=	MCD-2	Epidemiological Study and Control of Human Oncogenic Viruses in Africa	1
I-IV	=	MCD-3	Study, Prevention and Treatment of Tuberculosis in Ethiopia and Sri Lanka	1
I-IV	=	MCD-4	Study, Prevention and Treatment of Heart Diseases in Africa	1
I-IV	=	MCD-5	Survey of Elderly Population	1
I-IV	=	MCD-6	Radio-Diagnostic Assistance in Ethiopia and Sri Lanka	1
I-IV	=	MCD-7	Prevention and Treatment of Deafness	1
I-IV	=	MCD-8	Quality Control for Blood and Blood Products	1
I-IV	=	MCD-9	Experimental and Preventive Toxicology	1
I-IV	=	MCD-10	Malaria in Rondonia	1
I-IV	=	MCD-11	Parasitology Centre in Brasil	1
I-IV	=	MCD-12	Biotechnology Centre for Latin America	1

* Numbers on the right represent programmes started
(4) project being reviewed

N

**NEW SAFE AND
CLEAN
ENERGY SOURCES**

For Safe and Clean Energy

NEW SAFE AND CLEAN ENERGY SOURCES

=

N

N-0	=	SUPERTOKAMAK	
N-I	=	DCNF	MAGNETIC FUSION RESEARCH 1
N-II	=	ICF	INERTIAL CONFINEMENT FUSION
N-III	=	CNF	COLD NUCLEAR FUSION
N-IV	=	NET	NEW TECHNOLOGIES 1,2

* Numbers on the right represent programmes started
() project being reviewed

T

**TRANSFER OF
SCIENTIFIC AND
TECHNOLOGICAL
KNOWHOW**

TRANSFER OF SCIENTIFIC AND TECHNOLOGICAL KNOWHOW = T

T-1 = 1000 SCHOLARSHIPS

1

The purpose of this Project is to bring one thousand young students from Third World Countries in close collaboration with outstanding personalities of Industrialized Countries. This Project will contribute - in the most direct way - to the transfer of modern technology and scientific knowledge to the Third World Countries.

* Numbers on the right represent programmes started
() project being reviewed

Erice Statement

- It is *unprecedented* in human history that mankind has accumulated such a military power to destroy, at once, all centres of civilization in the world and to affect some vital properties of the planet.

The *danger* of a nuclear holocaust is not the unavoidable consequence of the great development of pure science.

In fact, *Science* is the study of the fundamental laws of Nature.

Technology is the study of how the power of mankind can be increased.

Technology can be for peace and for war. The choice between peace and war is not a scientific choice. It is a cultural one: the *culture of love* produces peaceful technology. The *culture of hatred* produces instruments of war. Love and hatred have existed forever. In the bronze and iron ages, notoriously pre-scientific, mankind invented and built tools for peace and instruments of war. In the so-called <modern era> it is imperative that the *culture of love* wins.

An enormous number of scientists share their time between pure science research and military applications. This is a fundamental source for the arms race.

It is necessary that a *new trend* develops, inside the scientific community and on an international basis.

It is of vital importance to identify the basic factors needed to start an effective process to protect human life and culture from a third and unprecedented catastrophic war. To accomplish this it is necessary to change the peace movement from a unilateral action to a truly international one involving proposals based on mutual and true understanding.

● Here are our proposals:

1. Scientists who wish to devote all of their time, fully, to study theoretically or experimentally the basic laws of nature, should in no case suffer for this free choice, to do only pure science
2. All Governments should make every effort to reduce or eliminate restrictions on the free flow of information, ideas and people. Such restrictions add to suspicion and animosity in the world.
3. All Governments should make every effort to reduce secrecy in the technology of defense. The practise of secrecy generates hatred and distrust. To start a ban for military secrecy will create greater stability than offered by deterrence alone.
4. All Governments should continue their action to prevent the acquisition of nuclear weapons by additional nations or non-national groups.
5. All Governments should make every effort to reduce their nuclear weapons stockpiles.
6. All Governments should make every effort to reduce the causes of insecurity of non-nuclear powers.
7. All Governments should make every effort to ban all types of nuclear tests in war technology.

● Conclusion

Those scientists - in the East and in the West - who agree with this <Erice Statement> engage morally themselves to do everything possible in order to make the *new trend*, outlined in the present document, to become effective all the world over and as soon as possible.

- This statement was written in ERICE, August 1982 by Paul A. M. DIRAC, Piotr KAPITZA, and Antonino ZICHICHI. During the course of the three years (1982-1985) it has been signed by 10,000 scientists, the world over.

World Laboratory Locations

The World Lab is where there are projects to be implemented

Countries

<i>Algeria</i>	<i>Argentina</i>	<i>Bolivia</i>
<i>Brazil</i>	<i>China</i>	<i>Colombia</i>
<i>Cyprus</i>	<i>Egypt</i>	<i>Ethiopia</i>
<i>India</i>	<i>Italy</i>	<i>Kenya</i>
<i>Lebanon</i>	<i>Malta</i>	<i>Morocco</i>
<i>Pakistan</i>	<i>Sahel</i>	<i>Senegal</i>
<i>Sri Lanka</i>	<i>Switzerland</i>	<i>Tunisia</i>
<i>Turkey</i>	<i>USA</i>	<i>USSR</i>

Branches

<i>USSR</i>	<i>9, Prospekt 60, Let Octyabria, Moscow</i>
<i>China</i>	<i>52, Sanlihe Road, Beijing</i>
<i>Central Europe</i>	<i>International Centre for Theoretical Physics, Strada Costiera 11, P.O. Box 586, Trieste, Italy</i>
<i>Mediterranean Area</i>	<i>CCSEM, Erice, Italy</i>

Offices

The ICSC - WORLD LABORATORY has offices in the following countries: Argentina, Brazil, India, Pakistan, and Sri Lanka.

*Why is the main Coordination Centre
located in Lausanne?*

Because the concept of Science without Secrecy and without Frontiers must not be limited to Italy. Italy has set the way, through its Foreign Minister, Giulio Andreotti. But there must be a world-wide involvement. Switzerland has an old tradition in supporting international relations, and Lausanne might thus become the basic reference point for Science to play this new role.

*Why are Academies and Institutions from the
Third World among the
founding members of the World Lab?*

Because all the World Lab activities begin from a precise engagement to go beyond all barriers between North and South.

The World Lab's task is to demonstrate that it is indeed possible for the best intellectual forces of the Third World to participate in projects for the solution of their particular problems - through the use of Science and its many applications in all fields of human knowledge available in the North - as well as for the advancement of Science and Knowledge.

Projects and Scientists

Basic Summary

<i>Main Field</i>	<i>Approved Projects</i>	<i>Projects being reviewed</i>
<i>A - Archimedes</i>	<i>10</i>	<i>9</i>
<i>E - Eloisatron</i>	<i>12</i>	<i>3</i>
<i>I - Improvement of Modern Life</i>	<i>24</i>	<i>1</i>
<i>N - New Safe and Clean Energy Sources</i>	<i>3</i>	<i>0</i>
<i>T - Transfer of Scient. and Tech. Knowhow</i>	<i>1</i>	<i>0</i>
<i>Grand Total =</i>	<i>49</i>	<i>13</i>

Total no. of Scientists:

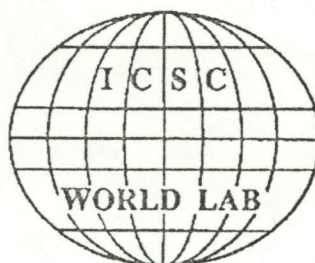
<i>From Industrialized Countries</i>	<i>250</i>
<i>From Developing Countries</i>	<i>959</i>
	<i>1209</i>

$\langle S \rangle / \text{Project} = 1209 / 62 \Rightarrow \text{about } 20 \text{ Scientists} / \text{Project}$

Any copy or patent right, which may arise in exceptional cases in connection with the implementation of the projects, shall be vested with the WL unless otherwise agreed in writing by the WL.

We believe that the new role of Science is to promote a more effective collaboration between the EAST and the WEST and to contribute in a direct way to fill the ever increasing gap between the NORTH and the SOUTH.

ICSC – WORLD LABORATORY



WORLD LABORATORY

VOLUME 7

Constituent
Instrument

WITH AMENDMENTS

GENEVA
16 December 1988

Constituent Instrument of the
International Centre for Scientific Culture - World Laboratory

The undersigned institutions and scientists, having met in Geneva on 12th July 1986,

AWARE of the responsibility incumbent upon the international scientific community to contribute to the solution of the pressing problems facing mankind,

CONVINCED that the free circulation of scientific information is a powerful instrument of progress, stability and balance, capable of establishing a climate of mutual security and trust, in both East and West, and both North and South,

CONVINCED ALSO that the implementation of development co-operation projects, with the active participation of scientists and researchers from the Third World, will constitute a concrete contribution to the building of peace,

HEREBY ADOPT the present constituent instrument of an international non-governmental organization to be known as "International Centre for Scientific Culture - World Laboratory".

Article 1

Constitution of an international non governmental organization and denomination thereof

An international non-governmental organization named "International Centre for Scientific Culture - World Laboratory" is hereby constituted in the form of a non-profit-making association governed by articles 60 et seq. of the Swiss Civil Code.

Article 2

Headquarters

The headquarters of the Organization are in Lausanne. Branch offices may be opened wherever the President may deem necessary.

Article 3

Objectives

The objectives of the Organization shall be:

- (a) To promote East-West and North-South technical and scientific co-operation for research without secrecy and without frontiers.
- (b) To favour the free circulation of scientific information, scientists and researchers, in particular by means of fellowships and visiting scientists' programmes.
- (c) To carry out projects in the scientific, technical and medical fields, in particular for the benefit of the developing countries, associating thereto researchers from other organizations and institutions without any discrimination, whether geographical, political, ideological, religious or racial.

Article 4

Means

The Organization may take, through its President, all appropriate steps to fulfil its objectives and in particular conclude agreements with any public or private institution as well as with any individual, whether participating as a member of the Organization or not. In particular, the Organization shall make use of the structures, experience and resources of the International Centre for Scientific Culture "Ettore Majorana" of Erice.

Article 5

Membership

The membership of the Organization shall consist of individuals and legal entities desirous of cooperating actively in its activities. Members shall be admitted by the Executive Committee upon written application and on the President's recommendation. The Executive Committee, with the consent of the President, may reject an application for admission without stating the reasons thereof.

Article 6

Financing

The financing of the Organization shall be mainly ensured by voluntary contributions, subsidies, donations or legacies from members or from other individuals or legal entities wishing to support either the overall activity of the Organization, or specific programmes or projects carried out in the framework and under the responsibility of the Organization. The Organization shall also collect annual dues from its members, at rates to be determined by the General Assembly.

Article 7

Organs

The organs of the Organization shall be the following:

- (a) The General Assembly.
- (b) The President.
- (c) The Executive Committee.
- (d) The Scientific Committee.
- (e) The Committee of Project Managers.
- (f) The Auditing Body.

Article 8

General Assembly

The General Assembly shall comprise all the members of the Organization.

It shall meet once a year when convened by the President or at the request of at least one fifth of the members of the Organization.

It shall approve the budget and accounts.

It shall elect the other organs of the Organization, with the exception of the Committee of the Project Managers.

Each member of the Organization shall be entitled to one vote in the General Assembly.

The General Assembly shall be vested with all powers which are not expressly conferred upon one of the other organs of the Organization.

Article 9

President

The President of the Organization shall be elected by the General Assembly on the proposal of the Scientific Committee.

The President shall be elected for a period of ten years and shall be re-eligible. He may resign from his office subject to giving six months' notice.

The President shall have the following functions:

- (a) he represents the Organization with regard to third parties;
- (b) he convenes and presides over the Organization, the General Assembly, the Executive Committee, the Scientific Committee and the Committee of Project Managers; he draws up the agenda for each;
- (c) he is responsible for the day-to-day business and extraordinary management of the affairs of the Organization and may take any initiative of a scientific or administrative character to manage and foster the activities of the Organization;
- (d) he appoints the managers of projects on the proposals made by the Scientific Committee.

Should the President be unable to perform his duties, he shall be replaced by the Vice President of the Scientific Committee who is senior in age until such time as he is once more able to perform his duties, or until the next General Assembly.

Article 10

Executive Committee

The Executive Committee shall consist of three members elected for a period of five years by the General Assembly, on the proposal of the President; they shall be re-eligible. They may resign from office, subject to giving six months notice.

The Executive Committee shall be responsible for:

- (a) controlling the administrative and financial management of the Organization and submitting to the President any appropriate observations;
- (b) supervising the running of the administrative activities of the Organization and advising the President thereon.

The Executive Committee shall meet at least twice a year, when convened by the President or upon the request of one of its members.

On the proposal of the President, the Executive Committee shall take all measures relating to the financial and administrative management of the Organization. Such measures shall be subject to the approval of the General Assembly.

Article 11

Scientific Committee

The membership of the Scientific Committee shall consist of:

- (a) the scientists who are signatories of the Constituent Instrument of the Organization, who shall be permanent members;
- (b) not more than ten members elected for a period of five years by the General Assembly on the proposal of the President. These members of the Scientific Committee shall be re-eligible; they may resign, subject to giving six months' notice.

The Committee shall elect three Vice-Presidents from among its members.

The Committee shall have the following functions:

- (a) to make proposals to the President on the selection of projects to be supported by the Organization and on the persons to be designated as project managers;
- (b) to follow the development of the scientific activities of the Organization;
- (c) to keep the President informed of the scientific activities under way, advise him and suggest new activities.

The Committee shall meet once a year, and be convened by the President.

Article 12

Committee of Project Managers

The membership of the Committee of Project Managers shall consist of the managers of all the projects supported by the Organization. It shall be responsible for ensuring the necessary co-ordination between the various projects. It shall meet once a year, and be convened by the President.

Article 13

Auditing Body

The General Assembly shall designate every year the Auditing Body of the Association, which must be either a fiduciary company or a chartered accountant. The Auditing Body shall be responsible for auditing the accounts of the Organization and for drawing up, for the benefit of the General Assembly, a written annual report on its operations. The report shall first be submitted to the President.

Article 14

Accounting year

The accounting year of the Organization shall run from 1 January to 31 December of each year.

The first accounting year shall end on 31 December of the year in which the Organization is constituted.

Article 15

Amendment of the Constituent Instrument

The present Constituent Instrument may be amended by the General Assembly on a proposal of the President approved by the Executive Committee.

Article 16

Dissolution

In the event of dissolution of the Organization, its net assets shall be handed over to organizations, associations or foundations pursuing similar objectives.

Article 17

Arbitration

Any dispute on the interpretation or application of the present instrument shall be submitted to an arbitration tribunal consisting of three members located at Geneva. Each party to the dispute shall designate an arbitrator, and the two arbitrators thus designated shall appoint the third. Should they fail to agree on the third arbitrator, the latter shall be appointed by the President of the Court of Justice of Geneva.

Done at Geneva on 12 July 1986.

Amended on 27 July 1987 and on 16 December 1988.

The following Institutions and Individual Scientists are members of the General Assembly, and have undersigned this document:

Academia Sinica

African Academy of Sciences

Foundation Galileo Galilei

Foundation Jean Monnet for Europe

Institute of Fundamental Studies -Sri Lanka

International Centre for Scientific Culture "Ettore Majorana"

International Center for Theoretical Physics

International Center of Insect Physiology and Ecology

Italian National Institute for Geophysics (ING)

Permanent Inter-state Committee for Drought Control in the Sahel (CILSS)

Third World Academy of Sciences

Professor E. Boschi

Sir John Eccles

Professor M. Gourdin

Professor R. Hofstadter

Professor H. Isliker

Professor T.D. Lee

Professor S. Martellucci

Professor G. Motta

Professor D. Palumbo

Professor Abdus Salam

Professor K.M.B. Siegbahn

Professor S.C.C. Ting

Professor B. Vittoz

Professor A. Zichichi

Council of Ministers of the USSR

A U T H O R I Z A T I O N

of June 16, 1989 # 486

MOSCOW. THE KREMLIN

**"ON APPROVING THE REGULATIONS OF THE ACTIVITY ON
THE TERRITORY OF THE USSR OF THE BRANCH OF THE INTERNA-
TIONAL-NON-GOVERNMENTAL ORGANIZATION "INTERNATIONAL CEN-
TRE OF SCIENTIFIC CULTURE - WORLD LABORATORY"**

In order to provide conditions for the activity on the territory of the USSR of the Branch of the international non-governmental organization "International Centre of Scientific Culture - World Laboratory" the Council of Ministers of the USSR passes the resolution:

The Regulations attached herewith of the activity on the territory of the USSR of the Branch of the international non-governmental organization "International Centre of Scientific Culture - World Laboratory" are approved.

Chairman
of the Council of Ministers
of the USSR

N. RYZHKOV

Superintendent of Affairs
of the Council of Ministers
of the USSR

M. SMIRTUKOV

APPROVED

by the authorization of
the Council of Ministers
of the USSR of June 16,
1989, # 486

REGULATIONS

of the activity on the territory of the USSR of the
Branch of the international non-governmental organization
"International Centre of Scientific Culture - World
Laboratory"

1. The Branch of the international non-governmental organization "International Centre of Scientific Culture - World Laboratory" (which is referred to herein as the World Laboratory Branch) enjoys the rights of a juridical body according to the Soviet Law, is a research institution and can carry out on the territory of the USSR any activity based on the aims and functions of this organization concerning international projects in the sphere of science, technology, medicine, education and in other spheres.

The World Laboratory Branch has a right:

To employ and hire as advisors Soviet and foreign citizens.

To buy and lease computers, telecommunication, printing and other equipment needed for its aims and functions.

To use internationally accepted forms and means of scientific exchanges including legally arranged self-financed visits abroad of Soviet scientists and specialists as well as invitations of their foreign counterparts in order that they work on projects or take part in conferences, seminars, meetings. To make contacts with foreign computer networks and data bases.

To buy products (services) of Soviet enterprises and organizations.

To organize and conduct research and experimental design work both independently and together with interested Soviet and foreign organizations, enterprises and firms and, if necessary, to set up in a legal way joint ventures, organizations and temporary groups to solve scientific and technological problems. The activity of the joint ventures and organizations with participation of the World Laboratory Branch and its foreign partners is governed by the Law on the activity on the territory of the USSR of joint ventures and organizations with participation of Soviet and foreign organizations and firms.

To set up on the territory of the USSR its own subdivisions and experimental research centres subject to agreements with the Councils of Ministers of union and autonomous republics, executive committees of territorial and regional Soviets of People's Deputies.

To publish and circulate printed works (collected scientific works, conference materials, reviews and prompt information digests) connected with the activity of the World Laboratory Branch.

To do construction work both with the available and borrowed money.

To directly conduct foreign economic activity based on the aims and functions of the World Laboratory Branch.

To sell, lease and lend free of charge computers, communication and other equipment and to give financial aid to the Soviet partner organizations.

To enter into direct relationship with the central organs of the Government of the USSR and those of the union republics, with local government bodies and other organizations.

The World Laboratory Branch has a title form and a seal.

2. The finances of the World Laboratory Branch are formed on the territory of the USSR through a contract-based sale of the results of its scientific and technological activity, through its consultative, information and other services, through the proceeds of publications and other activities as well as through voluntary donations from organizations and individuals.

3. The World Laboratory Branch opens bank accounts in roubles and foreign currency in accordance with the Soviet Law.

4. The World Laboratory Branch and its subdivisions are exempted from taxes, state and customs duties and other payments to the state budget.

In case the equipment brought to the USSR is meant as declared by the World Laboratory Branch for sale or for lease, it is imposed a customs duty on in the regular way.

5. The property and assets of the World Laboratory Branch and its subdivisions as well as the property lent to it free of charge are subject neither to requisition nor to confiscation in any administrative way.

6. In the sphere of communication the World Laboratory Branch is entitled to conditions no less favourable

than those provided for diplomatic representatives and to rates of payment for mail, cablegrams, telegrams, telex, telephone and other means of communication which are set for those representatives.

7. The World Laboratory Branch works out and approves in an independent way scientific, financial and economic programs necessary for its aims and functions. Neither central nor local government bodies have a right to set the World Laboratory Branch any obligatory production quotas.

8. Work and rest standards for the World Laboratory Branch employees, their social welfare and social security are regulated by the Soviet Law standards. These standards are also valid for the foreign citizens employed by the World Laboratory Branch except questions pertaining to remuneration rates, vacations and pensions which are individually resolved in the employment contract. The World Laboratory Branch determines in an independent way the forms and rates of pay and the amount of bonuses in Soviet roubles and deals independently with questions of employment and dismissal and other conditions of work observing in doing so the rights of citizens provided by the Soviet legislation.

International Non-Governmental Organization
"International Center of Scientific Culture -
- World Laboratory"

APPROVED:

Academician Ye. P. Velikhov
President of the World Laboratory
Branch in the U.S.S.R.

April 12, 1990

T H E C H A R T E R
OF THE WORLD LABORATORY BRANCH IN THE U.S.S.R.

MOSCOW.
1990

1. GENERAL

1.1. The International Non-Governmental Organization "International Center of Scientific Culture - World Laboratory" (hereinafter called World Laboratory), registered in Switzerland as a public non-profit-able organization, in accordance with Article 2 of its Constituent Document and by the consent of U.S.S.R. Government, opened the World Laboratory Branch in the U.S.S.R. (hereinafter called Branch) on 27th of February, 1987.

1.2. The Branch shall be a legal person under Soviet law, with the status of a scientific research organization, and shall carry out its activities on the basis of full economic self-dependency in accordance with the "Regulations Concerning Activities of the Branch of International Non-Governmental Organization "International Center of Scientific Culture - World Laboratory" on the Territory of the U.S.S.R.", approved by the Decree of the Council of Ministers of the U.S.S.R. No. 486 of June 16, 1989, and with this present Charter.

1.3. The Branch shall be entitled to conclude, in its own name, agreements and contracts, to possess and acquire property and personal non-property rights and bear obligations, to appear as a plaintiff and a defendant in courts of law, arbitration and mediation courts, and to make other actions following from the World Laboratory's purposes, the Branch's aims and functions and the aforementioned Decree of the Council of Ministers of the U.S.S.R. No. 486 of June 16, 1989, and inter alia:

To undertake and carry out research and development projects, either independently or with the participation of Soviet and foreign organizations, enterprises and companies and to establish, jointly with them and according to established regulations, organizations, enterprises and temporary task-forces for solving scientific and technological problems. The establishment and activities of joint ventures between the Branch and foreign organizations and companies shall be subject to Soviet law concerning activities on the territory of the U.S.S.R. of joint ventures between Soviet and foreign organizations and companies;

To establish branches and experimental bases, including those with the legal person rights;

To send Soviet scientists and specialists abroad and to host in the U.S.S.R. foreign scientists and specialists for the work on World Laboratory projects and other scientific programs, knowledge exchange, participation at conferences, seminars, meetings and other joint activities;

To establish and maintain communication with foreign computer networks and data bases;

To open accounts in Soviet and foreign currency, as stipulated by Soviet law;

To carry out direct foreign trade activity for accomplishing the Branch's purposes;

To carry out construction works, with its own or borrowed monies, as well as other economic activities following from the Branch's aims and functions.

1.4. For a more efficient use of its resources and capabilities, the Branch may participate in joint-stock companies, partnerships and other business enterprises, to join associations, unions and other voluntary bodies. Tax and other benefits given to the Branch by Decree of the Council of Ministers of the U.S.S.R. No. 486 of June 16, 1989 shall not apply to these bodies.

1.5. The Branch shall be liable, with respect to its obligations, to the extent and limit of its property which, according to Soviet law, may be claimed for recovery. Property and personal non-property rights of the Branch are subject to protection according to Soviet law.

The State, its organs and other organizations in the U.S.S.R. or abroad shall not be liable or responsible as to the obligations of the Branch, nor shall the Branch be liable or responsible as to the obligations of the State, its organs and other organizations in the U.S.S.R. or abroad.

The property and assets of the Branch and its affiliated organizations, as well as the property placed at their disposal on the territory of the U.S.S.R., shall not be subject to sequester or confiscation by administrative order, as stipulated by Decree of the Council of Ministers of the U.S.S.R. No. 486 of June 16, 1989.

1.6. The Branch shall have a letter-head and a seal with its name and logo.

1.7. The Branch shall be located in Moscow, U.S.S.R.

1.8. The activities of the Branch as a part of World Laboratory on the U.S.S.R. territory may be cancelled if so decided upon by the President of World Laboratory.

In such a case, the Branch shall be re-organized into an inter-national or Soviet organization with similar functions, being the legal successor of the Branch. The order and conditions of re-organization shall be determined by the Branch President.

2. THE PURPOSES AND FUNCTIONS

2.1. When determining its goals and carrying out corresponding activities, the Branch shall pursue mutual interests of Soviet and foreign organizations, scientists and specialists, the decisions of World Laboratory governing bodies and the following purposes of said organization, as set out in Article 3 of the Constituent Document thereof:

To promote scientific and technological co-operation between Western/Eastern and Northern/Southern countries for the research without secrecy and borders;

To create favorable environment for the free exchange of scientific information, scientists and specialists, including establishment of scholarships and programs of advanced scientific training;

To carry out projects in science, technology, medicine and other areas, in particular to help developing countries, engaging scientists and specialists from outside institutions, without any geographical, political, ideological, religious or racial discrimination.

2.2. In order to accomplish the above listed purposes of World Laboratory and to achieve its own goals, the Branch shall carry out the following functions:

Organizes and manages the participation of interested Soviet organizations, scientists and specialists in the approved research and development program of World Laboratory and other programs and projects conducted therein; participates in the creation of inter-national working groups for particular projects and assists in their activities;

Determines, jointly with Soviet and foreign organizations and scientists, promising areas of scientific research and prepares proposals as to improving co-operation within the framework of World Laboratory;

Prepares proposals concerning the use in the U.S.S.R. and abroad of scientific and technological results obtained in course of implementation of World Laboratory projects, with due regard to the rights of the Branch and other organizations and individuals for the said results. It shall be presumed that Soviet and foreign organizations and individuals engaged in projects, shall independently decide upon the transfer to World Laboratory of the results of their own and joint activities;

Conducts research and development for the creation of advanced equipment and technologies in the areas of informatics and computers, alternative energy sources, other resource-saving and ecologically clean technologies, means for environment monitoring, health diagnostic equipment, novel elements and materials, other science-intensive products; manufactures these products, including joint production with Soviet and foreign organizations and companies;

Conducts collection and processing of scientific and technological information, using modern methods and techniques of information interchange; creates data bases related to the fields under development within the framework of World Laboratory;

Publishes and distributes printed media items (collections of scientific papers, conference proceedings, surveys, express information), related to the activities of World Laboratory;

Promotes international humanitarian exchanges and co-operation, including those of young scientists, students and school pupils; participates in educational programs in ecology, culture, history and other areas;

Provides logistic and material support for research, development and other works within the framework of its activities, sets up production facilities required for that purpose;

Conducts other activities corresponding to the aforesaid purposes.

3. THE MANAGEMENT

3.1. The management of the Branch shall be exercised by the President heading thereof, and General Directorate headed by Executive Vice-President - General Director of the Branch.

3.2. The Branch President shall be appointed and removed from office by the President of World Laboratory. The term of office of the Branch President shall not be constrained.

Only U.S.S.R. citizen may be appointed the Branch President.

3.3. The Branch President:

Conducts general control over the participation of Soviet organizations, scientists and specialists in international scientific and technological co-operation within the framework of World Laboratory; approves appointments of Soviet staff of mixed working groups formed for carrying out of agreed research and development programs;

Engages Soviet and foreign scientists and specialists in the development of scientific and technological policy and particular projects, evaluation of international co-operation results and preparation of proposal as to their use; when necessary, forms advisory

committees and scientific boards in the fields relevant to the Branch activities;

Conducts liaisons with central and local governmental organs and agencies of the U.S.S.R. and Soviet republics;

Represents the Branch and Soviet organizations, upon their authorization, in the governing bodies of World Laboratory, including presenting for their consideration of the proposals for new programs and projects;

Appoints and removes from office Executive Vice-President - General Director, First Deputy General Director and Chief Accountant; determines their salaries;

Approves the Charters of the Branch's affiliated organizations, appoints and removes from office their heads and determines their salaries; if an organization is headed by a Board or other similar collective body, approves the composition of such a body;

Approves organizational, staff and salary structures of the Branch and its affiliated organizations. The staff and salary structures approved by the President may be avoided with respect to such organizations, their structural parts and individual staff members, whose activities are carried out on the task-force basis;

Approves general directions and long-term plans of the Branch and its affiliated organizations, their budgets and annual reports;

Determines the order and the terms of auditing for the Branch and its affiliated organizations.

3.4. Executive Vice-President - General Director:

Heads the Directorate - central executive and managing organ of the Branch and determines its composition;

Acts in the name of the Branch without further authorization;

Disposes of the Branch property and assets in accordance with Soviet law and this Charter;

Concludes, in the name of the Branch, agreements and contracts with Soviet and foreign organizations and individuals;

Presents to the President's approval the Charters of the Branch's affiliated organizations enjoying the legal person rights;

Approves regulations concerning structural divisions of the Branch;

Approves, upon suggestions of the heads of the Branch's affiliated organizations, appointments and removals from office of Chief Accountants and, if not otherwise provided for in the organization's Charter, deputy heads;

Approves, upon presentations of the Boards of the Branch's affiliated organizations, appointments made by them with regard to Administrative Directors, Managing Directors and other officials exercising executive and managerial functions according to the Charters of these organizations;

Appoints and removes from office members of the Branch staff, except for the positions whose filling relates to the Branch President's competence;

Presents to the President's approval draft budgets and annual reports of the Branch and its affiliated organizations;

Participates in the forming of international working groups for carrying out approved projects of World Laboratory and exercises control over activities of their Soviet parts;

Establishes, jointly with the interested Soviet and foreign organizations and companies and according to the established order, organizations and task-forces for solving scientific and technological problems;

Conducts planning and control over research activities of the Branch, considers reports of its structural divisions and affiliated organizations;

Distributes duties among his/her deputies, delegates some functions to other staff members;

In the President's absence, carries out his/her functions, except for appointing officials within the President's competence and approving organizational, staff and salary structures of the Branch and its affiliated organizations;

Makes decisions in other respects outside the President's competence; issues orders and instructions.

3.5. To assure legality and reasonability of the Branch and its affiliated organizations activities, Auditing and Legal commissions of the Branch shall be appointed and act according to their regulations, subject to approval by the Branch president.

The commissions shall act independently and be accountable only to the President.

3.6. The Auditing Commission shall be appointed by the Branch President for the term of five years and shall consist of the chairman and two members.

3.7. The functions of Legal commission shall be given out to the President's Legal council which shall act according to its Charter.

Aside of participation in the auditions of the Branch and its affiliated organizations, the legal council may, if so decided upon by the President or Executive Vice-President - General Director or by its own initiative, examine the fulfilling of conditions and requirements as set out by the Branch's constituent, contractual and other documents of legal nature.

4. THE STRUCTURE

4.1. The Branch shall consist of research, technical, organizational, financial, economical, supporting and other structural divisions and services, as required for carrying out its activities.

Structural divisions shall function according to regulations approved by Executive Vice-President - General Director of the Branch.

4.2. When necessary, the Branch shall open branches and experimental bases intended for:

Coordination of the participation of research organizations, scientists and specialists of republics and regions of the U.S.S.R. in international cooperation within areas of activities of World laboratory;

Development of projects and individual problems within the framework of mutually agreed research and development program in science, technology, medicine, education and other areas, including assisting in practical implementation of scientific results in economy and society;

Research and development in advanced technologies, as well as production of equipment, instruments and elements;

Promotion of humanitarian cooperation and implementation of international programs and exchanges in education, culture and other humanitarian areas;

Raising funds for research and development, according to the World Laboratory program, using profits from commercial exploitation of scientific and technological achievements, consulting, information and other services, publishing and other commercial activities;

Other activities following from the Branch's purposes and functions.

4.2. Branches and experimental bases shall be opened on the territory of the U.S.S.R. with prior consent of the Councils of Ministers of union and autonomous republics and executive committees of regional Soviets.

4.3. The status of branches and experimental bases opened by the Branch shall be either that of a structural division, or of an organization with the rights of a legal person, according to the Constituent Document.

4.4. An organization affiliated with the Branch carries out its activities in accordance with Soviet law, the Branch's Charter and its own Charter approved by the Branch President upon suggestion from Executive Vice-President - General Director.

4.5. For more efficient management and usage of their resources when developing international and other programs and projects, affiliated organizations of the Branch may engage in cooperation, concluding, when necessary, General Agreements and contracts regulating their relations on particular matters. The Branch may also create special organizational structures, incorporating its affiliated organizations on a territorial, production-wise or other basis and functioning in accordance with respective regulations approved by the Branch President.

4.6. The Branch's affiliated organizations shall be liable, to the full extent of property owned thereof, for any damage caused to other organizations, individuals or the State, in accordance with Soviet law.

The Branch shall not be liable as to the obligations of its affiliated organizations, nor shall these organizations be liable as to the obligations of the Branch.

5. FINANCIAL FUNDS

5.1. The Branch's financial funds shall be made of:

Voluntary contributions and grants from Soviet, foreign and international organizations, states and their authorities, and individuals.

Bank loans and loans obtained from other organizations and individuals;

Profits from commercial exploitation of scientific and technological achievements, consulting, information and other services, publishing and other commercial activities;

Contributions of the Branch's affiliated organizations.

5.2. Contributions may be made, and accounts with the Branch may be settled, by mutual consent of the parties, by means of transferring to the Branch of equipment, materials, other valuables, rights for inventions and other intellectual property, as well as by means of carrying out works and providing services.

5.3. The order of creation (calculation) and the amount of annual contributions to the Branch budget by its affiliated organizations shall be determined by the Branch President.

5.4. For the accumulation of financial resources required to fulfil its goals and functions, the Branch shall develop and implement necessary financial and commercial programs, organize fund-raising campaigns aimed to either covering general expenses of the Branch or funding particular programs and projects.

5.5. According to Article 1 of the Constituent Document of World Laboratory, the Branch shall not pursue the gaining of profits. The Branch's financial resources, after making material and other expenses for contractual works, credit, contractual and other obligatory payments and paying salaries to the personnel, shall be directed for the creation and replenishment of its funds.

5.6. The Branch shall form the following funds:

Production development fund;

Science and technology fund;

International cooperation fund;

Reserve fund;

Financial incentives fund;

Social development fund;

Fund of management expenses and representation.

Special funds may be created for the implementation of concrete aims and functions.

5.7. The amounts, the ways of creation and employment of the funds shall be determined by the Branch President, except for the Social development fund, which shall be subject to agreement with the local labor union.

When necessary, a part of the Financial incentives fund may be transferred to the Social development fund, subject to agreement with the local labor union.

5.8. Financial activities of the Branch shall be carried out according to annual budgets and shown in its balance sheets.

The Branch's monies may be accumulated for the use in subsequent years.

5.9. Complete audits of the Branch and its affiliated organizations shall be conducted at least once every two years at the discretion of the Branch President.

If so directed by the Branch President and in accordance with regulations of auditing commission of the Branch, or with the Charters of its affiliated organizations, examinations of other types may be also carried out.

5.10. The Directorate, heads of audited structural divisions and affiliated organizations shall be obliged to provide the materials necessary for audits.

If so decided upon by the President, audits may be carried out by auditing firms.

5.11. The Branch shall publish reports as to the budget fulfilling and provide, when so requested by institutional and individual contributors, data relating to the use of correspondingly obtained monies and material assets.

5.12. The Branch and its affiliated organizations shall be exempt, by the U.S.S.R. Government, from paying taxes, state and customs duties and other payments to the State budget (Decree of the Council of Ministers of the U.S.S.R. No. 486 of June 16, 1989).

In case of the imported goods being intended for paid alienation or leasing, they shall be subject to regular customs duties.

6. MATERIAL AND TECHNICAL SUPPORT

6.1. In order to carry out its functions, the Branch:

Employs allotted office space and the quarters for accommodation of visiting foreign scientists and specialists; when necessary, builds and rents additional space;

Establishes and uses the computing center connected with the other World Laboratory computing centers. To facilitate information interchange, communications, including those over satellite lines, shall be established between these centers;

Purchases and leases transportation and communications facilities according to the established order;

Establishes modern audio-visual complex, repro and printing shops with automatic pre-press system for quality publications of limited distribution;

Acquires and employs other means and facilities required for its efficient functioning.

6.2. Computer equipment, instruments and other equipment and materials, provided for the Branch by World Laboratory, other international and foreign organizations and individuals as their contributions to the technical and material support of the Branch, shall be exempt from Soviet taxes and import and export customs duties.

7. STAFF, WORKING CONDITIONS, WAGES, SOCIAL INSURANCE

7.1. The staff of the Branch and its affiliated organizations shall consist mostly of Soviet citizens.

The Branch and its affiliated organizations shall conclude labor agreements (contracts) with Soviet and foreign personnel. Labor agreements may also be concluded on the basis of secondary employment and one-time contract.

Foreign personnel shall be engaged by affiliated organizations for a job or consultations by the consent of the Branch.

7.2. Staff personnel shall be remunerated with the salaries, extra payments for important jobs and bonuses.

The payment of bonuses from the Financial incentives fund shall be subject to regulations, as agreed with the local labor union.

7.3. Depending on the working and financing conditions, different forms of pay may be established in affiliated organizations, structural divisions and for individual members of the staff.

7.4. Working conditions, leaves, social rights and social insurance shall be in keeping with Soviet law. Leaves and pension funds of foreign personnel shall be as provided for in individual working contracts.

7.5. Wages and salaries paid by the Branch and its affiliated organizations, shall be subject to income taxes in accordance with Soviet law.

7.6. The Branch shall assist in satisfying social needs of the staff. For this purpose, the Branch may acquire, lease and build leisure and cultural facilities and living quarters, allocate monies for the arranging of, and partial payment for, recreations, health care and catering of the staff.

7.7. The Branch shall assist in professional advancement of its staff, including their training in the U.S.S.R. and abroad with the Branch's financial support.

7.8. The personnel of the Branch and its affiliated organizations shall be liable for insufficient fulfilment of their duties, according to the norms of Soviet labor law and internal regulations. The personnel shall be obliged to keep business information confidential and refrain from actions detrimental to the Branch's goodwill and interests.

STATEMENT OF INTENT

made by the Government of the Union of Soviet Socialist Republics and the Government of the Italian Republic on rendering assistance to the international non-governmental organization "International Centre for Scientific Culture - World Laboratory"

The Government of the Union of Soviet Socialist Republics and the Government of the Italian Republic ascertain favourable development of scientific and technical cooperation between the USSR and Italy which, in particular, is confirmed in the Programme of Deepening the Cooperation in the Field of Science and Technology Between the USSR and Italy for the Period up to the Year 2000.

Besides, they take into account the growing cooperation between the two countries within the framework of the international non-governmental organization "International Centre for Scientific Culture - World Laboratory" and approve of the objectives of this cooperation.

Both Governments also note the accord between the forms of implementation of the Programme of Deepening the Cooperation in the Field of Science and Technology Between the USSR and Italy for the Period up to the Year 2000 and the Provisions for the Implementation of the International R&D Programme Serving as a Basis for Further Development of Soviet-Italian Scientific Cooperation Within the Framework of the International Centre for Scientific Culture - World Laboratory (Annex 1), having as their objectives efficient implementation and broadening of this cooperation.

Both Governments take into account, in particular, the following objectives of the organization "International Centre for Scientific Culture - World Laboratory":

- a) carrying out East-West and North-South scientific and technical cooperation for the purposes of conducting scientific research without secrecy and without frontiers;
- b) promotion of the free circulation of scientific

information, as well as that of scientists and researchers, in particular by means of granting fellowships and organizing special visiting scientists' programmes;

c) carrying out projects in the scientific, technical, medical, meteorological, environmental and other fields, in particular for the purposes of providing assistance to the developing countries with participation of specialists from other organizations and institutions without any discrimination, whether geographical, political, ideological, religious or racial.

The Government of the Union of Soviet Socialist Republics and the Government of the Italian Republic take into account the contents of the International R&D Programme Serving as a Basis for Further Development of Soviet-Italian Scientific Cooperation Within the Framework of the International Centre for Scientific Culture - World Laboratory (Annex 2), with the help of which it is intended to solve the problem of assistance and development of cooperation on the basis of equality and reciprocity and to provide broad opportunities for combining the efforts of scientists and specialists in working on the World Laboratory projects for the benefit of both countries and of all the mankind.

The Government of the Union of Soviet Socialist Republics and the Government of the Italian Republic agree with the enclosed Provisions for the Implementation of the above mentioned Programme.

Done in Rome on November 30, 1989 in two copies, each in the Russian and Italian languages, both texts being equally authentic.

For the Government
of the Union of Soviet
Socialist Republics

For the Government
of the Italian Republic

ANNEX 1
to the Statement of Intent

Provisions for the Implementation of the International R&D Programme Serving as a Basis for Further Development of Soviet-Italian Scientific Cooperation Within the Framework of the International Centre for Scientific Culture - World Laboratory

Within the framework of the positive scientific and technical connections between the USSR and Italy, with the aim of creating new provisions promoting development of these connections and solution of new problems, the World Laboratory Branch in the USSR and the World Laboratory Branch in Italy, hereinafter referred to as the Sides, have made a decision to carry out the agreed programme of scientific research and development in accordance with the laws of the USSR and Italy and other acts in the field of scientific research, use and protection of inventions and results associated with this research, as well as in the field of industrial and intellectual property.

For all that the Sides will be guided by the following provisions:

Article 1.

The agreed programme will be carried out by means of:

- a) exchanges of scientists and specialists;
- b) exchanges of scientific and technical information related to the projects;
- c) exchanges of the results of research and experiments;
- d) joint research, development, production and testing of scientific instruments for carrying out research related to the projects;
- e) joint working meetings, conferences, consultations.

Article 2.

For the working out of detailed programmes and agreements

when implementing the agreed projects special working groups will be established. Meetings of the working groups will take place both in the USSR and in Italy. These same working groups may specify the number of scientists to be participating in implementation of the projects.

Article 3.

By the agreement of both Sides leading scientists will be elected as "members of the World Laboratory". The Sides will take steps to ensure that issuing entry and exit visas for the Soviet and Italian scientists participating in the activities of the International Centre for Scientific Culture - World Laboratory (hereinafter referred to as the World Laboratory) will be regulated by the Agreement between the Government of the Union of Soviet Socialist Republics and the Government of the Italian Republic on Visa Issues.

The expenditures on scientific exchanges will, as a rule, be covered as follows:

the costs of travels USSR-Italy-USSR and Italy-USSR-Italy will be covered by the Side undertaking the trip;

the hosting Side will cover all the local expenditures: hotel accomodation, meals, transportation expenditures inside the country;

the scientists will also be provided with small amounts of currency, the size of these amounts will be subject to agreement and confirmation every two years.

Article 4.

The activities in the USSR related to the agreed projects will be conducted under the supervision of the World Laboratory Branch in the USSR in accordance with the Regulations confirmed by the USSR Council of Ministers.

Article 5.

Legal, commercial and financial matters which may emerge

in the course of cooperation including the conditions for scientific exchanges as well as the conditions for mutual submission of equipment, spare parts, disposable goods and other property and services shall be settled by interested Soviet and Italian organizations and the World Laboratory in compliance with the acting Soviet and Italian law and the order adopted by the World Laboratory.

Article 6.

The equipment and instruments required for joint research will be submitted by agreement between the Sides.

Article 7.

The Sides will take all necessary administrative and legal steps to ensure that the activities of the World Laboratory in the USSR and Italy are declared free of customs duties and any other forms of taxation, as well as that all the payments made to the scientists and other specialists working in the World Laboratory are exempt from taxation.

Article 8.

Each of the Sides will cover the expenditures to compensate any damage caused to its own personnel or equipment.

Article 9.

Financial provisions for the activities of the World Laboratory in the USSR and Italy related to the agreed programme will be made on the basis of ordinary balance of payment capacities of the Sides. At the same time the Sides make commitments to provide their Governments with proposals on creation of a legal basis for allocation of funds required for conducting cooperation in the fields specified in Annex 2 to the Statement of Intent. For the first three years of cooperation the total demand of the Italian Side is determined to be 100 billion lire and the demand of the Soviet Side is

the equivalent amount.

Article 10.

All issues which may arise concerning the implementation of the present Provisions shall be settled through direct negotiations between the World Laboratory Branch in the USSR (Moscow) and the World Laboratory Branch in Italy (Erice).

Article 11.

The general supervision of the programme will be conducted:

on the Soviet Side: by academician E. Velikhov - Chairman of the World Laboratory Branch in the USSR;

on the Italian Side: by professor A. Zichichi - President of the World Laboratory.

ANNEX 2
to the Statement of Intent

International R&D Programme Serving as a Basis for
Further Development of Soviet-Italian Scientific
Cooperation Within the Framework of the Inter-
national Centre for Scientific Culture - World
Laboratory

I. FACILITIES

I.1. HEADQUARTERS BUILDING

The World Laboratory will undertake the restoration of an ancient building in Moscow, which the Municipality of Moscow intends to put at the disposal of the World Laboratory to accomodate the Headquarters of the World Laboratory Branch in the USSR; a small hotel for visiting scientists of the World Laboratory will equally be made available.

The restoration works are part of a specific World Laboratory project (Project II.9).

I.2. COMPUTER CENTRES - SATELLITE COMMUNICATION

Two Computer Centres are to be created, one in Moscow (USSR) and the other in Erice (Italy) to support the projects of the present Programme. These Centres will be connected with other Affiliated World Laboratory Centres in the Soviet Union and in Italy. The Erice Centre will be the basis for the creation of a World Environmental Data Bank.

Satellite links will be established between the Centres for data exchanges.

I.3. INTERNATIONAL LABORATORY FOR SCIENCE, ENGINEERING
AND ADVANCED TECHNOLOGIES - ILSEAT

The purpose of this Laboratory, to be situated in

Erice-Comiso (Italy), is an international, all-embracing scientific cooperation for promoting implementation of new great projects in pure science, and for a better exploitation of applied science and technology developments in the interest of improving the quality of life for all mankind.

The main scientific and R&D activities are:

- a) Laser Technologies and Inertial Confinement Fusion;
- b) Emergencies which may occur at Nuclear Energy Production Cycle units and Chemical Industry units as well as those caused by Meteorological and Seismic Processes; Safety of Nuclear Power Plants; Environmental Protection;
- c) Peaceful Use of Missiles;
- d) ELOISATRON.

I. 4. INTERNATIONAL SAFETY AND EMERGENCY CENTRE

This Centre will be situated in Erice-Comiso (Italy), in the framework of ILSEAT, and will comprise: the International Consultation Unit providing information and advice in cases of emergency; the Experimental R&D Laboratories for development of remote sensing for radiation and toxic chemical pollution. This Centre will also be involved in analytical work, modelling, verification and validation of models for risk assessment.

To support the work of the Centre, related Units will be set up in the USSR: the International Safety and Emergency Centre, in Moscow, and the Chernobyl Station.

I. 5. TESTING STATION FOR ELECTROMAGNETIC SOUNDING

A permanent station with experimental MHD (Magneto-Hydro-Dynamic) installations and computer facilities will be established in Sicily (Italy), in the framework of ILSEAT. This facility will enable field operation, data storage and processing related to MHD and other technologies application for Earth sounding.

I. 6. CENTRE FOR ADVANCED LASER TECHNOLOGIES

The activities of this Centre, to be created in the framework of ILSEAT, will be:

- a) R&D on new types of lasers for non-military technological applications;
- b) Development of Laser Systems for use in Industry, Biology and Medicine;
- c) Research on Inertial Confinement Nuclear Fusion;
- d) Investigations on New Materials.

I.7. ECOLOGICAL STATION IN PERESLAVL-ZALESSKY (USSR)

The Station will be built in the vicinity of the town of Pereslavl-Zalessky. Its units will be spread over typical middle Russia area suffering from all contemporary problems of human activities impact on the environment. The Station will comprise laboratories, ecological and educational facilities, living quarters for visiting scientists.

I.8. QUASAR - NETWORK OF STATIONS AND DATA CENTRE

The Network of Radiointerferometrical Stations will include six stations in the USSR, one station situated in China, and another one in India. A Data Centre will be situated in Leningrad (USSR). All these Stations and the Data Centre will be connected via Soviet Satellite Links.

The possibility of Italian participation in this project, with radiotelescopes in Bologna and in Sicily, will be studied.

II. PROJECTS

II.1. MONITORING OF OZONE LAYER AND ULTRAVIOLET RADIATION

Objectives: Cooperation in the creation of a network for monitoring ozone and hard ultraviolet radiation. Development of numerical models to study the effects induced by the changes of ozone concentration and intensiveness of ultraviolet radiation on human beings and ecosystems.

Development of methods and means for preventing future ozone layer depletion. The possibility to restore the ozone layer will also be explored.

II.2. STUDY OF GREENHOUSE EFFECT AND CLIMATE MONITORING

Objectives: Cooperation in the monitoring of greenhouse gases. Development of advanced numerical models to understand the effects on climate of the encreasing concentration of these gases in the atmosphere, induced by human activities and natural processes.

II.3. PITAGORA - RADIATION MONITORING

Objectives: Development of methods and means of remote sensing with the purpose of creating a Global Radiation Monitoring Network. Multinational collection of all environmental data on accidents at Nuclear Energy Production Cycle units. Creation of a Centralized Data Bank (on atmospheric transfers, dosimetry, decontamination) with multinational access.

II.4. SUPERTOKAMAK

Objectives: Feasibility study of siting in Italy of a large experimental TOKAMAK of the type being developed jointly by Soviet-American-European-Japanese cooperation (ITER). The aim of ITER is the construction of the most powerful TOKAMAK for the decisive step in the achievement of Controlled Nuclear Fusion.

II.5. ELOISATRON

Objectives: Promoting the construction in Italy of the Largest Subnuclear Accelerator Machine in the world. The implementation of this project will constitute a unique instrument for expanding the frontiers of modern knowledge of Nature and of its Laws. The implementation of the ELOISATRON project in the framework of cooperation between Industrialized and Developing Countries will be a concrete contribution to the creation of Science without Secrets and without Frontiers.

II.6. HEFEST - ELECTROMAGNETIC SOUNDING USING

MHD-GENERATORS

Objectives: Joint development of equipment for earthquake prediction and deep earth sounding based on pulsed MHD-generators. Improvement of the methodology for earthquake prediction and the study of the Earth crust structure by electromagnetic methods. Assistance in the coordination of pulsed MHD activities in international programmes and measurement campaigns.

II.7. STUDY OF COSMIC RAYS AT THE GRAN SASSO LABORATORY

Objectives: Study of Cosmic Rays using the new facilities created at the INFN (Italian National Institute for Nuclear Physics) Gran Sasso Laboratory situated in central Italy. This will be accomplished by a joint participation in the construction of a ten thousand ton detector to study solar neutrinos, nuclear matter stability and neutrinos from stellar collapses.

II.8. ELIOS - CLEAN ENERGY TECHNOLOGIES AND RENEWABLE ENERGY SOURCES

Objectives: Cooperation in a large scale integrated programme for the use of New and Renewable Energy Sources. The programme concerns:

- a) R&D on polycrystalline silicon and thin films;
- b) Application developments in the field of power generation, communication, refrigeration, agriculture.

II.9. RESTORATION OF ANCIENT BUILDINGS

Objectives: Cooperation with the purpose of saving ancient historical buildings in both countries. The programme will be developed: a) by determining those buildings having historical value which need to be saved; b) by finding their appropriate use in present-day life; c) by trying to integrate the restored buildings into a larger contextual environment.

II.10 HERMES - COMPUTER, COMMUNICATION, EDUCATION

Objectives: Raising the level of school education and the creation of a better environment for the cognitive and didactical development of children, by the use of modern

information technologies and communications. The final goal is to enable one million classes of students, all over the world, to communicate among them, through the use of computers. The links between the one million classes will be provided by a system of satellites.

II.11. PROMETEUS - GLOBAL DEVELOPMENT MODELLING

Objectives: Development of methods and tools of computer science and mathematical modelling for studies of the main global problems of today, including those of disarmament, economic growth, demography, healthcare, food and energy supply. Carrying out joint research on the problems of global, regional and national development, including the problems of developing countries.

II.12. SEISMO-ELECTROMAGNETIC PRECURSORS

Objectives: To conduct scientific and technical investigations in the methods for studying abnormal electromagnetic phenomena in seismic regions of the USSR and Italy. Joint investigation and accumulation of statistical data of abnormal changes in electromagnetic parameters and their connection with seismic activities. Methodical and theoretical analysis of the collected data for the construction of physical models of earthquake preparation processes.

II.13. BROADBAND DIGITAL SEISMOGRAPH

Objectives: Development of a new high-quality broadband digital seismograph, making use of the most recent achievements, both in the field of sensor production and in the field of micro-processor design. This broadband digital recording system will combine the sensor, under development in the USSR, with the digital equipment designed jointly. The digital components will be provided by the Italian Side.

II.14. POSEIDON - STRONG MOTION DATA BANK

Objectives: Cooperation on the creation of a Strong Motion Data Bank for studies of processes taking place in earthquake source areas as well as for applications in

seismology engineering. The Data Bank will contain digital accelerograms for the shocks of varying intensity and will be oriented to the problems of seismo-resistant constructions, with special attention given to nuclear power plants, dams and other high-risk objects.

II.15. SEISMOLOGICAL INFORMATICS

Objectives: Development of a system of satellite communication channels for seismic data transmission from local and regional observation systems to information processing centres. Creation of programmes for numerical modelling of seismic wave propagation in non-homogeneous complex structure media. Use of vibro-seismic methods for the study of the crustal and upper mantle structure of the Earth in areas of special interest.

II.16. YANUS - EARTHQUAKE PREDICTION

Objectives: Exchange of existing algorithms for earthquake prediction and earthquake data sets. Search for new parametrizations and development of new algorithms. Mathematical and physical modelling of seismic processes and the dynamics of the lithosphere. Updating the predictions on a regular basis.

II.17. EPA - EARTHQUAKE PRONE AREAS

Objectives: Recognition of strong earthquake prone areas in all the seismic regions of the world on the basis of geological and geophysical parameters. Establishment of patterns of maximum magnitude earthquake prone areas on a worldwide scale for the prevention of earthquake consequences, accidents and damage in seismic regions.

II.18. WAVES - SEISMIC SURFACE WAVES

Objectives: Enhancement of the present knowledge of the structure of the Earth and the seismic sources using multiphase seismic wave data. Developing the methods and designing the instrumentation which will allow the retrieval of the main parameters of real seismic sources from surface wave recordings.

II.19. MINERVA - NETWORK OF GEOPHYSICAL DATA INTERPRETATION CENTRES

Objectives: Application of the fundamental results of the Physics of Solid Earth to earthquake prediction, reduction of earthquake damage and search for mineral deposits. Establishment of regional Networks of Data Interpretation Centres, each equipped with computers, software for geophysical research and access capability to the data of global observation systems.

II.20. TERRA - RISK MODELLING

Objectives: Development of mathematical models and software for the risk analysis. Evaluation of different models used in risk assessment and development of basic criteria for acceptable risk assessment.

II.21. AUGUR - GLOBAL MONITORING

Objectives: Creation of computer-based diagnostic systems software, forecasting and decision-making, for the control over high complexity objects being under risk. Working out a methodology of the complex objects structuring. Development of the processes simulation models for certain types of nuclear power stations.

II.22. HYPPOCRAT - COMPUTER SCIENCE FOR HEALTH

Objectives: Exchanges between countries in the field of the diagnostics and treatment of widespread diseases on the basis of modern computer science. Development and installation of modern communication means for the connection with special medical centres from remote places of the Earth.

II.23. COMPOSITE - NEW COMPOSITE MATERIALS FOR PROTECTIVE COATINGS

Objectives: Promotion of joint scientific and technical research for the development of new composite powder materials which provide multifunctional protective coatings. Study of the formation, compositions and structure of such composite materials.

II.24. ANGIO - TRAINING ON DIAGNOSTICS AND TREATMENT OF VASCULAR DISEASES

Objectives: Cooperation on organizing courses to broaden the capabilities of physicians, in particular from developing countries, in the diagnostics and treatment of vascular diseases.

II.25. MALSECO - RESEARCH ON PHYSIOLOGICALLY ACTIVE COMPOUNDS

Objectives: Promotion of multilateral scientific cooperation in the field of developing new methods for obtaining important physiologically active compounds on the basis of new types of raw materials. Use of natural physiologically active substances in medicine and agriculture.

II.26. PHOTON - RESEARCH ON MICROELECTRONICS

Objectives: Cooperation in theoretical and experimental research on condensed media. Development of low-temperature methods to be used in integrated circuit technology in place of the conventional high-temperature techniques.

II.27. PEACEFUL MISSILES - SCIENTIFIC SUPPORT FOR DISPOSAL OF RETIRED MISSILES

Objectives: Conducting Geophysical, Atmospheric and Ionospheric investigations by the use of missiles, as powerful energy sources. Preliminary studies on possible use of missiles which may become retired as a result of signing the START agreement, for launching a series of satellites with the purpose of ecological control, education and medical emergency information services.

II.28. QUASAR - RESEARCH ON FUNDAMENTAL ASTRONOMY AND THE EARTH SCIENCE

Objectives: Provisions for operation of the Radio-interferometrical Network consisting of ground stations in the USSR, China and India and possibly in other countries, including Italy, connected via satellite links, with the

purpose of precise determination of sky and Earth coordinate systems, high resolution mapping of astronomical radio sources, global tectonic investigations.

II.29. AGRO - STORAGE AND PROCESSING OF AGRICULTURAL PRODUCTS

Objectives: Cooperation on the creation in the USSR of an experimental farm on the basis of advanced and ecologically sound technologies for growing, harvesting, storing and processing agricultural products.

II.30. ARMS CONTROL - SCIENTIFIC SUPPORT OF INTERNATIONAL INSPECTION OF DISARMAMENT TREATIES IMPLEMENTATION

Objectives: Investigation of scientific and technical problems of arms control, primarily of nuclear arms control. Development of means for inspection of implementation of expected treaties in this field.

II.31. ADDICTS REHABILITATION CENTERS

Objectives: Studies of psychological, ethical, humanitarian issues of drug addicts rehabilitation and exchange of experiences of working with youth gained in rehabilitation institutions in different countries.

II.32 ECOSAT - ECOLOGICAL SATELLITE INFORMATION STATION

Objectives: Creation in Erice (Italy) of a ground station for receiving, processing and circulation of ecological information which will be transmitted by a Soviet satellite of the "Resource" type. The information will be accessible to developing countries.

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9121054

FROM: LYONS, John W.: NIST

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/05/91

SUBJECT: RE: THE SIGNING CEREMONY IN MOSCOW FOR THE NIST -
SOVIET ACADEMY AGREEMENT.

ASSIGNED TO:

*John R
Comment
DAS.*

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Thomas Ratchford

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 04/10/91

FILE: INTERNATIONAL - U.S.S.R.



NIST

9121054
UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899
OFFICE OF THE DIRECTOR

RECEIVED

91 APR 10 A10:01

OFFICE OF THE
DIRECTOR

April 5, 1991

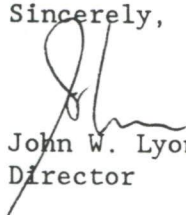
Honorable D. Allan Bromley
Assistant to the President
for Science and Technology
White House Office of Science
and Technology Policy
Washington, DC 20506

Dear Allan:

I understand from Tom Ratchford that you would like a signing ceremony in Moscow for the NIST - Soviet Academy agreement. I further understand you would be willing to sign for me. I would be pleased, indeed honored, to have you do so. If need be I can add my signature before or after the ceremony.

Normally I would try to make such a trip but my second oldest is receiving her Ph.D. from the University of Wisconsin that week and I am scheduled to escort her in the academic procession.

Sincerely,


John W. Lyons
Director

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

Allan Bromley -

Eyous was given 3
options - 1) go and sign
2) Debrale sign for NST/
Commerce or 3) you
sign for USG. He
chose 3). Debrale is
pleased as well.

John O'Neil is
making the appropriate
arrangements.

Good!
JTB

JTB
4/17/91

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9121054

FROM: LYONS, John W.: NIST

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 04/05/91

SUBJECT: RE: THE SIGNING CEREMONY IN MOSCOW FOR THE NIST -
SOVIET ACADEMY AGREEMENT.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Thomas Ratchford

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 04/10/91

FILE: INTERNATIONAL



NIST

9/2/854
UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899
OFFICE OF THE DIRECTOR

RECEIVED

91 APR 10 A10:01

OFFICE OF THE
DIRECTOR

April 5, 1991

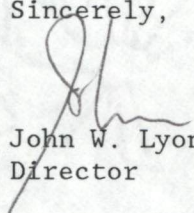
Honorable D. Allan Bromley
Assistant to the President
for Science and Technology
White House Office of Science
and Technology Policy
Washington, DC 20506

Dear Allan:

I understand from Tom Ratchford that you would like a signing ceremony in Moscow for the NIST - Soviet Academy agreement. I further understand you would be willing to sign for me. I would be pleased, indeed honored, to have you do so. If need be I can add my signature before or after the ceremony.

Normally I would try to make such a trip but my second oldest is receiving her Ph.D. from the University of Wisconsin that week and I am scheduled to escort her in the academic procession.

Sincerely,


John W. Lyons
Director

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9120959

FROM: MILLER, Terry A.: THE OHIO STATE UNIVERISTY

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/22/91

SUBJECT: AS REQUESTED, ADDITIONAL DETAILS ABOUT THE
DIFFICULTIES WITH THE U.S. EMBASSY IN MOSCOW ISSUING
VISAS TO SOVIET STUDENTS ACCEPTED FOR GRADUATE STUDY

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE: OSTP DUE DATE:

DATE COMPLETED: -----

COPIES TO: D. Allan Bromley
Thomas Ratchford

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS:

DATE RECEIVED: 04/02/91

FILE: INTERNATIONAL - USSR

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Letter	To: Allan Bromley From: Terry Miller Re: Visas for Soviet students (2 pp.)	3/22/91	(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files - Country Files
WHORM Cat.:
File Location: International: USSR [2 of 2] [1991]

Date Closed:	5/5/2010	OA/ID Number:	62067-007
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION

DOCUMENT NUMBER: 9120906

FROM: STERN, Marvin

TO: DR. BROMLEY

DATE OF
CORRESPONDENCE: 03/21/91

SUBJECT: A JOINT U.S.-SOVIET COOPERATIVE MONITORING SATELLITE
FOR TREATY VERIFICATION AND FOR WORLDWIDE
SURVEILLANCE.

ASSIGNED TO:

ACTION REQUIRED:

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

COPIES TO: D. Allan Bromley
Thomas Ratchford
Michelle Van Cleave

WHITE HOUSE TRACKING #:

CONTACT PERSON:

REMARKS: Please notify Marvin Stern if you wish to be kept advised.

DATE RECEIVED: 03/26/91

FILE: INTERNAT'L*NAT'L SECURITY
- U.S.S.R.

9120906

RECEIVED

MARVIN STERN
4001 Long Valley Road
Santa Ynez, California 93960
(805) 688-0348

91 MAR 20 P 2: 51

OFFICE OF THE
DIRECTOR

21 March, 1991

Dr. D. Allan Bromley
Science Advisor to the President
Executive Office Building
Pennsylvania Ave. and 17th St., N.W.
Washington, D.C. 20506

Dear Dr. Bromley:

Last April 27 I met with you and John Foster to discuss an approach to treaty verification and arms control that I have been studying. The approach utilizes a joint U.S.-Soviet cooperative monitoring satellite for treaty verification and for worldwide surveillance in order to defuse crises that might arise due to Third World military buildups.

Last week I discussed this approach with Evgeny P. Velikhov, Vice President of the Soviet Academy of Sciences, and he found it sufficiently interesting to have agreed to a joint symposium on the subject. Enclosed for your information is a copy of my follow-up communication with Dr. Velikhov.

The purpose of this letter is to inform you of this action and ask if you wish to be kept advised.

Sincerely,



Marvin Stern

Enclosures: 2

MARVIN STERN
4001 Long Valley Road
Santa Ynez, California 93460
(805) 688-0348

20 March, 1991

CCCP
Moscow, Leninski Pr. 14
Presidium of Academy of Sciences
Dr. Evgeny P. Velikhov

Dear Dr. Velikhov:

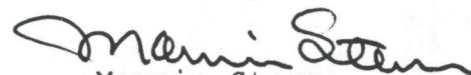
During last week's Soviet-American Symposium on Research, Technology and Trade it was very kind of you to take the time to discuss my proposal for *Global Monitoring By A Joint U.S.-Soviet Cooperative Satellite Program*. As you will recall, the program could be introduced initially for verification of START and CFE treaties, provide worldwide surveillance to inhibit Third World conflicts, and be a most useful improvement in the current commercial satellite imagery programs for monitoring of land resources. An additional summary of this proposal is enclosed.

Although this subject has been discussed with quite a few people here in the United States, we consider it most encouraging to find similar interest by a Soviet scientist of your standing. As captivating as the initial concept is, it does merit further in-depth study and analysis in several fields of the political and physical sciences. As one means of furthering such investigation, we discussed the possibility of a joint U.S.-Soviet symposium on the subject. I was delighted that you felt there could be great benefit to such an undertaking.

At last week's meeting in San Francisco, I was representing the UCLA Center for International and Strategic Affairs, where I serve as a Senior Research Fellow. It was on their behalf that the suggestion of a joint symposium was made. I am confident that there would be sufficiently broad interest in the subject that a wide and representative group from this country would assemble and participate in such a session.

I have initiated discussions here relative to delineation of topics and timing for such a symposium. We would most certainly appreciate any initial suggestions that you might have relative to these matters.

Sincerely,


Marvin Stern

cc: Michael Intriligator, UCLA

MARVIN STERN
4001 Long Valley Road
Santa Ynez, California 93460
(805) 688-0348

7 March, 1991

GLOBAL MONITORING BY A JOINT U.S.-SOVIET COOPERATIVE
SATELLITE PROGRAM

The SALT I treaty of 1972 permits the use of National Technical Means for treaty monitoring and verification. As an element of National Technical Means, satellite reconnaissance has proven to be very useful and contributory toward stability. Data gathered in this fashion, however, is considered classified; and specific information so gained cannot be displayed in public forums. Thus a major use of such information is denied.

Over the years, as a means of contributing to international stability, there have been several proposals to the United Nations for the establishment of an International Satellite Monitoring Agency. The last such proposal was made by the Soviet Union in 1988. In a July 13, 1990 United Nations report, *Study on the Role of the United Nations in the Field of Verification*, it is acknowledged that there is nothing in international law to prohibit an international organization from carrying out such monitoring activities from space. However, because of some states' concerns about national security and secrecy, no International Satellite Monitoring Agency has come about.

U.S.-SOVIET TREATY VERIFICATION.

A JOINT U.S.-SOVIET COOPERATIVE SATELLITE PROGRAM could be introduced initially for verification of the START and CFE treaties. The satellite would utilize sensor resolution less fine than each side currently obtains in its classified programs, but still significantly better than that offered by the current civilian programs. As such, since no added information would be gained by either participant, the resulting data generated by the joint program could be considered to be relatively declassified between the United States and the Soviet Union.

Imagery at a resolution of approximately 1 meter would satisfy the criteria specified. Such resolution would result in information that would be capable of providing "Detection" and "General Identification" of almost all targets of military interest. It would be incapable of providing either the "Description" or "Technical Intelligence" for almost all militarily interesting targets, these latter functions being more properly reserved for the classified programs (see Definitions and Required Resolutions in charts 1 and 2).

Digital read-outs of elctro-optic imagery data would be obtained directly by each of the participants. For the obtaining of imagery data at 1 meter resolution, the Joint Satellite would prove to be less cumbersome and far less intrusive than Aircraft Open Skies.

WORLDWIDE SURVEILLANCE AND CRISIS MONITORING.

Perhaps an even more significant advantage to the utilization of a near polar orbit Cooperative Satellite would be its utility for surveillance of possible military or weapon generation or deployments over the rest of the world as well. Such worldwide monitoring could in fact be very reassuring to the United States and the Soviet Union in their efforts to reduce significantly the level of their own arms deployments.

As an unfortunate consequence of the end of the Cold War, it is very probable that rivalries between countries other than the U.S. and the Soviets might grow unhindered. The surveillance provided by this Cooperative Satellite should detect weapon generation and military deployments if they were to occur in such situations. Since data gained from the Joint Satellite would be considered relatively declassified, it could be introduced into public forums. Therefore, hard information as to the existence of military buildups leading to potential crises and regional conflicts could be presented to the United Nations and its Security Council. As a result, political pressure could be brought to bear in an effort to stabilize such situations before they get out of hand.

With demonstrable success in treaty verification together with worldwide surveillance and crisis monitoring, the U.S.-SOVIET COOPERATIVE SATELLITE PROGRAM could then be expanded to multilateral participation. This, then, could form the basis for the formation of the International Satellite Monitoring Agency.

MONITORING OF LAND RESOURCES.

Civilian exploitation of satellite-obtained imagery is currently being employed in a wide variety of studies related to land use. It is clear that statistical sampling at the 1 meter resolution would provide a most useful complement to the coarser data currently being employed. Such finer resolution would assist materially in mapping land resources for geological purposes, vegetation assessment, and land development. This beneficial by-product for use in economic development and land resource management would be of particular value in contributing practical benefits to countries in the Third World in their sustainable development planning.

Data obtained at the 1 meter resolution would contribute greatly to many areas of global change research and would provide very useful information in the field of hazard reduction. Densely spaced, high resolution geodetic measurement on a frequent basis is the most likely technique to achieve timely earthquake prediction. High resolution geodetic observation and altimetry are also the keys to understanding regional uplift, subsidence, and associated hazards in coastal areas, as well as change in the shape and volume of polar ice caps.

In addition to the direct benefit attributable to such improved monitoring of land resources, it could be expected that the indirect benefit associated with improved economic land development planning might reduce internal pressures within some of the more deprived Third World countries.

DEFINITIONS

1. Detection Involves the Location of a Class of Units, Objects or Activity of Military Interest
2. General Identification Involves the Determination of General Target Type
3. Precise Identification Involves Discrimination Within Target Type
4. Description Involves Specification of the Size/Dimension, Configuration /Layout, Components-Construction and Number of Units
5. Technical Intelligence Involves Determination of the Specific Characteristics and Performance Capabilities of Weapons and Equipment

RESOLUTION REQUIRED FOR DIFFERENT LEVELS OF PRECISION

Target	Detection	General Identification	Precise Identification	Description	Technical Intelligence
Bridge	6 m	4.6 m	1.5 m	0.9 m	0.3 m
Communications					
Radar	3.0	0.9	0.3	0.15	0.04
Radio	3.0	1.5	0.3	0.15	0.15
Supply Dump	1.5	0.6	0.3	0.03	0.03
Troop Units	6.0	2.0	1.2	0.3	0.08
Airfield Facilities	6.0	4.6	3.0	0.3	0.15
Rockets and Artillery	0.9	0.6	0.15	0.05	0.01
Aircraft	4.6	1.5	0.9	0.15	0.03
Command and Control	3.0	1.5	0.9	0.15	0.03
Headquarters					
Missile Sites	3.0	1.5	0.6	0.3	0.08
(SSM/SAM)					
Surface Ships	7.6	4.6	0.6	0.3	0.08
Nuclear Weapon	2.4	1.5	0.3	0.03	0.01
Components					
Vehicles	1.5	0.6	0.3	0.05	0.03
Land Minefields	9.0	6.0	0.9	0.03	—
Port and Harbours	30.5	15.0	6.0	3.0	0.3
Coasts and Landing					
Beaches	30.5	4.6	3.0	1.5	0.08
Railway Yards and					
Shops	30.5	15.0	6.0	1.5	0.6
Roads	9.0	6.0	1.8	0.6	0.15
Urban Areas	61.0	30.5	3.0	3.0	0.3
Terrain	—	91.0	4.6	1.5	0.15
Surfaced Submarines	30.5	6.0	1.5	0.9	0.03

"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9122970
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

FROM: LAVEROV, Nikolay: USSR STATE COMMISSION FOR S&T

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 01/02/91

SUBJECT: RE: PARTICIPATION IN THE INTERNATIONAL OCEAN
DRILLING PROGRAM.

DIRECTORATE STAFF
ASSIGNED: ASSIGNED:

ACTION STAFF
REQUIRED: ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley John O'Neil
Tom Ratchford
SARA BOWDEN
Nancy Maynard

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS: This is an old information item which requires no action per Pat Neuhardt.

CLOSED

OSTP RECEIVED: 07/30/91
DEPT RECEIVED:

FILE: P-INTERNATIONAL-USSR

Mary,

This is old info and file only.

It needs to get in the system for
Bromley, Ratchford, Bowden, Maynard,
and O'Neil.

No action required. I've attached
the copies. Thanks.

Pat

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
02a. Letter	To: Allan Bromley From: Nikolay Laverov Re: Ocean Drilling Program [English translation] (1 pp.)	1/2/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files - Country Files
WHORM Cat.:
File Location: International: USSR [2 of 2] [1991]

Date Closed:	5/5/2010	OA/ID Number:	62067-007
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
02b. Letter	To: Allan Bromley From: Nikolay Laverov Re: Ocean Drilling Program [Russian] (1 pp.)	1/2/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files - Country Files
WHORM Cat.:
File Location: International: USSR [2 of 2] [1991]

Date Closed:	5/5/2010	OA/ID Number:	62067-007
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
02c. Telegram	To: Allan Bromley From: Nikolay Laverov Re: Ocean Drilling Program (1 pp.)	1/2/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: International Files - Country Files
WHORM Cat.:
File Location: International: USSR [2 of 2] [1991]

Date Closed:	5/5/2010	OA/ID Number:	62067-007
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information