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| ID | Doc Type | Document Description | No of Pages | Doc Date | Restrictions |
|-------|----------|---|-------------|-----------|--------------|
| 11769 | REPORT | U.S.-SOVIET RELATIONS: BILATERAL ITEMS <i>R 4/14/2011 F2006-114/11</i> | 3 | ND | B1 |
| 11770 | REPORT | STATUS OF US-USSR SCIENCE AND TECHNOLOGY COOPERATION <i>R 4/14/2011 F2006-114/11</i> | 3 | ND | B1 |
| 11771 | MEMO | BREMER TO ALLEN RE IMPLEMENTATION OF US-USSR BILATERAL COOPERATIVE AGREEMENTS <i>R 4/14/2011 F2006-114/11</i> | 2 | 5/26/1981 | B1 |
| 11767 | MEMO | ALLEN TO PRESIDENT REAGAN RE REPORT ON THE IMPLEMENTATION OF U.S.-USSR BILATERAL COOPERATIVE AGREEMENTS <i>R 1/4/2010 F06-114/11</i> | 2 | ND | B1 |
| 11772 | REPORT | SEMIANNUAL REPORT ON IMPLEMENTATION OF US-USSR BILATERAL SPECIALIZED AGREEMENTS <i>R 4/14/2011 F2006-114/11</i> | 73 | ND | B1 |
| 11768 | REPORT | INTERDEPARTMENTAL GROUP FOR EUROPE SEMIANNUAL REPORT <i>R 7/15/2008 NLRRF06-114/11</i> | 1 | ND | B1 |

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

File:

US-USSR-

Bilateral
Agreements

Jack - Here is the promised
info on the status of exchanges.

a) redo of paper on possible next
steps

b) John Zimmerman's piece on current
status

c) Report on FY 81 + 82 to Congress on
S+T exchanges. by NW

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U. S.-SOVIET RELATIONS: BILATERAL ITEMS

Agreements and Meetings

In recent months we have renewed our Atomic Energy and Housing agreements, and approved renewal of a "private" agreement between the National Bureau of Standards and the Soviet Academy of Sciences. Bilateral agreements on Space, Energy, and Science & Technology were allowed to lapse in 1982, and the extension of the Transportation agreement was suspended after KAL for "so long as they threaten the safety of civil aviation" as the President said September 5. Other active agreements include Environment, Health, Artificial Heart, and an Academy of Sciences exchange. Our Agriculture agreement is in force, but remains inactive because of the sanction against high-level contacts.

Major bilateral agreements and meetings coming up this year (in addition to the yet to be scheduled next round of Pacific maritime boundary negotiations and the late spring Hot Line talks) are:

-- Long-Term Economic, Industrial and Technical Cooperation Agreement: This ten-year agreement, our only economic and commercial agreement with the Soviets, expires in June. It has some utility in facilitating U.S. business efforts in Moscow. We are pushing for a ten-year renewal.

-- Fisheries Agreement: Extended twice under this Administration for a year, and up for renewal again on July 1. We have informed the Soviets we plan to extend for 18-months at that time.

-- World Oceans Agreement: Renewed for three years in 1981, and up for renewal in December. This agreement has been of major value to NOAA in carrying out its oceanographic research. One joint effort in 1982 involved 13 American scientists on a Soviet ship and saved NOAA \$1 1/4 million.

-- USTEC Meeting: The meeting of the U.S.-Soviet Trade and Economic Council cancelled in the fall is now scheduled for May in New York. The level of the USG speaker for the meeting will be an issue to decide.

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BY KML NARA DATE 4/21/11

Further Steps on Bilateral Issues:

Beyond these items forced on us by the calendar, there is a range of other bilateral issues that could be considered if developments in the overall relationship justify another look. Our willingness to proceed on them would signal the seriousness of our commitment to the "dialogue" component of our overall strategy to the Soviets and to the American public.

The following steps would increase people-to-people contact through our extant bilateral agreements on the environment, health (including artificial heart research), housing, and agriculture. These agreements are in force, but they have functioned at low levels partly because of the political atmosphere and partly because the sanction on high-level contacts has beheaded the U.S. side and reduced Soviet high-level interest as a result. The U.S. agencies involved are eager to renew cooperation.

-- On the environment, naming a U.S. Co-Chairman (EPA Secretary Ruckelshaus or Interior Assistant Secretary Arnett) to the U.S.-USSR Joint Commission; inviting Soviet Co-Chairman Izrael (who has ministerial rank) to the U.S. for a project meeting in October; and, finally, accepting the standing Soviet invitation to another meeting of the Joint Commission.

-- On health/artificial heart, rescheduling the visit by NIH Director Wyngaarten cancelled after KAL and, if this is successful, blessing a visit to the USSR by Secretary Heckler, in which HHS is interested, to examine possibilities for expanding activities under the health agreement.

-- On housing, agreeing to include a project on polymer concretes from the S&T Agreement that expired in 1982 under the recently-extended housing agreement. This is the same project that proved so valuable that the U.S. participant used information obtained from it to win a contract for MX missile base construction.

-- On agriculture, agreeing to a meeting between the Executive Secretaries of the agreement that both USDA and the Soviet side have wanted for years, and that the Soviets have made a de facto precondition for harvest reporting travel by our Agricultural Attache in Moscow. Renewed reporting from him would be a benefit in itself.

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Likely candidates for new agreements include: space, one of the few agreements where the balance of benefits was clearly in our favor before it expired as a Poland sanction in 1982, and which would follow naturally from our space rescue mission proposal; transportation, where KAL developments may warrant another look, given the linkage defined by the President in September; and basic sciences and engineering, which could be in our interest as a narrower, more carefully defined replacement for the expired S&T agreement.

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Status of US-USSR Science and Technology Cooperation

The present framework of bilateral science and technology (S&T) agreements was created largely as a result of the Nixon-Brezhnev summits in the early 1970s. The eleven agreements which were signed led to a significant increase in cooperative S&T activities throughout much of the decade. Following the Soviet invasion of Afghanistan in December 1979, the USG greatly reduced funding and other support for these cooperative programs. Activities declined further in 1982 with the non-renewal of three agreements (space, science and technology, and energy); This was one of the measures taken by the USG in holding the Soviet Union responsible for the imposition of martial law in Poland. Following the downing of the KAL airliner, we ended our negotiations to renew the Transportation Agreement, thereby suspending cooperative activities in that field. As a result of our responses to these three Soviet actions, the level of activity under the remaining seven agreements has been reduced to less than 20 percent of the 1979 level.

Consistent with NSDD-75 (January 1983), we have maintained an overall structure for S&T cooperation in the remaining areas so that beneficial activities can be expanded if the political situation should warrant. Within the past 12 months we have renewed the Atomic Energy Agreement, Housing Agreement, and have informally notified the Soviets of our intention to seek renewal of an implementing arrangement under the expired Science and Technology Agreement (the Memorandum of Cooperation between the National Bureau of Standards and the Soviet Academy of Sciences).

Maintaining the framework, however, has accomplished only that -- the framework is present but the program activities under this framework continue to decline. For example, the World Ocean Studies Agreement, which in 1982 supported a joint research cruise in the Antarctic saving NOAA approximately \$1.25 million, has seen only a few routine exchange visitors during 1983. In addition, the sanction against high-level contacts has reduced the Agriculture Agreement to little more than a means for data exchange and has precluded the appointment of a new US co-chairman for the Environmental Agreement, thereby causing severe organizational problems in EPA's efforts to coordinate even the most banal bilateral business. A similar problem is facing us in regard to the agreements in general health and artificial heart research; Over the next three years, several projects will be completed and without clear Administration direction, new projects will not be initiated to take their place. In the case of these five agreements, we have retained the cooperative structure while watching them atrophy.

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In addition, we need to look closely at the statement that the present level of activities is 20 percent of that in 1979 since it belies the fact this reduction was not spread evenly among the programs. A comparison of exchanges in 1979 and 1982 (the last year for which the Department has complete figures) shows that for some agreements the decline in American participation was drastic (Agriculture to 21 percent, World Oceans to 5 percent, Science and Technology to 11 percent, and Energy to 0 percent) while others were not as devastated (Environment to 45 percent, Health/Artificial Heart to 54 percent, Transportation to 50 percent, and Atomic Energy to 75 percent).

To maintain a truly viable cooperative S&T program with the Soviet Union, it must be able both to attract the interest of specialists at the US technical agencies and as well to provide a means by which to assist the agencies in fulfilling their domestic mandate whether it is improving American scientific strength in agriculture, health care, or theoretical physics. That these programs have the potential for making such contributions is clearly illustrated by recent successful programs: the transfer of three, young Siberian tigers from zoos in Moscow to the US (August 1983) and a joint cruise studying long-range pollutants in the Pacific Ocean using a Soviet research vessel (November-December 1983), both under the Environmental Agreement; long-term joint experiments in high-energy particle physics under the Atomic Energy Agreement (September 1983 to June 1984); and, the use of American research equipment on a Soviet-launched biosatellite under the expired Space Agreement (December 1983), the last joint project under this agreement.

Aside from the arguments made in NSDD-75 concerning the dissemination of American ideals in Soviet society, our foremost objective (especially as seen by the US technical agencies) in maintaining these cooperative activities is to strengthen American S&T capabilities. The S&T program provides our scientists access to unique resources (e.g., geological or environmental conditions) and facilities (e.g., large research ships or one-of-a-kind high-energy particle accelerators) and the opportunity to conduct joint projects with leading Soviet scientists who, for one reason or another, are not always able to travel.

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-3-

These cooperative programs also provide first-hand information on Soviet research in facilities under the direction of the Soviet Academy of Sciences and, occasionally, under one of the ministries. In spite of the general backwardness of Soviet S&T, it should be noted that they have the largest percentage of the world's scientists and are still capable of surprises.

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REPORT TO CONGRESS
SCIENTIFIC EXCHANGE ACTIVITIES WITH THE SOVIET UNION
FISCAL YEAR 1981 AND FISCAL YEAR 1982
DEPARTMENT OF STATE AUTHORIZATION ACT
SEC. 126.(a) and (b)

EXECUTIVE SUMMARY

OVERVIEW:

This summary section will provide a brief overview of the history and current status of the U.S.-Soviet cooperative science and technology exchange agreements, followed by a statement on "the risk of the transfer to the Soviet Union of militarily significant technology through research, exchanges, and other activities conducted pursuant to those agreements," as requested in Section 126.(a)(1).

The balance of the report will contain the individual agency submissions, which will address the information requested in Section 126.(a)(2).

The list of Soviet nationals participating during the upcoming academic year in the U.S. and the Soviet Union under the graduate student/young faculty exchange or senior scholar exchange, their topics of study and where they are to study shall be provided not later than July 1 as specified in Section 126.(c).

Background:

Since 1958, agreements between the United States and the Soviet Union have provided for science and technology exchanges with the Soviet Union, as well as those in the fields of education, culture and information. Science and technology exchange activities were conducted under specialized cooperative agreements which were signed by the U.S. and USSR during summits in Moscow (1972 and 1974) and Washington (1973). This framework led to a significant increase in science and technology activities, which remained at a high level throughout much of the 1970's.

Following the Soviet invasion of Afghanistan in December 1979, the U.S. Government greatly reduced funding and other support for science and technology exchanges. Activities declined further in 1982 with the expiration and non-renewal of three science and technology agreements - one of the measures taken by the U.S. in holding the Soviet Union responsible for the imposition of martial law in Poland in December 1981.

Current Status of Cooperative Science and Technology Agreements:

Reflecting changes in the overall political situation in the wake of Soviet actions in Afghanistan in 1979 and Poland in 1981, the level of cooperative science and technology activity under the remaining eight agreements has declined to roughly 20 per cent of the 1979 level, when eleven agreements were in force. We are proceeding with activities of particular benefit to the United States, especially in the areas of health, environmental protection and safety. We have maintained the structure of scientific cooperation intact in most areas so that beneficial exchanges can be expanded if the political situation should warrant. Consistent with this view, since 1979 we have renewed specialized agreements on cooperation in oceanography, medicine and public health, artificial heart research and development, environmental protection and agriculture.

Assessment of the Risk of Technology Transfer:

Appropriate elements of the intelligence community routinely assess the risk of the transfer to the Soviet Union of militarily significant technology through research, exchanges, and other activities conducted under these agreements. Inasmuch as the activities proposed and conducted generally are in basic research areas or involve scientific applications in the fields of health, safety, or environmental protection, the activities reviewed by the intelligence community rarely involve risk of the transfer of militarily significant technology. In those few instances where risk of technology transfer is identified, the activities are either cancelled or appropriately recast to minimize or eliminate such risk.

Agency Reports on Activities Conducted in Fiscal Years 1981 and 1982:

The agencies involved in cooperative activities with the Soviet Union during fiscal year 1981 and fiscal year 1982 under the eleven agreements which entered into force between 1972 and 1974 have prepared individual reports covering the following areas, as specified in Section 126.(a)(1).

- A. The areas of cooperation,
- B. The specific research and projects involved,
- C. The man-hours spent in short-term (less than 60 days) and long-term exchanges,
- D. The level of United States and Soviet funding in each such fiscal year, and
- E. An assessment of the equality or inequality in value of the information exchanged.

The reports covering the eleven agreements, with an indication of the status of the agreements and the operational agencies involved, appear at the following tabs:

TAB 1 - Cooperation in the Field of Agriculture (to be renewed for a five-year term on June 19, 1983) - Department of Agriculture.

TAB 2 - Cooperation in Artificial Heart Research and Development (extended until June 28, 1987) - National Institutes of Health.
Cooperation in Medical Science and Public Health (extended until May 23, 1987) - National Institutes of Health.

TAB 3 - Scientific and Technical Cooperation for Peaceful Uses of Atomic Energy (expires June 21, 1983; a renewal decision pending) - Department of Energy.

TAB 4 - Cooperation in the Field of Energy (expired June 28, 1982 and not renewed in accordance with a Presidential Directive) - Department of Energy.

TAB 5 - Cooperation in the Field of Environmental Protection (extended until May 23, 1987) - Environmental Protection Agency, National Oceanographic and Atmospheric Administration, U.S. Fish and Wildlife Service.

TAB 6 - Cooperation in the Field of Housing and Other Construction (extended until June 28, 1984) - Department of Housing and Urban Development.

TAB 7 - Cooperation in the Fields of Science and Technology (expired July 7, 1982 and not renewed in accordance with a Presidential Directive) - National Science Foundation, Bureau of Standards, U.S. Forestry Service.

TAB 8 - Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes (expired May 18, 1982 and not renewed in accordance with a Presidential Directive) - National Aeronautics and Space Administration.

TAB 9 - Cooperation in the Field of Transportation (expires June 19, 1983; a renewal decision pending) - Department of Transportation.

TAB 10 - Cooperation in Studies of the World Ocean (extended until December 15, 1984) - National Oceanographic and Atmospheric Administration.

US-USSR

AGREEMENT ON COOPERATION IN
THE FIELD OF AGRICULTURE
Fiscal Years 1981 and 1982

As requested in your memo of December 9, the following information is provided on Agricultural Agreement activities during the past two years:

Activities under the U.S.-U.S.S.R. Agreement on Cooperation in the Field of Agriculture were completely suspended as a result of U.S. sanctions against the Soviet Union imposed in January 1980. There were no activities during FY 1981. A working-level planning meeting held in July 1982 opened the way for travel by two U.S. teams to the Soviet Union during FY 1982. To date there have been no reciprocal visits by Soviet teams to the U.S.

Two American experts spent four weeks in August 1982 collecting germ plasm materials from wild forage grass and legume plants native to areas in the Soviet Union. The team obtained over 500 varieties of plant materials which will be tested for usefulness in arid pasturelands of the Southwest U.S. Cost of the trip was about \$9,300. In-country transportation and an interpreter escort were provided by the Soviets. Benefits from this visit are exclusively to the U.S. (This visit, however, was the second part of an exchange of teams. In 1978 a Soviet team spent six weeks in the U.S. collecting over 1,000 varieties of wild sunflower plant material.)

A three-man USDA team was in the Soviet Union also in August to observe the condition of the Soviet spring grain crop. At a cost of approximately \$14,000, the team visited representative grain-growing areas, inspecting crops in order to improve USDA's early knowledge of Soviet grain production. Soviet grain production affects world supply and demand, as well as U.S. grain exports. Benefits from this visit accrue strictly to the U.S.

It is not possible to determine Soviet expenses in these exchange activities.



The Office of International Cooperation and Development
is an agency of the
United States Department of Agriculture

Report Mandated by PL 97-241 on Scientific Exchanges
with the Soviet Union for FY 1981 - 1982

US-USSR Health and Artificial Heart Research and Development Agreements

A. Areas of cooperation:

1. Cancer
2. Cardiovascular Disease
3. Artificial Heart
4. Environmental Health
5. Arthritis
6. Influenza, Acute Respiratory Disease, and Viral Hepatitis
7. Mental Health
8. Eye Disease
9. Biomedical Communications
10. Individual Health Scientist Exchanges

B. Research and Projects:

1. Cancer

In Moscow, USSR, from 25 to 29 October 1980, seven American scientists participated in a joint workshop on "Clinical Biochemical Pharmacology." The American visitors established contact with Soviet scientists with whom previous interactions had been relatively sparse. Some of the Soviet contributions concerned: (1) the selectivity of drug action and the administration of selectively localized drug-carrier complexes; (2) the selective activation of pro drugs and of protective metabolites; and (3) the biochemical and pharmacologic target cell determinants of drug action for utilization in the design of "individualized therapy regimens."

One Soviet virologist spent one month in the National Cancer Institute (NCI) and the Sidney Farber Cancer Institute exchanging information on general problems associated with viral carcinogenesis and co-carcinogenesis.

A second Soviet virologist spent six months in the Sidney Farber Cancer Institute engaging in three research projects. The first project related to a comparison of the genomes of two murine leukemia viruses. The second project dealt with the structure of the section of the human chromosome that contains sequences homologous to the transforming portion of the genome of the feline sarcoma virus. The third project was one begun by the Soviet visitor in his home laboratory concerning the structure

of the viruses derived from the Soviet baboon colony in Sukhumi. Jointly, the scientists applied methods developed in the Farber Institute for detailed analysis of RNA virus genomes to the Soviet materials and were successful in defining the viruses. The second and third studies are continuing, in parallel, in the US and the USSR.

A Soviet geneticist spent two months at the State University of New York at Stony Brook learning the technique of removing nuclei from cells and inserting these into the anucleated cytoplasm of cells of different origin. This enabled him and his American hosts to make "minicells" containing a few or a single chromosome and inserting these into cells of a different species.

The six original program areas--in effect since inception of the US-USSR Health Agreement in 1972--were modified, restructured, and/or merged during the Sixth US-USSR Meeting on the Problem of Malignant Neoplasia in Bethesda, September 1981. Thus, the scientific areas of Cancer Treatment, Carcinogenesis, and Cancer Prevention now constitute the priority areas for continuing collaboration between American and Soviet cancer specialists.

An NCI intramural scientist, during his November 1981 visit to Moscow's All-Union Oncologic Scientific Center, discussed cancer chemotherapy, especially from the view of detailed analyses of raw data and participation in clinical rounds for the observation of Soviet patients entered into a parallel study of tamoxifen as an adjuvant in the surgical treatment of breast cancer. Preliminary data indicate positive treatment results with this agent, and the patient accrual under the study should yield promising information regarding this mode of treatment. The NCI provides the tamoxifen and research counsel for this parallel study.

The NCI has been provided with additional quantities of the Soviet drug, histar, for completion of preclinical testing in xenograft systems following demonstration of positive histar activity in L-1210 leukemia, B-16 melanoma, and CD8F mammary tumor. In addition, the Soviets are preparing for NCI testing samples of three compounds of natural origin to determine their potential use as anticancer agents. These are the antibiotic, bacuchiol, and lichen products, chrysophanol and cynodontin.

During their January-February 1982 visit to the NCI and other US cancer centers, two Soviet chemotherapists joined American colleagues at the University of Maryland Cancer Center for the design and development of a protocol for a Phase I and clinical and pharmacologic trial of platinum diammine (1,1-cyclobutane-dichloroxylate)2-(0,0'). The agent is commonly referred to as CBDCA. Paralleling the study

of the American scientists and clinicians, Soviet scientists and clinicians will pursue the objectives of: (1) establishing the maximum human tolerable dose of CBDCA; (2) evaluating its toxicity in patients with previously treated and untreated malignancies; (3) determining the antitumor activity of CBDCA; and (4) determining its clinical pharmacokinetics. The pharmacologic committee of the USSR Ministry of Public Health has approved the use in Soviet patients of CBDCA provided by NCI. The evaluation of the protocol is underway in the USSR as well as in the US.

A medicinal chemist from the University of Michigan was in the USSR from May 23 to June 6, 1982 to participate in a meeting on drug design and bioorganic chemistry as well as to meet with Soviet colleagues in a variety of institutes for exchange discussions on drug development and design and advances in bioorganic, organic, and medicinal chemistry. He received information from Soviet colleagues on progress they have achieved with a number of alkylating anticancer compounds as well as adamantane derivatives, some vinca compounds, and glycopeptide preparations such as the Soviet agent known as kxanerol.

A microbiologist from Pennsylvania State University spent two months in the USSR to pursue joint experiments on "Herpes virus papio: Modulation of Virus Expression in Baboon Lymphoma." The research was conducted in the Institute of Experimental Pathology and Therapy in Sukhumi. These animals of this institute have been a valuable resource for: (1) isolating primate retroviruses; (2) isolating primate herpes viruses and determining their role in the development of certain lymphoproliferative diseases; and (3) identifying genetic factors resulting from inbreeding.

After their participation in the 13th International Cancer Congress in Seattle in September 1982, two Soviet chemotherapists spent an additional three weeks in the United States visiting scientific centers related to the studies they are pursuing jointly with US scientists or independently. They exchanged information with American colleagues related to problems of the biochemical pharmacology of anticancer agents, the design and development of potentially useful anticancer compounds, and the preclinical testing of such agents for their toxicity and efficacy in animal tumor systems.

2. Cardiovascular Disease

During FY 1981 cooperation between the National Heart, Lung, and Blood Institute (NHLBI) and the USSR Ministry of Health continued in seven areas: Arteriosclerosis; Ischemic Heart Disease; Myocardial Metabolism; Congenital Heart Disease; Sudden Cardiac

Death; Blood Transfusion, Blood Components, and Hepatitis; and Hypertension. Activities in these areas of joint cardiovascular research provide a constructive forum for interaction on problems of major binational interest and need. The cooperative relationships established under this exchange provide a foundation of mutual respect and rapport which continues to yield scientific results of mutual benefit.

The US-USSR collaboration in the area of Pathogenesis of Arteriosclerosis provides a unique opportunity to study and compare the determinants and sequelae of coronary heart disease in different epidemiological settings. Both countries show a high incidence of heart disease, but differ significantly in ethnic and environmental characteristics. The highlight of cooperation during FY 1981 was the First Joint US-USSR Lipoprotein Symposium held in Leningrad in May 1981. Presentations reported the results of seven years of joint laboratory work and epidemiological studies on the prevalence of hyperlipoproteinemia and ischemic heart disease in Soviet and American populations. Further data were reported on correlates of high density lipoprotein (HDL) cholesterol. High levels of HDL cholesterol are associated with longevity, and this factor has been shown to be higher in Soviet populations than in comparative sample US populations. Discussions focused on developing a basis for further US-USSR joint studies designed to explain the differences in HDL cholesterol levels among lipid research clinic populations in the two countries, and to explore the potential for favorable modification of HDL cholesterol in populations. The cultural diversity of the studies and the strong emphasis on the use of common procedures to collect data of comparable quality, increase the importance of the data and its ability to add to our understanding of heart disease.

During FY 1982 important differences in cardiovascular risk factors between the Soviet and American study populations have emerged. The possible causes of these differences are being explored to further clarify the relationship between cardiovascular risk factors and deaths in both countries.

Extensive information has been collected and analyzed on the prevalence of hyperlipoproteinemia in men ages 40-59. A five-year follow-up to determine the cardiovascular status in a selected subsample of these middle-aged men is now in progress. A second prevalence study on a broader population sample, men and women ages 20-69, was initiated in 1978. Subject screening in this phase was completed in May 1982. All the data have been collected by rigorously trained personnel according to common protocols, using highly standardized laboratory and screening techniques.

In May 1982, the results of the first prevalence study on middle-aged Soviet and American men were presented at the Sixth International Symposium on Atherosclerosis in Berlin. The distributions of plasma total cholesterol, triglycerides, and HDL cholesterol differ significantly between the US and USSR sample populations.

During the visit of an American scientist to the USSR in November 1981, drafts of three joint manuscripts were developed from data presented at the First Joint Lipoprotein Symposium. Data analysis is also underway on blood pressure, clinical chemistry tests, smoking, and exercise ECG findings. A paper on USSR and US nutrient intake, plasma lipids, lipoproteins, and nutrients in men ages 40-59 sampled from Lipid Research Clinic populations were presented at the American Heart Association meetings in November 1982.

A US working group visited Moscow and Leningrad in December 1981 to review screening procedures in the prevalence study; data collection and mortality classification procedures in the follow-up study were also discussed. A Soviet biochemist visited the US for two months to work on independent studies of HDL sub-fractionation and on the composition and function of HDL apoproteins.

The large investment of resources in this collaborative area is now producing tangible results. Eight years of data collection have culminated this year in the completion of subject screening and observation of important contrasts between the US and USSR study population.

During FY 1981, joint cooperation in the area of Management of Ischemic Heart Disease focused on the Second Joint US-USSR Symposium on Ischemic Heart Disease held in Seattle, Washington, on March 20, 1981. Presentations at the Symposium reported on patient-oriented research to find ways to minimize the mortality, morbidity, and suffering resulting from advanced coronary heart disease, including the results of on-going studies in each country comparing different approaches to medical and surgical treatment of this disease.

In conjunction with the symposium, a joint US-USSR working meeting was held to discuss the comparability of data in the joint clinical study to systematically assess and compare, in a well-defined group of cardiac patients, the relative effectiveness of the different treatment modalities used in the two countries. US and Soviet angiographers read ventriculograms and angiograms with very good agreement between the independent readings. Comparisons were made of intake data and early survival experience. Subsequent to the symposium, the US side received follow-up data which is being entered in the Data Coordinating Center in Seattle for computer analysis.

In addition to participating in the Second Joint Symposium, the Soviet scientists attended the 30th Annual Scientific Session of the American College of Cardiology in San Francisco. They visited laboratories in Palo Alto, California, and in Birmingham, Alabama, where mutual interest was expressed in the following themes: (1) the role of spasm in ischemic heart disease; (2) circulatory insufficiency in ischemic heart disease; (3) the role of thrombocytes and blood coagulation in ischemic heart disease; (4) hypertensive heart disease; and, (5) issues of angiography.

Prior to the Symposium, a five-member US delegation visited the USSR in October 1980 to review progress on the joint studies, to discuss data analysis techniques and develop criteria for interpretation of results. The US delegation visited laboratories and scientific institutions in Moscow, Kaunas, Vilnius, and Tashkent. Problems of reference group comparability were resolved and a schedule for transmission of follow-up data developed.

During FY 1982 cooperation in this area continued to focus on the collection and analysis of data on US and USSR patients participating in joint studies of different approaches to the management of advanced coronary heart disease. The therapies under investigation include "differential" intensive medical management in the USSR, "conventional" standardized medical management in both countries, and coronary bypass surgery in the US. The study includes a total of 1,648 patients who have been carefully selected according to joint criteria. Approximately one-third of the patients are from the Soviet Union and two-thirds are from the US.

One group of patients in both the US and the USSR are precisely characterized by symptoms, coronary angiograms, and a variety of other characteristics. These patients constitute the "reference" groups and are being treated by conventional methods. Another group of patients with somewhat different coronary angiographic characteristics is being treated in the US by coronary artery surgery and in the USSR by differential "intensive" medical management. The "reference" group in each country and the two "intensively treated" groups are each composed of men from 30-60 years of age. In the US the joint study includes analysis of data from patients undergoing surgical treatment who have one or more coronary arteries occluded by lesions causing an obstruction greater than 70 percent. In the Soviet Union, data are analyzed from patients with comparable heart disease who are treated by a specialized pharmacological regimen.

The joint study of these US and USSR patients is assessing whether subjects in the reference group in both countries—who meet the same criteria and are treated in a generally similar fashion—have similar characteristics on admission and similar outcome on long-term follow-up. If this is the case, then there will be a basis for comparing the long-term effects of surgery in the US and differential intensive medical care in the USSR in the intensively treated patient groups who also share similar initial characteristics.

The data on all patients in both the US and the USSR are stored in the computer facilities at the Data Coordinating Center in Seattle. The study protocol specifies patient follow-up through June 1983. Follow-up data on the sample's clinical status are forwarded to the Coordinating Center twice a year. The initial analyses of the data were completed by the Fall of 1982 when a Joint Working Meeting will be held in Moscow. This meeting focussed on the review and evaluation of the data from the joint study, interpretation of preliminary results, and discussions of potential opportunities for further cooperation.

Joint cooperation in the area of Myocardial Metabolism incorporates a number of basic research projects. These are aimed at the discovery of new information that may help in the development of improved methods for prevention and treatment of cardiac disease. Current studies focus on the manner in which heart muscle cells obtain energy, regulate their growth, coordinate their contractions and respond to alterations in their environment. Presentations at the Fifth Joint US-USSR Symposium on Myocardial Metabolism which was held in June 1981 in Hershey, Pennsylvania were organized to report the results of joint studies in each of the above areas.

The US side has published the Proceedings of the Fifth Joint Symposium on Myocardial Metabolism as a supplement to an international scientific journal. The Soviet side will publish the Proceedings in Russian.

During FY 1981 the exchange of scientists in this area continued. A joint paper was published on work done by a Soviet scientist at NHLBI in the spring of 1981. This is expected to be of importance in understanding the regulation of a number of fundamental metabolic processes. The Soviet scientist conducted physical studies of the calmodulin dependent interaction between calmodulin and phosphodiesterase. These studies represent an initial description and validation of a new way of looking at this system. While there are a number of directions for further investigation, the results of work in progress will be of importance in understanding the ways in which calcium and calmodulin act to regulate a number of other metabolic processes in addition to their regulation of cyclic nucleotide phosphodiesterase.

Joint work done at NHLBI by another Soviet scientist, who also visited NHLBI in the spring of 1981, is expected to lead to a greater understanding of the components in the arterial wall. The study focused on the interaction of fibronectin with laminin and of actin with both fibronectin and laminin (which previously had not been shown to bind to either fibronectin or actin). Alterations in the interaction of these connective tissue components may be important in the pathology observed in vascular disease. Follow-up experiments will be pursued in the USSR and a joint publication of the results is planned.

Three US scientists conducted joint research in the USSR in FY 1982. One worked on lipoprotein genes and on the effect of glucocorticoids on myocardial calcium metabolism. Joint research protocols were drafted and a jointly written article was prepared. The second US scientist continued joint research and completed a joint publication on "Creatine Kinase of Heart Mitochondria: Changes in its Kinetic Properties Induced by Coupling to Oxidative Phosphorylation." Both scientists made presentations at the Ninth World Congress of Cardiology in Moscow. A third US scientist continued joint work on structural proteins of cells including studies on spectrin. He prepared and took to the Soviet Union a large quantity of pure spectrin, a cytoskeletal protein of red blood cells. The collaborating Soviet scientist conducted physical chemistry studies on this protein.

Two Soviet scientists visited the US during FY 1982. One continued joint studies on targeted drug transport to damaged cardiac cells employing drug-loaded liposomes. In 1978 the Soviet investigator together with a US colleague succeeded in linking antibodies specific for cardiac myosin to liposomes. When cardiac muscle is damaged by lack of oxygen, intracellular antigens are uncovered which are recognized by this liposome-antibody complex. By adding an isotopic marker to the drug liposome complex, the damaged muscle can be visualized at the same time as the therapeutic agent is rapidly and preferentially applied to it. Results of these joint studies have been published in major US and Soviet journals. A second application of the Soviet-developed liposomes is being studied both in the US and the USSR. A US biochemist has synthesized a potent renin inhibitor to be used as a potential anti-hypertensive agent. However, this peptide is metabolized within minutes after injection into laboratory animals. It is hoped that this breakdown of the active compound can be delayed by encapsulating the compound into liposomes. The US-developed peptide has been sent to the USSR where it will be linked to

liposomes. These collaborative studies are aimed at the development of a long-acting injectable renin inhibitor suitable for use in the treatment of hypertension. The other Soviet scientist studied advanced nuclear magnetic resonance (NMR) techniques to measure metabolism in the intact heart and to begin a joint research in this area.

Three senior US investigators visited the USSR in 1982 to present papers and exchange research findings in areas of mutual interest. The topics included: Regulation of protein turnover in skeletal and heart muscle; regulation of amino acid catabolism; regulation of microtubule assembly and distribution in eukaryotic cells; calcium regulation of cytoskeletal functions; mechanism of mitosis and chromosome movement in eukaryotic cells; molecular differentiation of the myocardium; and the mechanism of heart morphogenesis. Also, the US coordinator for this area visited the Soviet Union to plan the next joint symposium to be held in the Soviet Union in 1983.

Congenital heart disease is an important cause of premature death and can significantly impair the quality of life from childhood to adulthood. The objectives of US-USSR collaboration in this area are to explore new methods of diagnosis and post-operative care to reduce mortality from congenital heart disease, and to improve the surgical treatment of complex heart defects. Cooperation has consisted primarily in holding joint symposia and exchanging of working groups, delegations, and individual surgeons and physicians.

In follow-up to the Fourth Joint US-USSR Symposium on Congenital Heart Disease held in September 1980 in Moscow, the US and USSR Chairmen met in May 1981 with the NHLBI staff in Bethesda to discuss progress and plans in joint cooperative activities on the diagnosis, treatment, and surgical repair of congenital malformations of the cardiovascular system. As a result of the meeting it was agreed that further exchanges of scientists would be fruitful in the following areas: (1) the study of cardiac function and the blood circulation system utilizing mathematical models following open heart surgery; (2) the study of valvular grafts in children up to 14 years of age; (3) the study of possible surgical treatment of rare forms of cardiac arrhythmias; (4) the study of severe forms of pulmonary hypertension in children up to age 10; and (5) the study of emergency surgery for newborn infants and those in the first three years of life who have congenital heart defects.

In addition to the joint working meeting, the visit of the Soviet Chairman and his deputy included discussions with US surgeons attending the meeting of the American Society for Thoracic Surgery in Washington, D.C. Follow-up observations of surgery at Duke University Medical Center, Durham, North Carolina, the University of California in San Francisco, and the Children's Hospital Medical Center in Boston led to the exchange of information on (1) methods to ensure safety during operations; (2) development of new types of operations; (3) prevention of complications during operations and in the postoperative period; and (4) programming for experimental and computer analysis of patient follow-up and treatment.

Subsequently, in September 1981 two Soviet specialists visited the US for joint discussions with US surgeons on complex congenital and acquired heart defects, reconstructive surgery on heart valves, and methods of extracorporeal blood circulation, especially in young children.

In FY 1982 a three-member Soviet delegation including the USSR Coordinator for this area visited the US and met with American counterparts to discuss plans for further cooperation and to review the results of the latest research on this cardiovascular disease problem. Plans were made for the Fifth Joint US-USSR Symposium on Congenital Heart Disease to be held in May 1983 in the US.

Surgical techniques were discussed during the delegation's visit to US clinics and cardiovascular centers. Both sides reviewed their experiences with heart transplants and surgical procedures to control arrhythmia. The Soviets have an active surgical program for arrhythmia, and interest was expressed in joint discussions of indications for surgery and also of valve replacement as possible topics for future joint collaborative activities.

In July 1982 a US scientist visited the USSR to meet with the Soviet Coordinator for joint discussion on cardio-respiratory physiology and postoperative care. He lectured at Soviet medical institutions on the topics of acute respiratory failure; postoperative respiratory failure; and general principles of intensive care of the critically ill patient.

The goal of scientific collaboration in the areas of sudden cardiac death is to learn more about the mechanisms of arrhythmias and precisely how antiarrhythmic agents intervene to normalize the heart's electrophysiologic functions. Joint cooperation focuses on the pathological anatomy and electrophysiology which may lead to sudden cardiac death, and the pharmacology of possible prophylactic antiarrhythmic drugs. Six topics have been designated

for scientific exchange in this area: (1) pathological anatomy, (2) electrophysiology of sudden death; (3) study of the effects of antiarrhythmic drugs; (4) clinical aspects of sudden death; (5) epidemiology of sudden death; and (6) higher nervous and peripheral nervous activity in ventricular arrhythmias and sudden death.

Publications are being prepared on the results of joint experiments comparing the blocking effects, individually and in combination, of ethmozine, tetrodotoxin, cesium, lidocaine and verapamil. These results follow from studies which initially examined the effect of one drug on one aspect of heart functioning. Subsequent evaluation suggested the scientific merit in a broadened scope for research and more precise procedures and methodological tools for comparative studies. Topics of past joint work include: the effect of aprindine on the slow inward current in controlling arrhythmias, methods for studying electrophysiological events occurring at the infarction site, the study of mechanisms of arrhythmia production in the late stages of myocardial infarction. Analysis of the ultrastructural changes resulting from oxygen deficiency are being pursued by both sides. Joint work has also been done on the specialized conduction system of the heart and correlations of structural features and physiological and pathophysiological events.

During FY 1982 joint activities included the Third Joint US-USSR Symposium on Sudden Death in Kaunas, Lithuania, June 29-30, 1982. In December 1981 the USSR Coordinator and his colleague from Kaunas visited the US to finalize plans for the Symposium. An eight-member US delegation participated in the Symposium and also attended the Ninth World Congress of Cardiology in Moscow. A joint paper was presented on an on-going exchange of epidemiological data to determine if certain populations in each country may provide a "laboratory" for investigating national mortality trends of the incidence of acute myocardial infarction (AMI), one of the most important clinical components of ischemic heart disease. The joint presentation reported the results of investigations of data from medical histories, clinical, ECG and laboratory studies of patients with AMI in Oakland, California, and compared this data with that of patients included in the registry of AMI in Kaunas, Lithuania. A number of differences were noted in electrocardiographic and serum enzyme studies. Nevertheless, percentages of cases classified as definite and possible AMI among the Oakland and Kaunas patients were similar. Through the study and comparison of long-term trends in the two nations, it is believed that we may better understand the factors affecting the development of ischemic heart disease and sudden death.

Cooperation in the area of Blood Transfusion is concerned with research on the preservation and use of blood and blood products in cardiovascular surgery, focusing primarily on the problems associated with hepatitis, post-transfusion hematologic complications, and blood substitutes. Also, in the recent past, the US and USSR working groups in this area have gradually developed an interest in joint cooperation on thrombosis and hemostasis, with particular emphasis on hemophilia and other genetic bleeding disorders, and on platelet abnormalities. A delegation of four Soviet scientists visited the US in November 1980 for discussions of blood transfusion related research, including the role of platelet-vascular wall interaction in hemostasis, and the importance of thrombin and plasmin generation in the disseminated intravascular blood coagulation syndrome. These discussions led to an exchange of methodologies on blood separation.

A five-member working group visited the USSR in May 1981 to investigate the treatment and management of patients with abnormal hemostatic mechanisms and to examine physiologic and pathologic alterations of the blood-vascular system as a result of transfusion. In addition, proposals were discussed for the exchange of specialists in the areas of preservation of platelets and red cells, blood substitutes, the prevention of hepatitis, and the use of blood and blood products. The US investigators visited scientific centers in Moscow and Leningrad and also the Institute of Hematology and Blood Transfusion in Tbilisi. As a result of joint discussions, potential cooperative projects were outlined in hemophilia, plasmapheresis, blood component preservation, and the mechanisms of thrombohemorrhagic complications during massive transfusions.

In conjunction with the working group meeting, two US exchange scientists visited the Soviet Union to conduct joint discussions with Soviet counterpart specialists. One of the scientists discussed topics in blood transfusion therapy with special emphasis on the application of electron microscopy to the problem of platelet morphology. The other scientist focused on the storage of blood components and on donor risks relative to blood separation technology and the use of chemical agents for the separation of blood components. She also presented an overview of the application of plasma exchange in a variety of medical conditions and discussed the collection and transfusion of blood components such as granulocytes, platelets and mononuclear cells.

In December 1981 a three-member Soviet delegation visited the US to exchange information and data on procedures for blood donor processing, blood components, and preparation of platelet concentrations. US and Soviet scientists discussed a possible

joint project for isolating and studying vesicles shed by red cells during storage, and for quantitative analysis of their membrane proteins. In follow-up it was agreed that prior to shipping specimens from the USSR to the US, preliminary studies on the stability of vesicle preparations would be completed in Moscow. In the area of hepatitis, the Soviets are studying the specific immunology of anti-A as well as anti-B hepatitis.

An American scientist visited the USSR in April 1982 to lecture on genetics and hemoglobinopathies and to discuss modern laboratory techniques of gene manipulation. The visit provided an opportunity for the Soviet Central Institute of Hematology and Blood Transfusion and the NHLBI to exchange information on current developments in molecular biology research on thalassemia and to plan future collaborative activities.

During the fall of 1982 an American scientist visited the USSR to continue joint studies in the area of hematapheresis. The themes covered by this collaboration include: Comparison of platelet collection procedures, and patient transfusion response to platelets collected by continuous flow cell separation techniques; comparison of recipient response to leukocyte-rich single donor platelets ("Aminco") and leukocytodepleted platelet ("IBM-2997") concentrates and patient response; measurement of efficiency of cyto-reduction procedures using "Aminco" and "IBM-2997" blood cell separators in patients with blood diseases (thrombocytosis and leukocytosis); and determination of the frequency of leukopheresis and platelet pheresis to reduce risks of cerebrovascular accidents.

The Joint US-USSR Symposium on Biobehavioral and Epidemiological Aspects of Hypertension held in May 1981 in Bethesda was the focus for cooperative activity between US and Soviet scientists working to learn more about the prevalence, causes, treatment, and prevention of this "silent killer." Considering the high prevalence of hypertension in both the US and the USSR, scientists in each country are researching the clinical, basic science, epidemiological, and biobehavioral approaches to high blood pressure control. The biobehavioral approach to hypertension control is receiving increased emphasis at the present time. This research embraces the relationship between the central nervous system, expressive behavior, and cardiovascular phenomena—and simultaneously provides a scientific basis for developing non-pharmacological approaches to the treatment of hypertension. The Soviet side has on-going work in this area and, in advance of the Symposium, sent to the US a collection of studies entitled "Emotional Stress and Arterial Hypertension" and also the proceedings of the USSR "All-Union Symposium on Models and Methods for the Study of Experimental Emotional Stress." With these as background, scientists were able to identify areas of mutual interest where the results of on-going experiments in each country could be compared, and potential joint projects discussed.

Following the symposium, a Soviet specialist visited US scientific centers including the NHLBI, the National Institute on Aging in Baltimore, Maryland, and the Regional Primate Research Center of the University of Washington, Seattle, for discussions with US scientists on the neurophysiological mechanisms of emotional stress in experimental animals. The NHLBI Chief of the Behavioral Studies Branch visited the USSR in September 1981 for discussions of joint biobehavioral activities during the coming year.

During FY 1982, the Proceedings of the 1981 Joint US-USSR Symposium on Hypertension: Biobehavioral and Epidemiological Aspects were published by the US side in English and prepared by the Soviet side for publication in Russian. They include 10 Soviet papers and 7 US papers.

In July 1982 two American scientists visited the USSR to develop plans for a joint study on psychological interventions and the role of the sympathetic nervous system in primary hypertension. This collaborative study assesses neuroendocrine and blood pressure changes resulting from biobehavioral treatment strategies. Specifically, the study will determine if non-pharmacological interventions (hypnosis, biofeedback, transcendental meditation, and relaxation techniques developed by the Soviet side) can reduce blood pressure in patients with primary hypertension classified according to psychological profiles developed in the US.

3. Artificial Heart

During FY 1981, joint activities in the area of artificial heart research and development focused on the Second Joint US-USSR Symposium of Mechanically Assisted Circulation and the Artificial Heart held in Houston, Texas, September 28-29, 1981. Soviet research papers discussed the prospective use of implanted circulatory assist systems and artificial hearts with a radio-isotopic power source; the development of methods of circulatory assistance and artificial heart ventricles; and, mathematical modeling of the blood flow in the ventricular cavity of the artificial heart. US presentations reviewed the status of implantable energy systems to actuate and control ventricular assist devices; new mechanical techniques of circulatory support, and, electrical energy converters for practical human total artificial hearts. The challenge of an integrated left ventricular assist system is a design that is capable of supporting the full cardiac output required for the patient. Developing an energy system to actuate a permanent implantable left heart assist or total heart replacement device must take into account the following factors: selection of a source of energy to provide mobility, selection of the appropriate energy conversion technique to translate the energy from the

source to that form required to actuate the blood pump, and definition of methods to control the blood pump to meet variable physiological needs. Through joint collaboration, US and Soviet scientists are sharing their knowledge and laboratory experience to advance progress in meeting these challenges.

Discussion for further joint activities reviewed the accomplishments of a three member Soviet delegation visiting the US in August 1981 for joint in vitro and in vivo testing of a Soviet control system received in the US in July. In conjunction with this visit, US and Soviet scientists also developed a potential joint collaborative project on biomaterials. The joint project relates to the USSR Symposium presentation "A system of tests for assessing hemocompatible properties of polymer materials" and involves characterization of the absorption of human albumin to three or four well-characterized materials. The primary goals are to better understand the basic mechanisms of blood-material interactions and to assess the comparability among laboratories of experimental results. Follow-up arrangements for exchanges of materials and experimental results are in progress.

During April 1982 the Soviet chairman for the artificial heart research and development area visited the US to discuss mechanically assisted circulation. Six areas of proposed cooperation were identified: the study of the mechanisms of interaction of biomaterials with blood and its components and the development of comparable criteria of biomaterials hemocompatibility evaluation; comparative evaluation of the condition of the myocardium by means of biochemical and morphological tests during one- or two-sided bypass; comparative evaluation and development of new methods of connecting various pump devices for two-sided bypass; exchanges of specialists and delegations in order to continue further joint activities in assisted circulation, artificial heart control systems and biomaterials; publication of joint articles on US-USSR activities and scientific data exchanges; and plans for the Third and Fourth US-USSR Symposia on Artificial Heart and Assisted Circulation in the USSR in 1983 and in the US in 1985.

Two publications were generated from US-USSR cooperation in this area during FY 1982. A joint paper entitled "In Vitro Evaluation of US and USSR Artificial Hearts" was published in Artificial Organs, the Journal of the International Society of Artificial Organs, in May 1982. A Soviet article describing an implantable artificial heart that is driven by a compact motor was received by the US side and translated for review by US investigators.

In accordance with previous agreement the US side provided the USSR with biomaterials in exchange for the control system received from the Soviet Union in 1981.

4. Environmental Health

During FY 1981 and FY 1982, the National Institute of Environmental Health Sciences (NIEHS) cooperated with counterpart institutions in the Soviet Union on joint studies of the biological effects of microwave radiation, and static and low frequency electromagnetic fields. US and Soviet scientists conducted a duplicate study on the biological and behavioral effects in rats of long-term, low-level exposure to microwave radiation. Changes in blood chemistry, hematology, and behavior were observed by both Soviet and American investigators. This is the first time that such effects have been observed in the US at low levels of exposure. Soviet scientists are also studying the effects of microwave radiation on human volunteers and on humans exposed in occupational environments. The results of these studies are very valuable since almost no human effects data are available in the US and this information is essential for the extrapolation of animal data to man.

A workshop was held in the US on May 25-28, 1982, entitled "Nervous System Effects of Electromagnetic Waves (0-300 GHz)." Ten US scientists and eight Soviet scientists participated in the workshop held at NIEHS. The purpose of the workshop was to discuss existing methods of evaluating the impact of electromagnetic waves in the environment on the central nervous system and behavior in order to select those methods which appear to be most sensitive. As a result of the workshop, a duplicate project was developed to test and standardize the methodological approaches to be used for evaluating effects on the central nervous system.

A scientist from NIEHS and one from the Bureau of Radiological Health of the Food and Drug Administration visited the Soviet Union in September 1982 to discuss specific details and reach an agreement on the exact procedures for exposing the animals and for measuring the various parameters. Both sides will compare the same behavioral, electrophysiological, and biochemical methods under exposure conditions as identical as possible. The purpose is to determine whether or not both groups will observe the same effects and which methods appear to be the most sensitive. It is hoped that this study will provide insights into the reasons Soviet scientists generally report effects of electromagnetic waves on the nervous system at exposure levels below those reported in the US.

5. Arthritis

Through a series of bilateral exchanges of scientific personnel, administered on the US side by the National Institute of Arthritis,

Diabetes, and Digestive and Kidney Diseases (NIADDK), the program emphasizes clinical studies on the treatment of rheumatoid arthritis and systemic lupus erythematosus. Since institution of cooperation in 1972, twelve major meetings have been held between the members of the cooperating centers, and these meetings have been supplemented by the exchange of reprints and lecture materials, as well as by discussions of preliminary results and future projects.

A study of the treatment of rheumatoid arthritis with d-penicillamine, at various dose levels was completed in June 1980 with the entry of 100 patients by each side; a final report for the scientific literature is in preparation. At the invitation of the Soviet collaborators, five American scientists took part in, and addressed the International Symposium on Rheumatology sponsored by the All-Union Scientific Rheumatology Society in Tbilisi in October 1980.

Following a successful and published descriptive study of juvenile rheumatoid arthritis, a trial comparing hydroxychloroquine to d-penicillamine in that disease was begun in August 1981. Entry of patients into the trial is progressing satisfactorily in both countries.

An assessment of the results of total hip joint replacement with artificial joints in both countries has been completed and a report is in preparation.

An agreed upon assessment of hand function in rheumatoid arthritis is also being conducted in the two countries.

Large data sets bearing on the diagnosis of scleroderma have been exchanged and are under discussion.

In the more basic sciences, considerable attention has been devoted to collagen synthesis and degradation using fibroblasts in culture derived from normal persons and patients with scleroderma.

6. Influenza, Acute Respiratory Diseases, and Viral Hepatitis

Both for the US and the USSR, influenza may often be an imported infection resulting from spread of a new antigenic variety of influenza A (more seldom B) virus from regions such as South-East Asia or the Western Pacific. Observations made within the framework of the Agreement have shown that the spread of strains of epidemiologically active variants into countries of the Eastern and Western hemispheres does not always occur simultaneously. The earliest discovery of these strains can be made by highly qualified laboratories either in the US or in the USSR. There have been regular exchanges of information about influenza viruses isolated in collaborating countries or sent from other regions. A rapid exchange of viruses has also contributed to a better understanding of the behavior of influenza in both countries and revealed a common global tendency in the epidemic activity of influenza viruses, over the long term, despite differences between years.

During the Joint US-USSR Symposium on Influenza and Acute Respiratory Diseases held in Alma Ata in November 1980, guidelines were developed to assist in the interpretation of unusual reports of influenza virus isolates. These guidelines are helpful when assessing the authenticity of unexpected influenza virus isolates. This is of great importance in the work of virological laboratories to minimize erroneous reports that otherwise cause concern to national and international health authorities.

In October 1981, another Joint US-USSR Symposium on Influenza and Viral Hepatitis was held in Atlanta. An agreement was signed to continue cooperation between the US and USSR in influenza and viral hepatitis, reflecting the emphasis on special studies in these areas. All topics indicated in memorandums of agreement signed earlier remain a part of the continuing agreement.

In 1982, atypical strains of H1N1 virus which had not yet caused an epidemic were found in the USSR and the strains were exchanged. An atypical variant A/Shanghai/80(H3N2) isolated in China has not caused epidemics either in the US or in the USSR, although it was isolated in several Asian countries in 1981. The strain was sent by American scientists to the USSR where it was studied and recommended as a reserve candidate for vaccinal strains. In 1982, US scientists received variant strains A/Philippines/2/82 and 3/82 (H3N2) and shared these with their USSR colleagues.

Considerable progress has been made in understanding the circulation of influenza viruses in nature as well as the antigenic/biochemical nature of influenza viruses in different species of birds. In April 1981, two Soviet scientists participated in the First International Symposium on Avian Influenza held in Beltsville and they undertook joint studies of avian strains of influenza at St. Jude Children's Research Hospital in Memphis.

To facilitate modeling and prediction of epidemics, archival morbidity data supplied to the US by Soviet scientists were studied using methods of epidemiological analyses developed in the USSR and the US, thus allowing for a comparison of both epidemiological models. Two American scientists participated in the International Symposium on Influenza Surveillance and its Prediction which was held in Leningrad in November 1980.

Collaborative studies involving bilateral exchange of scientists have been initiated to perform oligonucleotide and hybridization analyses of cold-adapted variants of influenza viruses independently developed in the US and the USSR. This work is of practical and theoretical importance since, on the one hand, the viruses are supposed to be used for production of live vaccines and, on the other hand, data on genetic variability of these viruses shed light on the molecular mechanisms of attenuation.

Monoclonal antibodies against M-protein supplied by American scientists are being evaluated as reference preparations in an ELISA method for revealing different antigenic properties of M-proteins of rimantadine-resistant and remantadine-sensitive variants of influenza viruses; this work is of considerable mutual interest due to the continuing use of antiviral agents and the need for markers useful in the rapid identification of resistant variants that may arise.

Additional collaborative studies involving bilateral exchanges of American and Soviet scientists have been conducted on the following topics: epidemiologic modes of influenza transmission and prevention; lipid bilayers and M-proteins of influenza viruses; genetics of live attenuated influenza virus vaccine strains; chemotherapy and chemoprophylaxis of viral infections as well as several projects of basic molecular and biochemical research.

In the area of hepatitis, a solid phase radioimmunoassay was developed in the USSR for detection of hepatitis A virus antigen or antibodies, and compared with the method developed in the US using materials supplied by American collaborators. Results of the investigations demonstrated the possible existence of several antigenic variants of hepatitis A virus. The method is currently used in clinical and epidemiological investigations for studying hepatitis outbreaks, characterizing the immunological response, serologic surveys, and assays of antibody titers of commercial gammaglobulin preparations.

7. Mental Health

There was no activity under this area in FY 1981 and FY 1982.

8. Eye Disease

A meeting to review progress in cooperation in the area of eye diseases was held in October 1981 between the Director, National Eye Institute (NEI), and the Director, All-Union Research Institute of Eye Diseases. Considering the magnitude of public health problems caused by eye disease and the knowledge and research accomplishments of investigators in the US and USSR, the need for continued collaboration on vision research aimed at the prevention of eye diseases and blindness and the alleviation of suffering caused by these diseases was reaffirmed.

US and Soviet scientists have been collaborating on the development and evaluation of a new laser-beam method of treating glaucoma, the second leading cause of blindness in the US. Lasers have long been used to treat some eye diseases, especially detached retinas. In the treatment of detached retina, the laser beam heat is used to reweld torn parts of the back of the eye. In the treatment of glaucoma, however, the laser's intense heat became a problem; therefore, Professor Mikhail Krasnow, Director, All-Union Research Institute of Eye Diseases, Moscow has worked with Aleksander M. Prokhov, Soviet Nobel Prize winner in physics,

to develop an almost heatless laser, the Q-switched laser. With Soviet assistance, a similar Q-switched laser instrument has been developed at the NEI in Bethesda and similar clinical evaluations of the instrument are underway both in the US and the USSR. This past year patients have been recruited in both countries for clinical trials to determine the effectiveness of this laser surgery as compared to conventional surgical approaches. This new laser treatment, if proved effective, is simple by comparison to conventional surgical methods and should be much less expensive and cause significantly less complications.

9. Biomedical Communications

There was no activity under this area in FY 1981 and FY 1982.

10. Individual Health Scientist Exchanges

The Individual Health Scientist Exchange Program permits the exchange of scientists between the US and the USSR in areas not covered by the cooperative arrangements in other areas of the US-USSR Health Agreement.

In FY 1981, one American scientist visited the USSR to continue his work on the preparation of a biography on Nikolai A. Semashko, the architect and founder of the Soviet health care system, and 10 Soviet scientists interested in such diverse areas as organ and tissue transplants, pain management in dentistry, lysosomes, hearing aids, coronary surgery, and viral infections, visited a number of research institutions in the US.

In FY 1982, a six-member team of American neurosurgeons visited the USSR to study research in new computerized CT scanning procedures and stereotactic computerized methods for treatment and removal of central nervous system lesions. During this visit, the delegation met, discussed, and exchanged information on problems inherent in this method and on the neurobehavioral effects on behavior before and after stereotactic removal.

One American scientist visited Moscow and Leningrad to study clinical and research work in otolaryngology. Several Soviet scientists interested in such diverse areas as immunology, interferon research, eye surgery, neurosurgery and artificial organs visited the US in FY 1982.

Activities under the Individual Health Scientist Exchange Program were suspended in mid-year in order to carry out an evaluation of the program.

C. Man-hours spent in short-term (less than 60 days) and long-term exchanges. All exchanges reported below are based on an eight-hour day.

1. Short-term (less than 60 days) exchanges

| | FY 1981 | | FY 1982 | |
|--|--|---------------|---------------|---------------|
| | US to USSR | USSR to US | US to USSR | USSR to US |
| Cancer | 24 | 1,848 | 624 | 936 |
| Cardiovascular Disease | 648 | 3,600 | 2,304 | 5,712 |
| Artificial Heart | (included in figures for cardiovascular disease) | | | |
| Environmental Health | 288 | 840 | 240 | 1,056 |
| Arthritis | 96 | 312 | 0 | 840 |
| Influenza and Acute Respiratory Disease | 840 | 2,592 | 480 | 2,160 |
| Mental Health | 0 | 0 | 0 | 0 |
| Eye Disease | 120 | 120 | 120 | 120 |
| Biomedical Communications | 0 | 0 | 0 | 0 |
| Individual Health Scientist Exchanges | 240 | 2,088 | 816 | 1,920 |

2. Long-term Exchanges

None

D. Level of US and USSR Funding (\$ in thousands)

| | FY 1981 | | FY 1982 | |
|--|--|---------|---------|---------|
| | US | USSR | US | USSR |
| Cancer | \$ 49.3 | unknown | \$ 36.2 | unknown |
| Cardiovascular Disease | 633.3 | " | 480.8 | " |
| Artificial Heart | (included in figures for cardiovascular disease) | | | |
| Environmental Health | 22.6 | unknown | 45.8 | unknown |
| Arthritis | 6.6 | " | 10.7 | " |
| Influenza & Acute Respiratory Disease | 40.9 | " | 31.1 | " |
| Mental Health | 0 | " | 0 | " |
| Eye Disease | 1.4 | " | 1.2 | " |
| Biomedical Communications | 0 | " | 0 | " |
| Individual Health Scientist Exchanges | 87.8 | " | 90.9 | " |

E. Assessment of the equality or inequality in value of the information exchanged:

1. Cancer: Like the United States, the Soviet Union has devoted major resources to a war on cancer. While the overall judgment of the US coordinators for this activity is that the balance of benefits favors the Soviet side, there are currently joint research projects which would be worthwhile undertaking. The US coordinators for the cancer area plan to maintain communication with their Soviet counterparts. The US and Soviet coordinators have recently reorganized the program of cooperation to deemphasize meetings of delegations and emphasize exchanges of individual scientists for collaborative research projects. By maintaining a posture of open communication, the US side hopes to continue to be able to obtain and evaluate Soviet clinical anticancer drugs and preclinical compounds which otherwise would not be available to the US side.
2. Cardiovascular Diseases: In this area, the US side is beginning to see significant benefits as a result of collaborative relationships painstakingly developed over the years of exchange. Working relationships between both sides are smooth and open and conducive to the steady expansion of scientific activities and free exchange of scientific data even in the midst of political tensions. In particular, the joint collaborative project between nine US and two Soviet lipid research clinics, which is gathering vital information on risk factors contributing to cardiovascular disease, should continue. As a result of this study to date, significant differences have been discovered between populations studied in the US and the USSR which raise new scientific questions now being pursued by both sides in an effort to lower the risk of developing cardiovascular disease. In addition, a joint clinical study comparing the treatment of patients suffering from advanced coronary disease should yield data on the relative efficacy of treatment modalities practiced in the US and the USSR.
3. Artificial Heart: The US coordinators for this area are satisfied with progress. The two sides have already accomplished the joint testing of artificial hearts both in vitro and in vivo, and are testing components, biomaterials, and control systems in connection with the development of families of mechanical circulatory devices.

4. Environmental Health: While the overall benefits to the US side from collaboration with the Soviets in this area have been minimal, continued collaboration in several areas is worthwhile. In particular, continuation of joint studies on the biological effects caused by microwave radiation, for which the Soviets have established exposure standards 1,000 times more stringent than comparable US standards, are expected to lead to a better understanding of the reason for these differences. Another reason for continuing collaboration in this area is to become familiar with Soviet neurophysiologic and behavioral studies and the role that data from these studies play in the establishment of environmental standards.
5. Arthritis: Cooperation in this area focuses on a very useful joint study on treatment of juvenile rheumatoid arthritis which is expected to be completed in 1984. US coordinators want to continue these studies but, at this time, do not want to undertake any new initiatives in this area.
6. Influenza, Acute Respiratory Diseases, and Viral Hepatitis: Major advances have been made in understanding the epidemiology, immunoprophylaxis, chemotherapy and chemoprophylaxis of influenza, and the ecology and basic properties of influenza viruses and hepatitis viruses. The Agreement has provided the framework for enhanced scientific communication and collaboration between the US and USSR. This has resulted in the performance of research not otherwise possible and the stimulation of new ideas for study, increasing the rate of scientific progress.
7. Mental Health: Cooperation with the Soviets in this area has been politically sensitive largely due to the reported treatment of dissidents as mental cases. When conditions permit, the US coordinators would like to resume collaboration with the Soviets focusing on mental health problems of the aged such as senility, depression, etc.
8. Eye Disease: Cooperation in this area is focused principally on joint clinical trials of the Soviet-developed Q-switched laser in treating glaucoma. If proven effective, this will represent a major new tool in the treatment of this disease. In addition, the US side hopes to assess a Soviet-developed treatment for retinitis pigmentosa which attracts a number of Americans to the Soviet Union for this controversial treatment.

9. Biomedical Communication: The USSR side has been inactive and has not implemented activities agreed upon several years ago. However, the exchange of periodicals and publications, which existed before the Agreement, will continue.

10. Individual Health Scientist Exchanges: The opportunity to exchange specialists in scientific areas not covered under the other areas of the Health Agreement has been a positive attribute of this program. Until about 1978, the value to each side of the exchanges was approximately equal and became imbalanced in favor of the Soviet side in 1979 - 1981. Following a US-imposed moratorium on exchanges in 1982, exchanges are expected to begin again in 1983 at a controlled rate to ensure equality of benefits.

US-USSR

SCIENTIFIC AND TECHNICAL COOPERATION
FOR PEACEFUL USES OF ATOMIC ENERGY
Fiscal Years 1981 and 1982

✓
SUBJECT: Report to the Congress Required by Department of
State Authorization Act on Scientific Exchange
Activities with the Soviet Union

Topics under the US-USSR Atomic Energy Agreement are:

1. Controlled Thermonuclear Reaction (CTR), i.e. magnetic fusion
2. Fast Breeder Reactors, and
3. Fundamental Properties of Matter (FPM)

The specific research and projects involved are given in the attached table. There were no activities in the area of Fast Breeder Reactors during FY81 and FY82.

There were no activities in fusion in FY1981. In 1982, the level of effort was approximately six exchange trips in each direction totaling approximately 80 man-weeks. The activities were limited principally to the topics of plasma theory and experimental physics. Under FPM, more Soviets came to the US to perform experiments because the US has some of the premier experimental facilities in the world; the Soviets must compete for time on these experimental machines with domestic and international experimental consortiums, with awards being made on the basis of scientific merit. In FY81, the Soviets expended 261 man-weeks of effort in the US (224 of which were on three long-term assignments), and the US 39 man-weeks in the USSR, all on short-term assignments. In FY1982, the Soviets expended 254 man weeks (242 of which was on long-term assignments), and the US expended 22 man-weeks in the USSR, all short term assignments.

DOE does not explicitly earmark funds in its budgets for cooperation with the USSR. Funds for cooperative activities are principally for travel and per diem. In CTR, about \$34,000 was spent in FY82, and nothing in FY81. Under FPM, the USSR pays for the expenses of USSR scientists in the US and the US for US scientists in the USSR. A special exception, though, is the part of the FPM exchange with the Soviet Academy of Sciences. Housing costs are covered by the host country. For FY81 and 82, total cost to DOE was about \$80,000 per fiscal year.

The Soviet magnetic fusion program is roughly the same size as the US program and generally as advanced. The Soviet program is particularly strong in its theoretical innovations, and is weakest in its computing capability. The fusion exchange is carefully focused on those topics which are of substantial interest to DOE and to which the Soviets can contribute, namely, plasma theory, experimental physics and the technology related to physics experiments. Since Soviet publications are frequently late and of poor quality by US standards, the US-USSR fusion exchanges are the primary means by which DOE obtains useful information on the Soviet program, innovations, and personnel. Cooperation in FY82 was particularly useful, partly reflecting the greater abundance of new information obtained due to the FY81 hiatus, and the results of negotiating and working with the Soviet system since 1974.

FY81 and FY82 FPM exchanges (which are usually in support of experimental projects requiring several years to plan, construct, implement and analyze the results) continued to support what have been the most consistent benefit of the FPM exchanges for DOE over the long run, namely the germination of conceptual ideas in theory, accelerator R&D, instrumentation (i.e. particle detector R&D), and preservation of the valuable and useful formal channels of communications. In FY81 and FY82, the Soviets supplied a lithium lens for an experiment at Fermi National Accelerator Laboratory worth over \$1.5 million, and a lead-glass Cherenkov radiation shower detector, worth approximately \$4 million and saving DOE two years if it were made here. The Soviets are also supplying instrumentation worth \$2 million for the detection of polarized protons, and are also building a transition radiation detector and associated wire counter systems which would cost upwards of \$1 million. In terms of equipment exchanges, there were no major experiments carried out in the USSR by US personnel during FY81 and FY82. The DOE program is not dependent upon Soviet contributions.

CTR Exchanges FY82

USSR to USA

1. Participation in Experiments on RF Plasma Heating and Current Drive in PLT
2. Participation in American Physical Society Conference and in IAEA Topical Meeting on Open Systems
3. Topical Meeting: Edge Plasma Physics and Participation in Conference on Plasma-Surface Interaction
4. Joint Work: Analysis of Beta Limits in Tokamaks
5. Workshop on Engineering Problems in the Experimental Fusion Facilities
6. Topical Tour: Materials for Controlled Fusion
7. Joint Work: Transport Models in Bumpy Tori and Stellarators

USA to USSR

1. Topical Tour: Stellarators
2. Participation in Experiments on ECR Heating in T-10
3. Topical Meeting: Theory of Alpha Particles and Energetic Ion Behavior.
4. Topical Meeting: Physics and Engineering of High Field Tokamaks and T-15

FPM Exchanges

1982

USSR to USA

1. Neutrinos in Emulsion with 15 Foot Bubble Chamber
2. Photoproduction in Experiment E-516 at Fermilab
3. Superconducting Magnets at Fermilab
4. Electron/Positron Colliding Beams: Storage Rings, Detectors, Experiments
5. Theoretical and Experimental Problems of Developing Proton-Antiproton Colliding Beam Facilities
6. Particle Jets, Experiment E-672 at Fermilab
7. Polarization Experiments in E-581 and E-704 at Fermilab

USA to USSR

1. Study of High Energy Particle Channeling in Monocrystals
2. Hyperon Studies
3. Theoretical and Experimental Problems of Developing Proton-Antiproton Colliding Beam Facilities

1981

USSR to USA

1. Joint Coordinating Committee for FPM
2. Planning Proposals
3. Neutrinos in Emulsions with 15 Foot Bubble Chamber
4. Data Collection and Analysis of Particle Physics
5. Nuclear Matter

6. Synchrotron Radiation
- 7. Electron/Positron Colliding Beams: Experience and Detectors
8. Studies of Intense Colliding Beams in Storage Rings
9. Studies of Rare Decays and Properties of Charged Hyperons

US to USSR

1. Planning Proposals
2. Photoproduction of Particles
3. Study of High Energy Particle Channeling in Monocrystals
4. Superconducting Magnets
5. Stability of Intense Colliding Beams in Storage Rings
6. Studies of Rare Decays and Properties of Charged Hyperons

US-USSR

COOPERATION IN THE FIELD OF ENERGY

Fiscal Years 1981 and 1982

SUBJECT: Report to the Congress Required by Department of State Authorization Act on Scientific Exchange Activities with the Soviet Union

Topics under the US-USSR Energy Agreement were:

- Forecasting
- Hydropower
- Hydropower - Cold Weather Storage
- Heat Rejection
- Air Pollution Reduction
- Superconducting Power Transmission
- Ultra-High Voltage Transmission
- Electric Power Systems
- Coal
- Oil
- Gas
- Magnetohydrodynamics (MHD)

As a result of the Soviet invasion of Afghanistan in December, 1979, and the subsequent policy guidance of pursuing only those activities of low visibility and substantial benefit to the US, all activities under the US-USSR Energy Agreement were postponed indefinitely. Only two activities took place under the US-USSR Energy Agreement in FY81 and FY82 and these were in the area of MHD. A Soviet delegation of MHD specialists, some of whom were already in the US attending a conference, was hosted at ANL September 24 to October 6, 1980 to complete reports on two joint tests conducted in 1979 using the US superconducting magnet and the Soviet U-25B facility. The Soviets also hosted in October, 1980 in Moscow a visit by two DOE program managers who were already in Poland for activities under a US-Poland Agreement and stopped in Moscow to inspect facilities. Since the travel to Poland and back was paid for by State, virtually no funds under the US-USSR Energy Agreement were expended during FY81 and FY82.

The MHD effort was the most active area under the Energy Agreement. Neither the USSR nor the US received much return on capital investments made in the late 1970s to conduct a joint experimental program. The USSR spent on the order of \$20 million on a specially built MHD flow facility for the cooperation. The US spent \$4 million for a superconducting magnet which was used seven times in the Soviet MHD flow facility, and roughly \$10 million for construction of a MHD channel which was to be tested in a Soviet (and the world's only) MHD pilot plant. The MHD channel is now mothballed in the US with no current prospects for it ever being tested in the Soviet Union.

US-USSR

AGREEMENT ON COOPERATION IN THE
FIELD OF ENVIRONMENTAL PROTECTION
Fiscal Years 1981 and 1982

AREAS OF COOPERATION
(Specific Working Groups and Projects)

Following each project rubric is a brief characterization of the purpose of the project.

AREA I - PREVENTION OF AIR POLLUTION

Working Group 02.01-10, Air Pollution Modeling, Instrumentation, and Measurement Methodology:

Project 02.01-11, Air Pollution Modeling and Standard Setting: Study of formation, transformation, and atmospheric transport of air pollutants; theoretical and experimental development of descriptive and predictive models.

Project 02.01-12, Instrumentation and Measurement Methodology: Development and use of instruments for measuring pollutants, automated instrumentation systems, and measurement methodology. Ground-based, mobile, and airborne instrumentation systems are included. A related topic under this project seeks to improve capabilities for the spectroscopic identification of pollutants and toxic substances.

Working Group 02.01-20, Stationary Source Air Pollution Control Technology:

Project 02.01-21, Gaseous Emissions Abatement Technology: Methods for reducing sulfur dioxide (SO₂) emissions by utilizing limestone, magnesia, and ammonia techniques.

Project 02.01-22, Particulate Abatement Technology: Mutual understanding of dust collection technologies in both countries; selection and verification of sampling and analytical procedures for determining characteristics of industrial aerosols.

Project 02.01-23, Optimization of Technological Processes: Protection of the environment from influence of coal preparation plant operations.

Project 02.01-24, Ferrous Metallurgy Pollution Control Technology: Prevention or reduction of harmful emissions from ferrous metallurgical plants into the air or water.

Project 02.01-31, Transportation Source Air Pollution Control Technology: Inactive.

AREA II - PREVENTION OF WATER POLLUTION

Working Group 02.02-10, River Basins, Lakes and Estuaries, and Aquatic Ecosystems:

Project 02.02-11, River Basin Water Quality Planning and Management: Comparison of water quality planning principles,

modeling techniques, and planning and implementation of water pollution control plans in both countries.

Project 02.02-12, Protection and Management of Water Quality in Lakes and Estuaries: Development of methods of water quality management, including exchange of information, comparison and intercalibration of analytical methods, and the development of comparative programs that will aid both sides in comprehending fundamental lake and estuary processes.

Project 02.02-13, Effects of Pollutants Upon Aquatic Organisms and Ecosystems; Development of Water Quality Criteria: Exchange of information on methodologies for setting water pollution standards and comparisons of toxicological methodology of water quality, including biochemical, microbial, and analytical chemical methods.

Project 02.02-21, Prevention of Water Pollution from Municipal and Industrial Sources: Exchange of information on control technologies for treatment of all wastewater effluents (including sludges) generated by municipal, industrial, and joint municipal-industrial wastewater treatment installations. Ultimate project goals are: (1) that all effluent streams from these installations will be treated to the point that, when discharged, they will not degrade the recreational, commercial, and life-supporting capability of the receiving water bodies; and/or (2) that they will be treated for recycle-reuse without being discharged into the environment.

AREA III - PREVENTION OF POLLUTION RELATED TO AGRICULTURAL PRODUCTION

Project 02.03-11, Integrated Pest Management: Development of improved pest management programs on specific crops in the USA and USSR through the exchange of beneficial organisms, technical information, results from joint and other research trials, and scientific personnel.

Project 02.03-21, Interaction Between Forest Ecosystems and Pollutants: Joint research on the potential of trees to ameliorate air pollution, techniques for measuring impacts of pollution in forest ecosystems, management of forests injured by pollution, and the effects of acid precipitation on forests.

Project 02.03-31, Forms and Mechanisms by which Pesticides and Chemicals are Transported: Joint research on the distribution, transformation, and transport of pesticides and other agricultural chemicals in the environment.

Project 02.03-41, Effects of Chemicals Used in Agriculture on Fauna: Exchange of information and conduct of joint research on pesticide use, distribution and persistence in terrestrial

and aquatic ecosystems, their effects on fauna (including soil organisms), and pertinent analytical chemistry methodology; prepare a bilingual glossary of related technical terms.

AREA IV - ENHANCEMENT OF THE URBAN ENVIRONMENT

Project 02.04-11, Urban Transportation and the Environment: Exchange of information on each country's problems and practices in ameliorating the impact of transportation on the urban environment and in using urban transportation as a tool for enhancing this environment.

Project 02.04-21, Enhancement of the Environment with Regard to Places and Monuments of Historic Interest: Exchange of information regarding the restoration, preservation, adaptive use and interpretation of historic sites and districts.

Project 02.04-31, Removal and Processing of Solid Waste in Urban Areas: Inactive.

Project 02.04-41, Enhancement of the Environment in Existing Cities Through Urban Land Use: Identification and analysis of each country's problems and practices in applying environmental criteria to land use planning, including the abatement and control of noise and the optimal use of land.

Project 02.04-51, Recreation Zones in Urban and Near-Urban Areas: Exchange of information on planning and managing recreation systems in urban and near-urban areas.

AREA V - PROTECTION OF NATURE AND THE ORGANIZATION OF PRESERVES

Project 02.05-11, Conservation of Wild Species of Flora and Fauna and the Protection of Natural Areas: Exchange of expertise and joint work on conservation and rational use of wildlife resources, including conservation of specific species of birds and mammals, implementation of US-USSR Migratory Bird Convention, organization and management of nature preserves and national parks, and exchanges of live animals between American and Soviet zoos.

Project 02.05-21, Protection of Northern Ecosystems: Evaluation of the influence of anthropogenic activity on arctic and subarctic ecosystems and recommendations on minimizing adverse environmental impacts.

Project 02.05-31, Reclamation and Revegetation of Disturbed Land: Exchange of information on technological improvements in mining and other industrial processes in order to assess and bring under control their harmful effects on land resources through reclamation and revegetation of land subjected to economic exploitation.

Project 02.05-41, Biosphere Reserves: Development of criteria for the selection, regulation, utilization, and monitoring of basic preserved and experimental tracts of land designated as biosphere reserves; results are shared with UNESCO's "Man and the Biosphere" (MAB) program. A related topic under this project focuses on the marine ecosystem of the Bering Sea.

Project 02.05-51, Protection of Arid Ecosystems: Exchange of scientific information, ideas, and experience in the study and development of rational utilization of arid territories in the US and USSR, with primary attention to the influence of various anthropogenic factors and recommendations for halting desertification.

Project 02.05-61, Marine Mammals: Collaborative research into the biology, ecology, and population dynamics of marine mammals of interest to both countries, with an eye to sound management and conservation.

Project 02.05-71, Animal and Plant Ecology: Cooperative fundamental research into the ecology of single species and communities of animals and plants in both countries. Data obtained will provide a theoretical basis for practical measures in the conservation of biotic diversity, in the enrichment of different communities for the sake of increasing their resistance to human impact, and in the restoration of destroyed biological self-regulating processes.

Project 02.05-81, Ichthyology and Aquaculture: Exchange of information and joint work on the following topics: fish genetics, selection, and hybridization; live and artificial feeds for freshwater anadromous fish during breeding and raising periods; methods of prevention and cure of fish diseases in aquaculture; biotechnics of artificial breeding and commercial raising; technical-engineering aspects of aquaculture.

AREA VI - PROTECTION OF THE MARINE ENVIRONMENT FROM POLLUTION

Project 02.06-11, Prevention and Cleanup of Pollution of the Marine Environment from Shipping: Exchange of technical information and practical experience on common problems associated with prevention and control of marine pollution from commercial vessels; conclusions and recommendations are frequently presented jointly before the Marine Environmental Protection Committee of the Intergovernmental Maritime Organization.

Project 02.06-21, Effects of Pollutants on Marine Organisms: Exchange of information and long-term cooperative programs to aid both sides in understanding effects of pollutants on marine organisms and ecosystems, including on-site intercalibration of analytical methods.

AREA VII - BIOLOGICAL AND GENETIC EFFECTS OF POLLUTANTS

Project 02.07-11, Biological and Genetic Effects of Pollutants: Cooperative research in monitoring the genetic load in human populations from environmental factors, and evaluating the genetic effects of exposure to specific chemical substances; a related topic within this project focuses on the toxicology and mutagenic and carcinogenic properties of the products of fuel shale processing.

Project 02.07-21, Comprehensive Analysis of the Environment: Cooperative examination of the various factors and interrelationships affecting environmental quality, including pollution effects on human health and ecosystems, sources of pollution, technology and economics of control methods, and the impact of human activity on the biosphere.

AREA VIII - INFLUENCE OF ENVIRONMENTAL CHANGES ON CLIMATE

Project 02.08-11, Effects of Changes in the Heat Balance of the Atmosphere on Climate: Joint research and exchange of methodologies on problems of climate modeling, the description and assessment of past climate changes (paleoclimate), the assembly and analysis of a data base on recent climate, and the effects of polar and oceanic regions on global climate.

Project 02.08-12, Effects of Pollution of the Atmosphere on Climate: Joint research and exchange of information on properties and climatic effects of natural and anthropogenic aerosols, ozone, carbon dioxide, and other atmospheric constituents.

Project 02.08-13, Influence of Changes in Solar Activity on Climate: Joint research and exchange of information on the physical mechanisms involved in possible solar effects on climate and on mathematical modeling of atmospheric responses to these mechanisms, including photochemical changes.

AREA IX - EARTHQUAKE PREDICTION

Project 02.09-11, Field Investigations of Earthquake Prediction: Establishment and operation of networks for studies of induced seismicity at Nurek Reservoir, Tadzhik SSR, and Toktogul Reservoir, Kirghiz SSR; establishment and operation of a network for seismicity, velocity, and focal mechanism studies in the Peter I Range near Garm, Tadzhik SSR; establishment and operation of a network of digital instruments to investigate spectra and strong ground motion in sediment filled valleys near Garm.

Project 02.09-12, Laboratory and Theoretical Investigations of Physics of the Earthquake Source: Laboratory studies in Moscow, Colorado, and California on rupture processes and premonitory phenomena in rock and synthetic materials; development of models for earthquake premonitory phenomena; theoretical studies of the earthquake source and fracture processes.

Project 02.09-13, Mathematical and Computational Predictions of Places Where Large Earthquakes Occur and Evaluation of Seismic Risk: Studies in Moscow and California of the application of pattern recognition techniques to earthquake prediction; use of seismicity patterns (foreshocks, aftershocks, earthquake swarms) in earthquake prediction; development of algorithms for prediction and risk estimates.

Project 02.09-14, Engineering-Seismological Investigations: Establishment of a network of 19 strong-motion instruments in Tadzhikistan; studies of explosion-induced vibrations in full-scale buildings near Dushanbe, Tadzhik SSR.

Project 02.09-21, System of Simultaneous Warnings on Tsunamis: Joint research and exchange of information on generation and propagation of seismic tidal waves (tsunamis); improved exchange of seismic and tide data, as well as tsunami watch/warning bulletins.

AREA X - ARCTIC AND SUBARCTIC ECOSYSTEMS

No specific projects; work related to this topic is subsumed under other areas of the Agreement.

AREA XI - LEGAL AND ADMINISTRATIVE MEASURES FOR PROTECTING ENVIRONMENTAL QUALITY

Project 02.11-11, Legal and Administrative Measures: Exchange of information and experience on the legal and administrative aspects of environmental protection in both countries, including issues of enforcement, environmental impact assessment, balancing of environmental and economic considerations, incorporating public organizations into environmental policy making, and global environmental quality.

Project 02.11-21, Harmonization of Air and Water Pollution Standards: Inactive.

USG MAN-HOURS EXPENDED (Approximate)

| | <u>FY-81</u> | <u>FY-82</u> |
|-----------------------------------|--------------|--------------|
| Short-term (less than 60 days) | 8,170 | 5,940 |
| Long-term | <u>504</u> | <u>0</u> |
| Total | 8,674 | 5,940 |

LEVEL OF USG FUNDING (Approximate)

| | |
|-------|-----------|
| FY-81 | \$277,000 |
| FY-82 | \$195,500 |

Level of Soviet funding unavailable

ASSESSMENT OF BALANCE

In November 1981, the Administration decided in favor of extending the US-USSR Environmental Agreement for a third five-year term. This decision was taken on the basis of positive recommendations from EPA and the other technical agencies involved, and with the concurrence of the Department of State and the National Security Council.

In recommending in favor of extension, the US Executive Secretary noted several factors which bear on the issue of equality vs. inequality of information exchanged:

- Joint research, and studies published on the basis of that research, have made new contributions to scientific knowledge, contributions which would have been more costly in many cases - impossible, in some cases - to achieve without Soviet cooperation;

- American specialists have had access to regions of the USSR rarely visited by Westerners;

- The Agreement has served as an effective channel of communication with those sectors of the Soviet scientific and bureaucratic elite professionally committed to environmental goals, and has helped sensitize Soviet decision-makers to domestic and global ecological concerns.

The equality or inequality in value of information exchanged, like the balance of overall benefit, varies from area to area of the Agreement. US side gains are generally most pronounced in the fields of nature conservation (Area V), climatic effects (Area VIII), and earthquake prediction (Area IX). Though achievements tend to be less impressive, a good balance of benefit is also obtained in problems of air pollution (Area I), water pollution (Area II), and some projects concerned with pollution related to agriculture (Area III). By and large, those problems which the Soviets have been researching for some time and which fall to the purview of powerful ministries or prestigious Academy of Sciences research institutes show excellent balance of benefit in the bilateral exchange. Frequently, in such cases, American sophistication in analytical instrumentation and methodology is paired with unique bodies of Soviet data and/or field expeditions or research cruises fully outfitted by the Soviet side.

Those projects of the Agreement which have been judged unproductive by American experts remain, for the most part, inactive, with no expenditure of resources by either side. The reduced level of effort on the US side has necessarily improved the return on each dollar and man-hour invested, as we have sought to maintain those activities of greatest value to US interests.

On the other hand, some unfavorable trends can be observed in the recent course of the Environmental Agreement exchange. While the total USG man-hours involved dropped by a third from FY-81 to FY-82, the number of Soviets visiting the US declined by nearly one-half in the same period (from 69 to 37). Included in this cut-back were Soviet visits under projects on climatic effects and earthquake prediction, traditionally areas of strong mutual interest and benefit. The Soviet side also postponed two visits on problems of environmental law and policy, an exchange which stood to shed considerable light on the efficacy of recent environmental controls in the USSR. Only work in the area of nature conservation seems largely unaffected.

Our Soviet interlocutors have stated on numerous occasions that the US side's unwillingness to resume the annual schedule of joint committee meetings -- a policy sustained by both US Administrations since the invasion of Afghanistan -- makes it increasingly difficult for them to fund current levels of exchange activity. In all likelihood, the suspension of Aeroflot service to the US in response to the December 1981 declaration of martial law in Poland reduced substantially the Soviet side's willingness or ability to send Soviet specialists to this country. In any case, it is clear that the Soviet side declined an unprecedentedly large number of invitations from American counterparts in FY-82 and that previously active and productive joint projects have languished.

On the US side, budgetary constraints experienced by participating agencies, as well as the contraction or elimination of domestic programs, have reduced our ability to take part in even highly promising joint efforts. In the continued absence of line-item funding for US-USSR scientific and technical cooperation, this trend will almost surely persist, regardless of foreign policy considerations or balance of scientific benefit.

6

U.S.-U.S.S.R. AGREEMENT ON COOPERATION
IN HOUSING AND OTHER CONSTRUCTION

Summary of Exchange Activities: FY'81 and FY'82

Introduction

The Agreement on Housing and Other Construction was signed in Moscow on June 28, 1974 by President Nixon and Soviet Premier Kosygin. It was renewed in June 1979 for a second five-year period.

The Agreement is administered by HUD and its counterpart agency, the U.S.S.R. State Committee for Construction Affairs (GOSSTROY). A Joint Committee was established to oversee cooperation under the Agreement, and the Secretary of HUD was assigned the responsibility to serve as the Committee's U.S. Co-Chairman. The Assistant to the HUD Secretary for International Affairs acts as U.S. Executive Secretary to the Joint Committee. Representatives of American business firms have played a significant role in carrying out activities under this program.

A. The Areas of Cooperation

Activities are carried out by Working Groups that were established at the first meeting of the Joint Committee in June 1975. The six Working Groups and their lead agencies are as follows:

- 10.01 Building Design and Construction Management:
General Services Administration (GSA)
- 10.02 Utility Systems (HUD)
- 10.03 Building Materials and Components (HUD)
- 10.04 Construction in Seismic Areas: National
Science Foundation (NSF)
- 10.05 Building for Extreme Climates and Unusual
Geological Conditions (U.S. Army Corps
of Engineers)
- 10.06 New Towns (HUD)

B. The Specific Research and Projects Involved

The poor state of U.S.-Soviet relations in the period under review (FY'81 and FY'82) was reflected in the activities of this program. Three of the six Working Groups--10.01, 10.04, and 10.05--had no exchanges of personnel, only correspondence via State Department channels. Consequently, this report will concentrate largely on the two Working Groups which did have such exchanges: 10.02 and 10.03. (See summary chart of exchange visits.) Working Group 10.06 had some notable publishing achievements as it was completing its work under this program.

Working Group 10.02: Utility Systems

There are two projects under this Group:

- 1.1 Internal Systems for Utilities and Energy Conservation in Residential, Public and Commercial Buildings
- 1.2 External Utility Systems for High-Density Urban Areas

There were two exchanges under this Group during the reporting period: one U.S. team travelled to the U.S.S.R. and a U.S.S.R. team came to the U.S.

Working Group 10.03: Building Materials and Components

There were five active projects under this Group in the FY'81-'82 period:

- 1.2 Concretes: lightweight aggregates; design codes for lightweight concrete; development of joint recommendations on durability; and analysis of samples of concrete admixtures.
- 1.4 Mineral and Glass Fibers: insulating materials.
- 1.6 Fire Resistance of Buildings and Components: the use of mathematical models in fire protection; education of higher-level fire fighting personnel; the use of fire-protective coatings; and the development of a joint glossary of fire-protection terms.
- 1.7 Wood Building Products
- 3.1 Building Systems: factory construction of high-rise residential structures; factory construction of single-family housing using wood as the principal material.

There were three exchanges under this Group during the reporting period; two U.S. delegations went to the U.S.S.R. and one Soviet delegation came to the U.S.

Working Group 10.06: New Towns

There are two projects under this Working Group:

- 1.1 Planning New Towns
- 1.2 Managing New Towns

While there was no exchange of delegations during this period, there was the completion of two joint publications. The English-language U.S.-U.S.S.R. Report on "Planning New Towns" was published by HUD in March 1981; the other report, "Managing New Towns," was completed in draft in June 1982 but will not be published by HUD until spring 1983 at the earliest. The Soviets have not yet published either report in Russian.

U.S.-U.S.S.R. Agreement on Housing and Other Construction
 Working Group 10.02, Projects 1.1 and 1.2
 Working Group 10.03, Projects 1.4, 1.5 and 3.1

SUMMARY OF EXCHANGES

Fiscal Years 1981 and 1982

| FISCAL YEAR | DATES OF VISIT | PROJECT NO. | NO. IN DELEGATIONS | PURPOSE OF VISIT |
|---------------------|----------------------|---|----------------------------------|---|
| <u>To U.S.S.R.:</u> | | | | |
| 1981 | Oct. 26-Nov. 5, 1980 | W.G. 10.03, Joint Projects 1.4 & 1.5 | 7 U.S. (5 private sector) | Information Exchange/ Study Tour |
| 1981 | Sep. 21-30, 1981 | W.G. 10.02, Joint Projects 1.1 & 1.2 | 10 U.S. (6 private sector) | Information Exchange/ Study Tour |
| <u>To U.S.:</u> | | | | |
| 1982 | Jan. 20-Feb. 1, 1982 | W.G. 10.03, Project 3.1 | 6 Soviets | Study Tour and Technical Seminar |
| 1982 | Mar. 30-Apr. 8, 1982 | W.G. 10.02, Joint Projects 1.1 & 1.2 | 6 Soviets | Study Tour and Technical Site Visits |
| <u>To U.S.S.R.:</u> | | | | |
| 1982 | Oct. 20-29, 1981 | W.G. 10.03, Project 3.1 | 5 U.S. (4 private sector) | Study Tour |

C. Man-Hours

The following figures are approximate and refer only to the man-hours spent by U.S. personnel carrying out short term activities under this program; they do not include time devoted by private sector persons or by the staff of the HUD contractor (See section D below).

Department of Housing and Urban Development (HUD)

U.S.-U.S.S.R. Program Officer/International Office
FY'81 - 1440; FY'82 - 1300

Program Manager/Research Office
FY'81 - 520; FY'82 - 520

Assistant Program Manager/Research Office
FY'81 - 240; FY'82 - 240

Program Manager/Housing Office
FY'81 - 250; FY'82 - 326

Program Analyst/New Towns
FY'81 - 300; FY'82 - 180

General Services Administration (GSA)

Staff Engineer/Public Buildings Service
FY'81 - 100; FY'82 - 100

National Science Foundation (NSF)

Earthquake Program Staff
FY'81 - 12; FY'82 - 12

National Bureau of Standards

Chief Fire Science Division
FY'81 - 120; FY'82 - 115

Department of Agriculture

Forest Products Research Engineers
FY'81 - 150; FY'82 - 140

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D. HUD Funding Levels

HUD funding for this bilateral program in FY'81 and FY'82 may be divided into three parts:

1. Travel Funds for HUD Personnel Participating in Exchange Visits

| | <u>Foreign Travel</u> | <u>Domestic Travel</u> | |
|---------|----------------------------------|------------------------|--------------|
| 1982 | \$4,096.04 | \$10,536.46 | \$14,632.50 |
| 1981 | \$6,172.70 | | 6,172.70 |
| (Other) | <u>Health insurance coverage</u> | | <u>97.92</u> |
| | | TOTAL | \$20,903.12 |

2. Translation of Russian-language Documents

FY'81 - \$40,000
 FY'82 - \$20,000

3. Research Contractor

Under HUD Contract H-5180, Delphi Research Associates of Washington, D.C., provides personnel, facilities, consultant and administrative services, and the preparation and publication of reports in carrying out certain projects: Working Group 10.02, Projects 1.1 and 1.2 and Working Group 10.03, Projects 3.1, 1.4 and 1.5. In support of these projects, the contractor spent the following sums (figures include travel support support funds for private sector participants and funds for preparation and publication of program reports):

FY'81 - \$180,000
 FY'82 - \$120,000

The Soviet funding level is unknown.

E. Assessment of the Value of the Information Exchanged

The following assessment concentrates only on those Working Groups in which there were actual achievements in FY'81 and FY'82, namely Working Group 10.02, Working Group 10.03, and Working Group 10.06.

Working Group 10.02

The following is a consensus view of the key participants in Working Group 10.02 "Utility Systems".

There are technical areas in which the U.S. can benefit from the Soviets, but they are limited. While our systems and institutions are very different and the technical quality of Soviet construction is not the best, Soviet experience is broad and systematic and can be useful. In the specific areas identified

below, the U.S. can get relevant technical data because the Soviet professional talent is first rate; however, this effort will continue to require detailed attention to specific topic areas by U.S. experts:

Technical Areas of Benefit

1. District Heating and Combined Cycle Electric Generation

- o pumping loads, water velocities in huge mains, storage techniques
- o small plant technology (of increasing interest in the U.S. for retrofit of small plants and buildings)

2. Buildings

- o single pipe-heating systems, plumbing systems
- o modeling techniques and load balancing

3. Individual Technologies

- o solid waste handling systems

4. Model Experimental Communities

- o Chertanova - 6000 units, 25,000 people

5. Seismic (Utilities)

- o utilities technology in new, multi-family buildings (water, electrical, etc.)
- o elevator safety

Working Group 10.03

The value of the information exchanged, in terms of equality or inequality, varies on a project-by-project basis. Overall, we believe there is some inequality in favor of the United States, primarily because of advantages in Projects 1.2, 1.6, and 1.7.

Project 1.2: Inequality in favor of the United States, primarily in the area of lightweight aggregates and lightweight aggregate concrete. The advantage to the United States derives from the fact that the Soviet lightweight concrete

industry is much larger and more sophisticated than that of the United States, and lightweight concretes have a much wider range of applications which might well be adapted to the needs of our own industry.

Project 1.4: Inequality in favor of the Soviet Union, which produces little in the way of innovative insulating materials. It is unlikely, however, that materials provided to the Soviet Union will prove especially useful to them, even though they represent improvements over their own materials. Adjusting the production system to utilize new materials appears an unlikely course of action for the Soviets to take.

Project 1.6: Inequality in favor of the United States. The work developed under this Project has been used in meetings of ASTM-E5, especially as it applies to coatings. Protective coatings have heretofore been used in the United States only as applied to steel. Soviet experience in applying such coatings to wood indicates a potential for U.S. benefit which appears promising and which would not have been recognized as early without the exchange. Other portions of the exchange appear about equal.

Project 1.7: Inequality in favor of the United States. Analysis of glue samples provided by the Soviet Union is not yet complete, so an accurate evaluation is impossible. However, it appears that the analysis will produce results indicating more favorable potential to the United States in the use of Soviet technology than the reverse.

Project 3.1: Equality. Soviet technology in Industrialized Building Systems is employed primarily in the construction of multi-family, industrial, and commercial structures. In the United States, it is employed primarily in the construction of single-family housing. Information passing in both directions, then, will be used to the receiving side to the extent that the appropriate decisions are made regarding the emphasis to be placed on the process of industrializing construction.

Working Group 10.06

Inasmuch as relatively little is known about how the Soviets plan, design, develop and manage their new towns and industrial centers, the U.S. has gained knowledge which it might not otherwise have received in such a comprehensive form. All U.S. information on new towns was in the public domain and thus available to the Soviet Government without this program activity.

*Prepared by: John Geraghty, Office of International Affairs
Department of Housing and Urban Development
(Tel. 755-5770) on January 20, 1983.*

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NSF-SPONSORED RESEARCH UNDER THE
U.S.-U.S.S.R. AGREEMENT ON COOPERATION
IN THE FIELDS OF SCIENCE AND TECHNOLOGY

FISCAL YEARS 1981-1982

This report is submitted at the request of the Department of State in connection with the requirements of Public Law 97-241, Section 126, paragraph(a)(2)(A-E). It is organized in the following parts:

1. Areas of Cooperation
2. Specific Research and Projects Involved
3. Person-Hours Spent in Short-Term (less than 60 days) and Long-Term Exchanges
4. Level of United States and Soviet Funding in Each Fiscal Year
5. Assessment of the Equality or Inequality in Value of the Information Exchanged

1. AREAS OF COOPERATION

Between 1972 and 1982, the NSF's U.S.-U.S.S.R. Cooperative Research Program provided financial and administrative support for 11 of the 14 joint working groups (including one that had become a standing committee) under the U.S.-U.S.S.R. Science and Technology Agreement. Of these 11 NSF-supported groups, by FY 1981 only 7 remained active. The U.S. Side terminated cooperation in Chemical Catalysis in 1980, while cooperation in Earth Sciences and Polymer Science, newly approved by the U.S.-U.S.S.R. Joint Commission on Scientific and Technological Cooperation in 1979, did not get underway as a result of the January 1981 Afghanistan sanctions. Scientific and Technical Information became a Standing Committee in 1979 and no subsequent activity took place in that area.

Three of the 14 working groups were supported by other agencies. These were Forestry (Forest Service, USDA), Metrology (NBS/DOC), and Water Resources (Bureau of Reclamation, DOI).

Table 1 lists the 7 NSF-supported working groups that were active in FY 1981 and 1982. Included, as applicable, are the projects carried out within each working group. The code numbers are based on a jointly established system and will be used as reference later in this report.

TABLE 1

NSF-SPONSORED WORKING GROUPS UNDER THE
U.S.-U.S.S.R. SCIENCE AND TECHNOLOGY AGREEMENT

FY 1981-1982

- 01.01 Application of Computers to Management
 - 01.0101 Econometric Modeling
 - 01.0102 Economics and Management of Large Systems
 - 01.0103 Management of Large Cities
 - 01.0104 Theoretical Foundations of Software for Applications in Economics and Management

- 01.03 Electrometallurgy and Materials
 - 01.0301 Electroslag Technology
 - 01.0302 Plasma-Arc Melting of Metallic Materials
 - 01.0303 Electron-Beam Evaporation of Metallic and Non-Metallic Materials in a Vacuum
 - 01.0306 Solid-State Joining
 - 01.0307 Metallurgy of Fusion Welding
 - 01.0308 Materials and Welds for Cryogenic Applications

- 01.07 Production of Substances by Microbiological Means
 - 01.0703 Genetics of Microorganisms
 - 01.0704 Microbial Enzyme Reactions
 - 01.0705 Microbial Control of Insect Pests
 - 01.0707 Fundamentals of Microbiological Processes

- 01.08 Physics
 - 01.0801 Condensed Matter Physics
 - 01.0802 Relativistic Astrophysics
 - 01.0803 Physics of Dense Plasmas
 - 01.0805 Particle Physics

- 01.0807 Mathematical Physics
- 01.0808 Quantum Dynamics and Reactivity of Large Molecules
- 01.09 Science Policy
 - 01.0901 Planning and Management of Research and Development
 - 01.0904 Fundamental Research Systems
- 01.13 Corrosion
- 01.15 Heat and Mass Transfer

2. SPECIFIC RESEARCH AND PROJECTS INVOLVED

Tables 2 and 3 present a detailed list of NSF grants to U.S. investigators made in FY 1981 and FY 1982 in connection with the program.

3. PERSON-HOURS SPENT IN EXCHANGES

Tables 4 and 5 list all joint activities that occurred during FY 1981 and FY 1982. At the end of each table is a summary of person-hours (of participants from the sending country) broken down according to short-term (less than 60 days) and long-term visits.

4. LEVEL OF FUNDING

In Fiscal Year 1981 NSF funding of the program was \$397,982. The corresponding figure for Fiscal Year 1982 was \$297,985.

The U.S. Side has no information on which it can base even a rough estimate of Soviet funding levels. In general, each country supported all expenses for research and travel of its own participants.

5. EQUALITY OR INEQUALITY IN VALUE OF INFORMATION EXCHANGED

The following is based primarily on letter-reports submitted to NSF in November 1981 by U.S. chairmen of the joint working groups and other U.S. participants.

In the area of Application of Computers to Management, bilateral seminars were the predominant form of activity. These were organized so as to ensure that participants from each side made approximately equal contributions. The Soviets' expertise in theoretical aspects of numerical modeling, and Soviet attempts to apply such models to large-scale economic planning, provided valued opportunities to U.S. researchers to improve the theoretical basis of software development as well as to obtain a better understanding of the current state of Soviet economic thinking. In addition, access to certain Soviet institutions, such as the U.S.S.R. State Planning Committee (GOSPLAN), has been considered an important benefit of this activity.

In FY 1981-1982 there were some notable accomplishments in the area of Electrometallurgy and Materials. U.S. researchers obtained excellent mathematical modeling data on the electroslog remelting process - an field pioneered by the Soviet Union - which had been long sought by the U.S. Side. Exchanges of experimental materials and data in the projects on Electron-Beam Evaporation and on Cryogenic Materials and Welds were of benefit to both countries in terms of both basic materials research and developing better materials for special applications, such as weldments for vessels intended for low-temperature service. Some exchanges of test material were not successful: a U.S. shipment of remelt electrodes to be tested in the U.S.S.R. under the Plasma-Arc Melting project was lost enroute (not in Soviet territory), and a shipment of Soviet-produced specimens to the U.S. in connection with the Fusion Welding project was mistakenly routed to a third country and apparently

never retrieved by the Soviet Side. More serious problems of access to Soviet institutions and facilities performing applied metallurgical work eventually led the U.S. Side to suspend further exchanges of personnel in these two areas, although exchanges of experimental data continued to take place.

The exchange of information carried out in Microbiology was judged to be probably somewhat more balanced in the areas of Genetics of Microorganisms, Microbial Enzyme Reactions, and Microbial Control of Insect Pests than in the project on Fundamentals of Microbiological Processes. In large part this situation was attributable to the fact that the lead Soviet organization for the project was an industrial ministry rather than, as the U.S. Side would have preferred, an organization oriented toward basic research. Thus the U.S. Side experienced chronic difficulty in obtaining access to Soviet basic researchers, although in 1981 progress was made on this account with the active participation of the Soviet Academy of Sciences in a joint conference. Particularly noteworthy advances were made in the exchange of fungal and viral preparations under the Insect Pests project.

U.S.-Soviet cooperation in Physics carried out under the program was undoubtedly among the best examples of the benefits of well-matched and carefully designed international scientific cooperation. As a result, the quality of the participants on both sides was very high and sustained ever since the Physics Working Group became active in about 1977. In every project area, activities under the cooperative program have resulted in significant achievements, advancing U.S. scientific understanding of the field and providing valuable insight, which would otherwise not have been possible, into Soviet activities, approaches, and accomplishments in this area. Overall, the balance of benefits from the exchange of information has ranged from acceptable to slightly favorable to the U.S. In some fields, such as Physics of Dense Plasmas and Quantum Dynamics and Reactivity of Large Molecules, mutual benefits have been heightened by complementary capabilities - e.g., U.S. experimental expertise paired with Soviet strengths in theoretical and analytical approaches.

No significant joint activity in Science Policy took place during the reporting period, apart from a planning meeting of the U.S. and Soviet working group chairmen in July 1981. The subsequent deterioration in U.S.-Soviet intergovernmental relations, however, made it impossible to follow up this meeting with any substantive activity.

In the areas of Corrosion and Heat and Mass Transfer, exploratory meetings and visits took place in FY 1981-1982. However, because these otherwise promising projects had only recently (1979) been formally initiated, little headway was made in identifying appropriate counterpart relationships at the scientist-to-scientist level prior to the expiration of the Science and Technology Agreement in July 1982. Some accomplishments, however, were recorded, notably in a project in Heat and Mass Transfer on radiative heat transfer in which laboratory analysis performed in the U.S.S.R. enabled U.S. researchers to interpret Voyager spacecraft data on the Jovian moon Io in an impressively short time.

TABLE 2

FISCAL YEAR 1981 RESEARCH AWARDS
 U.S.-U.S.S.R. COOPERATIVE RESEARCH PROGRAM
 NATIONAL SCIENCE FOUNDATION

| <u>P.I. Name/Institution Name</u> | <u>Title/(Project Number)</u> | <u>Amount</u> |
|--|---|---------------|
| 01.01 APPLICATION OF COMPUTERS TO MANAGEMENT | | |
| Wilfrid J. Dixon UCLA | U.S.-USSR Computer Software Study (01.0104) | 62,118 |
| 01.03 ELECTROMETALLURGY AND MATERIALS | | |
| Merton C. Flemings Mass Inst. of Tech | Electroslag Castings (01.0301) | 45,000 |
| Julian Szekely Mass Inst. of Tech. | Mathematical and Physical Modelling of the Electroslag Remelting Process (01.0301) | 45,000 |
| Raymond R. Fessler Battelle Memorial Inst. | Investigation of Plasma-Arc Remelting for Producing High-Nitrogen Stainless Steels and as a Substitute for Vacuum- Arc Remelting or Electroslag Remelting (01.0302) | 70,300 |
| Rointan F. Bunshah Univ. of Cal-Los Angeles | Structure/Property Relationship in Microlaminate Composites (01.0303) | 45,000 |
| 01.13 CORROSION | | |
| Joseph R. Pickens Martin Marietta Corp. | The Mechanisms and Phenomenology of Embrittlement of Ultrafine- Grained Aluminum Alloys | 25,000 |
| 01.15 HEAT AND MASS TRANSFER | | |
| George S. Bankoff Northwestern University | Fragmentation of Liquid Drops Behind a Pressure Shock Front | 21,000 |
| Robert D. Cess Suny St. Univ. Stony Brook | Studies in Radiation Heat Transfer | 18,000 |
| Warren W. Rohsenow Mass Inst. of Tech. | Critical Heat Flux for Gravity- Driven Liquid Films | 31,980 |
| Satish C. Saxena Univ. of Illinois-CHCO CIR | Heat Transfer in Fluidized Beds | \$ 20,000 |

TABLE 3
FISCAL YEAR 1982 RESEARCH AWARDS
U.S.-U.S.S.R. COOPERATIVE RESEARCH PROGRAM
NATIONAL SCIENCE FOUNDATION

| <u>P.I. Name/Institution Name</u> | <u>Title</u> | <u>Amount</u> |
|--|---|---------------|
| 01.13 CORROSION | | |
| Michael A. Streicher Univ. of Delaware | A Comparison of "Non-Electrolytic" and Electrochemical Corrosion | \$ 25,000 |
| 01.15 HEAT AND MASS TRANSFER | | |
| S. George Bankoff Northwestern University | Fragmentation of Liquid Drops Behind & Pressure Shock Front | 21,600 |
| Robert D. Cass Suny St. Univ. Stony Brook | Study of Radiative Energy Transfer in Gases (Mechanical Engineering) | 38,500 |
| Warren M. Rohsenow Mass Inst. of Tech. | Critical Heat Flux for Gravity-Driven Liquid Films | 52,400 |
| Satish C. Saxena Univ. of Illinois-CHGO CIR | Heat Transfer in Fluidized Beds | 37,500 |

TABLE 4
 PERSONNEL EXCHANGES SPONSORED BY NSF UNDER THE
 U.S.-U.S.S.R. SCIENCE AND TECHNOLOGY AGREEMENT
 FY 1981

| <u>Project</u> | <u>Type of Activity</u> | <u>Site</u> | <u>Dates</u> | <u>Partici- pants*</u> | <u>Person- Hours*</u> |
|--|--------------------------|-------------|--------------------------|----------------------------|---------------------------|
| APPLICATION OF COMPUTERS TO MANAGEMENT | | | | | |
| 01.0101 | Seminar | U.S. | 14-21 Oct 80 | 6 | 240 |
| 01.0104 | Planning | U.S.S.R. | 16-23 Nov 80 | 2 | 80 |
| 01.0101 | Research | U.S.S.R. | 30 Nov - 7 Dec 80 | 2 | 80 |
| 01.0102 | Seminar | U.S. | 2-16 Dec 80 | 5 | 400 |
| 01.0104 | Research | U.S.S.R. | 5-19 Sep 81 | 2 | 160 |
| 01.0103 | Planning | U.S.S.R. | 26 Sep - 4 Oct 81 | 1 | 40 |
| ELECTROMETALLURGY AND MATERIALS | | | | | |
| 01.0301 | Seminar | U.S. | 7-21 Oct 80 | 4 | 320 |
| 01.0307 | Research | U.S. | 11 Nov 80 - 10 Jan 81 | 2 | 704 |
| 01.0302 | Survey | U.S. | 2-16 Dec 80 | 4 | 320 |
| 01.0307 | Survey | U.S. | 2-16 Dec 80 | 3 | 240 |
| 01.0308 | Survey | U.S.S.R. | 15-29 Mar 81 | 4 | 320 |
| 01.03 | Working Group Meeting | U.S. | 12-26 Apr 81 | 10 | 800 |
| 01.0308 | Seminar | U.S.S.R. | 14-28 Jun 81 | 6 | 480 |
| 01.0307 | Survey | U.S.S.R. | 28 Jun - 12 Jul 81 | 5 | 400 |
| 01.0308 | Conference | U.S. | 9-23 Aug 81 | 4 | 320 |

MICROBIOLOGY

| | | | | | |
|---------|------------|----------|----------------------|---|-----|
| 01.0707 | Conference | U.S.S.R. | 24 May - 3 Jun 81 | 5 | 320 |
|---------|------------|----------|----------------------|---|-----|

PHYSICS

| | | | | | |
|---------|------------------------|--------|-----------------------|----|------|
| 01.0801 | International Workshop | Sweden | 15 Jun - 18 Jul 81 | 11 | 1320 |
|---------|------------------------|--------|-----------------------|----|------|

| | | | | | |
|---------|-------------------------|---------|--------------|---|-----|
| 01.0808 | International Symposium | Hungary | 18-24 Sep 81 | 5 | 200 |
|---------|-------------------------|---------|--------------|---|-----|

SCIENCE POLICY

| | | | | | |
|-------|----------|----------|--------------|---|----|
| 01.09 | Planning | U.S.S.R. | 26-30 Jul 81 | 2 | 80 |
|-------|----------|----------|--------------|---|----|

CORROSION

| | | | | | |
|-------|-----------------|------|-------------|---|-----|
| 01.13 | Planning/Survey | U.S. | 5-19 Oct 80 | 5 | 400 |
|-------|-----------------|------|-------------|---|-----|

| | | | | | |
|-------|--------|----------|----------------------|---|-----|
| 01.13 | Survey | U.S.S.R. | 23 Aug - 3 Sep 81 | 4 | 256 |
|-------|--------|----------|----------------------|---|-----|

HEAT AND MASS TRANSFER

No activity.

TOTAL PERSON-HOURS (FY 1981)

| | <u>Short- Term</u> | <u>Long- Term</u> |
|----------------------|------------------------|-----------------------|
| U.S. Participants* | 3,736 | -0- |
| Soviet Participants* | <u>3,040</u> | <u>704</u> |
| | 6,776 | 704 |

*Participants and person-hours from sending country. Person-hours based on 40-hour weeks.

TABLE 5
PERSONNEL EXCHANGES SPONSORED BY NSF UNDER THE
U.S.-U.S.S.R. SCIENCE AND TECHNOLOGY AGREEMENT
FY 1982

| <u>Project</u> | <u>Type of Activity</u> | <u>Site</u> | <u>Dates</u> | <u>Partici- pants*</u> | <u>Person- Hours*</u> |
|--|-----------------------------|-------------|----------------------|----------------------------|---------------------------|
| APPLICATION OF COMPUTERS TO MANAGEMENT | | | | | |
| 01.0101 | Seminar | U.S.S.R. | 18-26 Oct 81 | 6 | 288 |
| 01.0101 | Research | U.S.S.R. | 16-26 Nov 81 | 2 | 128 |
| ELECTROMETALLURGY AND MATERIALS | | | | | |
| 01.0303 | International Conference | U.S. | 4-15 Apr 82 | 4 | 288 |
| MICROBIOLOGY | | | | | |
| No activity. | | | | | |
| PHYSICS | | | | | |
| 01.0801 | International Seminar | U.S.S.R. | 27 May - 7 Jun 82 | 2 | 160 |
| 01.0805 | International Seminar | Denmark | 13-24 Sep 82 | 12 | 960 |
| SCIENCE POLICY | | | | | |
| No activity. | | | | | |
| CORROSION | | | | | |
| 01.13 | Survey | U.S.S.R. | 8-15 Nov 81 | 2 | 80 |
| HEAT AND MASS TRANSFER | | | | | |
| 01.15 | Research | U.S.S.R. | 4-12 Jan 82 | 1 | 40 |

TOTAL PERSON-HOURS (FY 1982)

| | <u>Short- Term</u> | <u>Long- Term</u> |
|----------------------|------------------------|-----------------------|
| U.S. Participants* | 1,656 | -0- |
| Soviet Participants* | <u>288</u> | <u>-0-</u> |
| | 1,944 | -0- |

*Participants and person-hours from sending country. Person-hours based on 40-hour weeks.

US-USSR

AGREEMENT ON COOPERATION IN THE
FIELDS OF SCIENCE AND TECHNOLOGY
Fiscal Years 1981 and 1982

US-USSR Science and Technology Exchanges
Working Group 01.04 - Forestry

1. Description of forestry programs - F.Y. 1981 and 1982

A. Areas of Cooperation.

Only two areas of cooperation were active during the two years in question: (1) exchanges of tree seeds (germ plasm) and (2) exchanges of scientists and scientific materials in the field of integrated control of forest insects.

B. Specific Research and Projects

(1) Tree Seed Exchanges - Continued in both years through correspondence and exchanges of small packets of seeds for research purposes. No exchanges of scientists.

(2) A team of four U.S. scientists visited the Ukraine to review integrated pest management practices in the spring of 1981. In June 1982 two Soviet scientists visited the Northeastern United States to followup on the same program. During each team visit insect parasites and predators of forest tree defoliating insects were exchanged.

C. (Man hours spent (Short Term visit only))

The U.S. side estimate of man-hours spent on the two exchanges is as follows:

| | |
|-----------------------|------|
| Federal Employees (2) | 1000 |
| State Employee | 500 |
| University Employee | 500 |
| Total | 2000 |

Our estimate of Soviet manhours for the two exchanges is 1800 but could be considerably greater since they tend to have large numbers of people involved on the receiving end.

D. Level of Funding

(1) Including the State and University inputs we estimate the exchanges to have cost \$25,000.

(2) We have no estimate of Soviet costs.

4

E. Assessment of value received.

1. The exchanges of tree seed have been quite even as to volumes and value of plant materials. We have the distinct feeling that our scientist are making better use of the Soviet germ plasm received than vice versa.
2. Through exchanges in integrated control of forest tree insects the Soviets have been provided with samples of host specific insect viruses that are largely available commercially they have benefitted from knowledge of our statistical approach to sampling insect populations.

We have been able to introduce some insect parasites and predators that may prove beneficial in controlling the gypsy moth in eastern hardwood forests. We are currently studying their means of building up bird populations for natural control of insects.

The program benefits appear to us to be slightly in favor of the United States. If the work to control Gypsy Moth is successful the benefits would clearly be greatly in our favor.

US-USSR

AGREEMENT ON COOPERATION IN THE
FIELDS OF SCIENCE AND TECHNOLOGY
Fiscal Years 1981 and 1982

Subject: National Bureau of Standards Scientific Exchange Activities
with the Soviet Union

The following is the report you requested on scientific exchange activities between the National Bureau of Standards and the USSR Academy of Sciences. This program was initiated under the Agreement for Cooperation in Science and Technology; it was formalized by a written memorandum dated December 13, 1978, with a period of validity of five years. Under this agreement, all of the institutes of the Academy of Sciences that conduct research in areas of interest to NBS are, in principle, open to visits by NBS scientists.

Information regarding the topics listed in Section 126 of Public Law 97-241 follows:

Sec. 126 (a) (2) (A), (B), (C), and (D): The Memorandum between NBS and the USSR Academy of Sciences calls for cooperation in the fields of thermal physics and thermodynamics, materials science, spectroscopy, chemistry and chemical kinetics, and cryogenic science; other fields may be added by mutual agreement. During FY 1981, four USSR scientists visited NBS for discussions in the areas of chemical thermodynamics, statistical mechanics, and mechanics of continuous media. During this period, no NBS scientist visited the Soviet Union. The total duration of the visits to NBS and other U.S. laboratories was ten man-weeks.

In FY 1982, one scientist from the Institute of Spectroscopy, Moscow, worked for three months at NBS in our Laser Spectroscopy Laboratory, and two USSR scientists from the High Temperature Institute, Moscow, spent two weeks each at NBS for discussions of thermal and mass exchange processes and the hydrodynamics of two-phase flow. In FY 1982, one NBS scientist visited the USSR for two weeks for discussions on chemical thermodynamics. In all cases, the discussions concerned areas of basic sciences, generally already reported in published literature.

Page 2

In FY 1981, NBS spent \$4,500 on the exchange programs and in FY 1982, \$8,800. These amounts covered the expenses of the USSR visitors in the United States, in accordance with the "receiving side pays" provision of the agreement, and includes approximately \$1,500 for travel to the Soviet Union for the one individual who visited in 1982.

USSR expenditures for international travel for the two years are estimated to be approximately \$6,000 for FY 1981 and \$4,500 for FY 1982.

(E): The NBS hosts of the USSR visitors have uniformly reported that they were pleased with the technical content of the discussions that they held with the USSR visitors. In all cases, the exchange of information was a two-way flow and the NBS scientists gained significant technical benefits from the reports of the visitors. In the one instance in which a Soviet scientist remained for three months at NBS, his laboratory host reported that he was an excellent contributor to the work of the group, and that he would be welcome to return if suitable arrangements could be made. While accurate quantitative comparisons cannot be made, it is estimated that the technical information gained by each side was approximately equal.

US-USSR

AGREEMENT ON COOPERATION IN THE
FIELDS OF SCIENCE AND TECHNOLOGY
Fiscal Years 1981 and 1982

Working Group on Metrology

Subject: Report to the Congress Required by Department of State
Authorization Act on Scientific Exchange Activities
with the Soviet Union

Reference: Your request of February 17, 1983

This memorandum addresses the specific requirements of Sec. 126(a) of the attachment to your letter with respect to the activities of Working Group 01.06 (Metrology) under the S&T Agreement during Fiscal Years 1981 and 1982.

1. Risk of transfer of sensitive technology

The technical cooperation activity of Working Group 01.06 is confined to the intercomparison of reference standards for measurements, the development of methods for measurements and the scientific research related to these areas. With the possible exceptions noted below, all of the cooperative projects involved measurement technology that is widely known, fully published and in no way connected with classified technology. In all such cases there is no risk of transferring militarily significant technology.

Two specific projects require special comment:

Project 01.0614 - Measurement Methods and Standards for Antennas

Project 01.0616 - Measurement Methods and Standards for Non-Ionizing Electromagnetic Radiation

Plans for cooperation have been formulated for both of these projects; however, no cooperative activity has yet been implemented in either case.

Measurement technology for antennas and electromagnetic radiation is important to military applications as well as a very wide range of non-military applications. While the NBS technical work in these areas is unclassified, there is some conceivable risk

connected with Soviet access to NBS research results before they are normally published. On the other hand, there is an important need on the part of U.S. Government agencies (military and non-military) to establish a better understanding of the state of Soviet measurement technology in these areas. The need for this understanding is related to the possibilities for biological effects caused by non-ionizing electromagnetic radiation and the determination by Soviet health authorities that the exposure of workers and the public to such radiation must be controlled at levels below those considered to be necessary or feasible in the United States (related Soviet regulations are more restrictive than those of any other country). The plans for cooperative work on these projects have been fully coordinated with other U.S. agencies having an interest and the related risk of transfer of militarily significant technology was fully considered. It was, therefore, determined that the specific cooperation planned for these two projects could be undertaken without a significant level of risk.

2. Description of Exchanges and Related Activities

Fiscal Year 1981

A. The areas of cooperation were limited to measurement standards and measurement methods.

B. Specific research and projects involved are given in attachment 1.

C. Two Soviet scientists visited NBS for two weeks in October 1980 in connection with Project 01.0609 (Standard Reference Data). There were no other exchange visits from either side during FY 81 and cooperative activity was based upon earlier visits and correspondence.

D. Funding of U.S. participation in the cooperation is derived from active NBS programs in each project area. There is no detailed accounting for the effort expended on cooperation as such. However, it is estimated that, during FY 81, the aggregated level of such funding for all projects did not exceed \$10,000.

Information on the Soviet level of funding is not available; however, it is reasonable to estimate that it was comparable to the U.S. level.

E. The value of information exchange was approximately the same.

Fiscal Year 1982

A. In December 1981 a Joint Working Group Meeting was held in the United States. Plans were formulated for the period 1982-1983. Except for this meeting, there was no active cooperation during FY 82.

B. Specific research and projects planned for FY 82 and beyond are given in attachment 2.

C. Four Soviet delegates visited the United States for ten days in December 1981 for the purpose of participation in the Working Group Meeting. Otherwise, there were no exchange visits from either side during FY 82.

D. U.S. funding during FY 82 was limited to participation in the Working Group Meeting. Cost, excluding the time of all persons involved, is estimated to have been \$2,000.

There is no information available regarding the Soviet funding level, except for the participation of four delegates, for ten days, at the Working Group Meeting. The Soviets paid all of their expenses for this meeting; considering travel from Moscow, travel in United States and per diem expenses, we estimate the total to have been \$7,000.

E. Technical information exchanged during the working Group Meeting was primarily based upon NBS laboratory visits for the Soviet delegation. Consequently, the value of such information was more favorable to the Soviets on this occasion. However, this value has been fully offset by laboratory visits in the U.S.S.R. for U.S. delegations to previous Working Group Meetings.

Working Group 01.06Projects Active in FY 81

| <u>Project</u> | <u>Topic</u> |
|----------------|--|
| 01.0603 | Comparison of measurement standards in the field of ionizing radiation. |
| 01.0604 | Research on stabilized radiation sources for metrology. |
| 01.0607 | Improvements in the values of the physical constants. |
| 01.0608 | Analysis of test methods in standardization. |
| 01.0609 | Cooperation on standard reference data. |
| 01.0610 | Investigation of methods for making absolute radiometric measurements. |
| 01.0612 | New methods for relating the electrical units to constants or mechanical units. |
| 01.0613 | Methods of measurement of high voltage based on the Stark effect, Kerr effect and other phenomena. |

UNITED PLAN for Scientific and Technical Cooperation in the Field of Metrology
between the USA and the USSR
for 1982-1983

December 1981

ACTIVE PROJECTS

| Project | Title | Objective | Execution | | Responsible Organization | |
|---------|---|---|----------------|--------|--------------------------|--------------|
| | | | begin | finish | from the USSR | from the USA |
| | | | See note below | | | |
| 01.0603 | Comparison of Standards in the Field of Ionizing Radiation | Intercomparison of national measurement standards | 1974 | 1983 | VNIIFTRI | NBS |
| 01.0604 | Research on Stabilized Radiation Sources | Cooperative research on high accuracy standard for the unit of length | 1974 | 1983 | VNIIM | NBS |
| 01.0607 | Improvements in the Values of Physical Constants | International consistency in the recognition of "best values". | 1974 | 1983 | VNIIM | NBS |
| 01.0609 | Cooperation on Standard Reference Data | Exchange of compilations of data on properties of matter | 1974 | 1983 | VNIIMS | NBS |
| 01.0610 | Investigations of Methods for Absolute Radiometric Measurement | Intercomparison of national measurement standards and methods | 1976 | 1983 | VNIIOFI | NBS |
| 01.0612 | New Methods for Relating the Electrical Units to Atomic Constants or Mechanical Units | Cooperative research on new methods for realization of electrical units of measurement | 1976 | 1983 | VNIIM | NBS |
| 01.0613 | Development of New Methods of Measurement of High Voltage based on the Stark effect, Kerr Effect and Other Methods | Cooperative research on methods for measurement of high voltage | 1976 | 1983 | VNIIMS | NBS |
| 01.0614 | Investigation of Methods, Standards and Realization of Measurements in Connection with Antenna Parameters | Intercomparison of national standards and methods for measurement | 1981 | 1983 | VNIIRI | NBS |
| 01.0615 | Transportable Temperature Reference Points | Improved methods for the transfer of the temperature scale | 1981 | 1983 | VNIIFTRI | NBS |
| 01.0616 | Measurement Standards and Methods for Non-Ionizing Electromagnetic Radiation of Possible Importance in Biological Effects | Establish a firm technical basis for the intercomparison of laboratory observations of biological effects caused by electromagnetic radiation | 1982 | 1983 | VNIIFTRI | NBS |

*See following sheet for definitions of acronyms.

Note: Time schedules given in this table reflect plans of the Joint Working Group as of December 1981. There have been no actions on these plans since that date.

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Acronyms Used to Identify Agencies of the State Committee
for Standards of the USSR Council of Ministers (Gosstandart)

VNIIM: Mendeleev All-Union Scientific Research Institute of Metrology

VNIIMS: All-Union Scientific Research Institute for Metrological Service

VNIIOFI: All-Union Scientific Research Institute for Optico-physical Measurements

VNIIRI: All-Union Scientific Research Institute for Radio Technical Measurements

VNIIFTRI: All-Union Scientific Research Institute for Physico-Technical and Radio Technical Measurements

GETsAI: State Standard Center for Antenna Measurements

Gosstandart: State Committee for Standards of the USSR Council of Ministers

Fiscal Years 1981 and 1982

US-USSR COOPERATION IN SPACE RESEARCH

Under the 1972 intergovernmental US-USSR Agreement on Space Cooperation (renewed in 1977), NASA carried out specific joint activities and projects with Soviet counterparts during 1981 and 1982 within the framework of four Joint Working Groups (JWGs): Space Biology and Medicine, Near-Earth Space, the Moon and Planets, Study of the Natural Environment, and Space Meteorology. A fifth area of cooperation envisioned in the 1977 Space Agreement renewal - satellite search and rescue systems - continued to be developed during this period but moved beyond the bilateral framework under a 1980 multilateral agreement involving participation by Canada and France, the US and the USSR.

During 1981, bilateral exchanges under the Space Agreement continued to be curtailed significantly as part of the US response to the Soviet invasion of Afghanistan, and were reduced even further by the US during 1982 in response to Soviet actions in Poland. Among the sanctions announced by the Administration in December, 1981, was the decision that the US-USSR Space Agreement would not be renewed when it came up for renewal. The agreement thus expired on May 24, 1982.

1981 Activities

The majority of joint US-USSR space activities during 1981 took place in the areas of space biology and medicine and planetary research. Highlights of projects and activities which occurred in 1981 are given below:

-- Space Biology and Medicine: During 1981, NASA continued to participate in preparations for a Soviet biosatellite mission scheduled for launch in 1982 (the launch has since slipped to the fall of 1983). This "Cosmos" biosatellite mission will fly primates for the first time in the Soviet program, and the US will provide technical support for planned cardiovascular and biorhythm measurements on two small rhesus monkeys. In addition, US scientists are participating in investigations using rats to study calcium metabolism and embryology. In return for its assistance, the US will receive the unique biomedical data obtained during the mission for subsequent analysis and interpretation.

In May, agreement was reached on a new cooperative project to measure human vertebral bone mineral changes resulting from long-duration manned spaceflight. Through a series of computer-assisted tomography (CAT) scans taken of cosmonaut vertebra, the effects of extended periods of weightlessness on overall bone development processes may be observed and analyzed. Under this cooperative project, Soviet scientists are responsible for taking the prescribed pre-flight and

post-flight CAT scans of cosmonauts using US-provided magnetic tapes, and then shipping these tapes with the raw data to the US for subsequent analysis and interpretation. The final result of the US study is then to be shared with the Soviets. This type of study, using the most modern medical techniques, should result in a greater understanding of the physiological changes occurring both during space missions and following return to the normal gravity environment on Earth.

In November, 1981, the twelfth meeting of the Space Biology and Medicine JWG was held in Washington. A special feature of the meeting was a 2 1/2-day Cardiovascular Symposium, which brought together US and Soviet specialists to exchange information and data from ground-based simulations of weightlessness and actual space missions. US scientists learned firsthand the biomedical results from the Soviet 185-day Salyut manned mission, as well as the results of a later 75-day Salyut mission. The agreed work in bone mineral measurements using CAT scanning techniques was broadened in scope to include studies of bone mineral mass and muscle density. In addition, US participation in the USSR "Cosmos" biosatellite mission was further defined. Finally, the participants agreed to publish the final results of their Joint Bedrest Study (completed in 1979) independently during 1982.

-- Near Earth Space, the Moon and Planets - During 1981, a number of scientist-to-scientist exchanges took place in the areas of planetary geology, planetary atmospheres and space plasma physics. The Soviets also contributed a large body of written material on the results of their past Venera missions to Venus for incorporation in future NASA publications on Venus.

In August, the Soviet Academy of Sciences complied with a NASA request to reduce the potential for radio-frequency interference (RFI) during the Voyager 2 spacecraft's nine-day encounter period with the planet Saturn. Similar Soviet cooperation had been extended to NASA in connection with previous US planetary encounters in 1978 (Pioneer-Venus), 1979 (Pioneer 11-Saturn), and 1980 (Voyager 1-Saturn).

A highly-successful meeting of the US-USSR JWG on Near-Earth Space, the Moon and Planets was held in San Francisco in October, 1981. During this meeting, scientific results were presented from the 1978 US and Soviet missions to Venus (Pioneer Venus and Venera 11 and 12, respectively). Reports were given on the state of a current research in the following topic areas: the solar wind interaction with non-magnetized or weakly magnetized solar system bodies; geological interpretation of Mars data; lunar sample analyses; and Antarctic meteorite and cosmic dust studies. The participants

also exchanged detailed information on plans for future planetary missions, and reached agreement on a joint program of collaboration in the analysis and interpretation of X-ray and gamma-ray remote sensing data for planetary exploration using ground-based and balloon flight studies.

During the October planetary discussions, the two sides agreed to consider as a primary objective for their next JWG meeting the establishment of several kinds of coordinated efforts which could enlarge the scope of current bilateral activities. That meeting was to have taken place in the Soviet Union in May, 1982, but was not held due to the non-renewal of the US-USSR Space Agreement.

-- Space Meteorology - In the rocket meteorology area, cooperation has focused on the exchange and analysis of data from the Eastern and Western Hemispheric meridional network. During 1981, these joint efforts continued but at a reduced level due to the closing of several US rocket ranges in 1979 and 1980, and changes in NASA's budget priorities. In the satellite meteorology area, laboratory and field data were exchanged during 1981 to establish common data processing procedures for atmospheric temperature sounding with the objective of making international sources of meteorological data more compatible.

Short-Term and Long-Term Exchanges During 1981

A statistical summary of the total mandays spent in short-term and long-term exchanges during 1981 under the US-USSR Space Agreement is given below:

| <u>Type</u> | <u>US Mandays Spent in USSR</u> | <u>USSR Mandays Spent in US</u> |
|--------------------------------------|-------------------------------------|-------------------------------------|
| Short-term (less than 60 days) | 88 | 406* |
| Long-term (over 60 days) | 0 | 0 |

* Due largely to two Joint Working Group (JWG) meetings held in the US during the year. Other exchanges were approximately in balance.

Value of Information Exchanged During 1981

The overall value of the scientific and technical information exchanged during 1981 would appear to be approximately balanced. It should be noted, however, that certain data (particularly biomedical data related to long-duration manned spaceflight) is available only from the USSR.

1982 Activities

Following the decision on non-renewal of the Space Agreement, NASA received interagency authorization to complete its participation in the Soviet "Cosmos" biosatellite mission (discussed in an earlier section) on the basis of agency-to-agency agreements with Institute of Biomedical Problems in Moscow dating from 1978-81. These agreements continue in force independent of the Space Agreement. Continuation of other agency-level activities was and is subject to case-by-case interagency review, as would be any proposals for NASA involvement in future Soviet biosatellite missions.

During 1982, several US specialists in planetary geological and atmospheric research visited space research institutes in the Soviet Union as guests of the USSR Academy of Sciences. The specialists were NASA contractors and grantees from universities and private industry. These scientists-to-scientist discussions were particularly fruitful since they occurred during and after the successful landings of the USSR's Venera 13 and 14 spacecraft on the Venusian surface in March, 1982.

Other bilateral activities envisioned by or dependent upon the existence of the US-USSR Space Agreement essentially ceased with its lapse in May, 1982. No meetings of the JWG's established under the Agreement took place during 1982. No new joint space activities or projects were initiated during 1982.

Short-Term and Long-Term Exchanges During 1982

A statistical summary of the total mandays spent in short-term and long-term exchanges in 1982 under the US-USSR Space Agreement prior to its expiration on May 24 is given below:

| <u>Type</u> | <u>US Mandays Spent in USSR</u> | <u>USSR Mandays Spent in US</u> |
|-----------------------------------|---------------------------------|---------------------------------|
| Short-Term (less than 60 days) | 55 | 0 |
| Long-Term (over 60 days) | 0 | 0 |

Value of Information Exchanged During 1982

For the five months of 1982 in which US-USSR exchange activities took place under Space Agreement auspices, the overall value of the scientific and technical information clearly favored the US. For example, visits to the Soviet Union clearly benefited the US scientific community involved with planetary exploration, especially since these visits coincided with receipt of data and results during and after the March Soviet Venus lander missions. No comparable US information flow to the Soviets was possible during 1982, since the US had no Venus mission of its own to Venus during this period. In fact, at present there are no plans to launch another US spacecraft to Earth's sister planet before 1988.

In the biomedical area, the US continued to receive the raw data from Soviet CAT scans of cosmonaut crews involved in long-duration manned spaceflight for subsequent processing and reduction. Such data are unique in light of the current short-duration focus of the US manned spaceflight program using the Space Shuttle. Since human physiological changes become more pronounced with the increase in staytime in the weightless environment of space, US biomedical information provided to the Soviets during 1982 was of relatively limited research value.

Level of US and USSR Funding During 1981 and 1982

Since the entry into force of the US-USSR Space Agreement, NASA has conducted its cooperative activities and projects with Soviet counterparts on the basis of mutual interest and reciprocity. During 1981 and 1982, as in previous years, funding for approved joint projects has been provided within the budgetary constraints of existing programs. No specific R&D line item for US-USSR activities is included in NASA budgets.

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Scientific Exchange Activities with the Soviet Union
FYs 81-82

US-USSR Transportation Agreement

(A) Areas of Cooperation

All of the exchanges under the Transportation Agreement during the reporting period were in the civil aviation area.

(B) Specific Research and Projects Involved - Civil Aviation Working Group

(1) Air Traffic Control (ATC)

A total of six meetings were held with Soviet specialists in the U.S. and Soviet Union which dealt with a wide range of ATC navigation, surveillance, and communications topics. Some of the systems are in the design stage, such as the Mode-S (an improved secondary surveillance radar system) which is an integral part of the FAA National Airspace Plan. Through their collaboration on design features, American and Soviet experts have reached agreement on a common Mode-S signal format. In September 1981, a Soviet transponder was successfully tested with prototype Mode-S equipment at the FAA test facility, and the sides have agreed to jointly test the Mode-S transponders and other equipment in the Soviet Union next year to demonstrate to the International Civil Aviation Organization (ICAO) community Mode-S capability and compatibility. During the past two years, U.K. civil aviation experts have participated in the US-USSR discussions on the Mode-S system which gives this effort a trilateral character, thereby improving the credibility of the dialogue concerning the system in ICAO, which discussions are scheduled to begin in the spring of 1983.

Other topics discussed, e.g., control center configurations, weather data processing, data link applications, and training of controllers, provided an opportunity for the sides to become familiar with technical progress in these areas which are vital to national capabilities to safely handle increased international air traffic during the next two decades.

In addition, the Soviet Union is cooperating with the U.S. to evaluate the signal reliability of the OMEGA Navigation System used by pilots to determine in-flight positions. Toward this end, the U.S. provided recorders which were installed on Aeroflot aircraft for this purpose, and the data provided thereby on signal behavior over the Polar area bordering the USSR has been valuable in analyzing variations in signal reception. Further, the U.S. side has proposed that the use of satellites for civil aviation navigation be discussed within the ATC subgroup. This is a complex problem which will involve difficult control techniques and procedures soon to be discussed in ICAO. FAA experts believe bilateral cooperation on the subject, particularly with the USSR, would provide an important foundation for ICAO deliberations on establishing international standards.

(2) Microwave Landing System (MLS)

Discussions with the Soviet Union on technical capabilities of the U.S.-Australian-designed Time Reference Scanning Beam (TRSB) MLS during 1975-1978 led to Soviet-Bloc support in early 1979 for ICAO's adoption of the system as the international standard over several other competing national systems not considered as technically superior. Two meetings during FYs 81-82 between U.S. and Soviet experts have covered follow-on discussions and plans on the TRSB Precision Distance Measuring Equipment, operational procedures, and a transition plan for converting current Instrument Landing Systems to the new MLS system. Tests of U.S. and Soviet MLS receiver equipment are planned in both countries during the next two years to demonstrate the universal compatibility of the TRSB.

(3) Training and Education and Environmental (Noise) Impact Subgroups

A U.S. delegation visited the Soviet Union in November 1980 to continue exchanges of information on the scope and effectiveness of civil aviation training programs. Following a September 1980 meeting in the U.S. between experts on aviation noise, exchanges of technical information on noise measurements and interpolation of noise calculations were exchanged in preparation for ICAO discussions on this topic early in 1981.

(C) Man-hours

There were no long-term exchanges involved in the above cooperative activities, and no accurate data were kept on the number of man-hours spent in short-term exchanges. Actual U.S. travel to London and sites in the USSR for six separate meetings with Soviets involved fifteen departmental specialists and eight industry officials (whose travel expenses were covered by the companies they represented). Of these six separate meetings, two were held in London and Moscow and two in Moscow and Leningrad consecutively. Actual Soviet travel to the U.S. involved twelve specialists for six meetings, one of which included a review of program activities between Working Group Leaders.

(D) Level of U.S. and Soviet Funding

The Department of Transportation has no line-item funds for carrying out its International Cooperation Program, which includes exchanges under the US-USSR Transportation Agreement. All delegation travel is carried out on a "sending-side-pays" basis. Necessary travel and other incidental expenses, e.g., copies of publications and interpreting/translating services, are funded from budgeted research funds in the Office of the Secretary or modal administrations on the basis of benefit to the domestic R&D transportation programs.

No data is available on level of Soviet funding for carrying out Agreement exchanges.

(E) Assessment

The Department believes that the exchanges of information and task-sharing projects undertaken under the US-USSR Civil Aviation Working Group, particularly the ATC and MLS subgroups, are equally valuable to both countries. Soviet research of sophisticated civil aviation systems is on a par with the U.S. Actually, the ATC system now installed in Moscow is more advanced than any in the U.S. Soviet bloc support in ICAO for adoption as international standards of U.S.-designed systems, developed by private industry under government contract at a high cost to the U.S. taxpayer, is crucial to capitalizing on this investment and for maintaining U.S. leadership in planning for international air navigation needs for the foreseeable future.

Fiscal Years 1981 and 1982

US-USSR Agreement on Cooperation in
World Ocean Studies

The US-USSR Agreement on Cooperation in World Ocean Studies was renewed on December 15, 1981, for three years until December 15, 1984 (TIAS 9349). The renewal was endorsed by all U.S. participating agencies (NOAA, Navy, NSF, Geological Survey and Department of State). The cooperative areas are Air-Sea Interaction, Ocean Dynamics, Marine Geology and Geophysics, Instrumentation Intercomparison, and Biological Productivity and Biochemistry.

Following the Afghanistan sanctions, the level of activity under the Agreement was reduced drastically. Only one major cooperative field activity, an air-sea interaction study in the Antarctic, was conducted in fiscal years 1981 and 1982. The other activities were limited to short term visits.

A response to the specified items follows:

(1) To avoid the transfer of militarily significant technology, all activities where such transfer might occur are reviewed by all participating agencies (Navy, NOAA, NSF, Geological Survey and Department of State).

(2) (A) Areas of cooperation:

- Large Scale Air Sea Interaction
- Ocean Dynamics
- Marine Geology and Geophysics
- Instrumentation Intercomparison
- Biological Productivity and Biochemistry

(B) Large Scale Air Sea Interaction, a major field experiment, the WEPOLEX Expedition, was carried out with 13 U.S. scientists and their equipment carried to Antarctica aboard a large Soviet Polar Research Vessel, the SOMOV. The expedition bridged FY81 and FY82.

In early FY82, four Soviet scientists attended Panel meetings of the Deep Sea Drilling Program under the Marine Geology and Geophysics area, but later in FY82, negotiations for further Soviet participation in the DSDP were halted.

A three-member U.S. delegation on Instrumentation visited the USSR in October 1981 to conduct a project for dissolved oxygen intercomparison, and to discuss the results of the calibration of Soviet current meters in an American laboratory.

In the biological area four Americans attended a fisheries symposium on parasites and pathogens during October 1981.

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(C) FY81 Short-term visits - None
FY82 Short-term visits to the USSR - 541 person-days
(480 person-days aboard Soviet vessel)
FY82 - Short-term visits to the US - 56 person-days

FY81-FY82 - Long-term visit to the USSR - 231 person-
days (231 person-days aboard Soviet vessel)

(D) FY81 US - about \$3,000 for travel
FY82 US - about \$30,000 for travel
 about \$50,000 for shipment of equipment

FY82 USSR -The level of Soviet funding is unknown, but
the ship time made available to the US scientists in
the Antarctic research cruise could be valued at about
\$1,250,000.00.

(E) The value of the information exchanged was approximately
equal.



DEPARTMENT OF STATE

Washington, D.C. 20520

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May 26, 1981

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MEMORANDUM FOR RICHARD V. ALLEN
THE WHITE HOUSE

Subject: Implementation of US-USSR Bilateral Cooperative Agreements

Attached is a report on the implementation of the 11 US-USSR Bilateral Cooperative Agreements for the period January-June 1980. The report was prepared by the Inter-departmental Group for Europe in response to a request from the National Security Council dated April 27, 1977 for semi-annual assessments of activities under the Agreements (NSC request attached).

Deep cuts were made in official scientific exchanges following the Soviet invasion of Afghanistan, but it was decided not to abrogate existing exchange agreements. This policy also provided for a limited number of selected activities to keep the framework of cooperation intact so that exchanges could be expanded or further curtailed as the political situation warranted.

The report gives the details of this wide-ranging reduction in exchange activity. Some key points are:

-- Overall, exchanges declined to 25% of the level of the first half of 1979.

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GDS 5/15/87

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BY KML NARA DATE 4/21/11

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-2-

-- Under three of the Agreements - Energy, Agriculture, and Transportation - activity almost completely ceased.

-- All new exchanges and high-level meetings were indefinitely deferred.

John H Kelly
L. Paul Bremer, III
for Executive Secretary

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NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

7711406

April 27, 1977

WB

TO: The Secretary of State
The Secretary of Defense

ALSO: The Secretary of the Interior
The Secretary of Commerce
The Secretary of Health, Education
and Welfare
The Secretary of Housing and Urban
Development
The Secretary of Transportation
The Administrator, Federal Energy
Administration
The Chairman, Joint Chiefs of Staff
The Director of Central Intelligence
The Administrator, National Aeronautics
and Space Administration
The Administrator, Energy Research
and Development Administration
The Administrator, Environmental
Protection Agency
The Director, Office of Science and
Technology Policy
The Director, National Science Foundation
The Director, United States Information
Agency

SUBJECT: Implementation of Eleven US-USSR
Bilateral Technical Agreements

The NSC Interdepartmental Group for Europe, expanded to include representatives of the addressees, will assume responsibility for monitoring implementation of the eleven bilateral technical agreements with the USSR. Reports on actions or proposed actions taken to implement each agreement and an analysis of the progress of the agreements should be submitted on a semi-annual basis. The first semi-annual report should be forwarded by September 1, 1977. All reports should be submitted to the President through the Policy Review Committee.

The White House memoranda of June 8, 1972 and July 22, 1974 are superseded; those portions of the White House memoranda of August 7, 1974 on the Housing Agreement and of August 22, 1974 on the Energy Agreement dealing with the reporting function are also superseded.



Zbigniew Brzezinski

US-USSR 59

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MEMORANDUM

NATIONAL SECURITY COUNCIL

May 29, 1981

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ACTION

MEMORANDUM FOR: RICHARD V. ALLEN

FROM: RICHARD PIPES/PAULA DOBRIANSKY PD

SUBJECT: Report on the Implementation of U.S.-USSR
Bilateral Cooperative Agreements

The Report on the Implementation of Eleven U.S.-Soviet Bilateral Cooperative Agreements for the period January-June 1980 (Tab A), though nearly a year late, gives a fair and comprehensive overview of the subject matter. It conveys the impression that the principle of reciprocity in exchanges has been well adhered to. (c)

Stearman and Huberman concur.

RECOMMENDATION

That you sign the memorandum at Tab I to the President, forwarding the Report (Tab A).

Approve _____ Disapprove _____

Attachments:

- Tab I Memorandum to the President
 - Tab A Report on the Implementation of U.S.-USSR Bilateral Cooperative Agreements
- Tab II Incoming covering memorandum from State (includes memorandum signed by Dr. Brzezinski on April 27, 1977)

~~CONFIDENTIAL~~

Review May 29, 1987.

MEMORANDUM

THE WHITE HOUSE
WASHINGTON~~CONFIDENTIAL~~INFORMATION

MEMORANDUM FOR THE PRESIDENT

FROM: RICHARD V. ALLEN

SUBJECT: Report on the Implementation of U.S.-USSR
Bilateral Cooperative Agreements

In response to a request from the National Security Council in 1977, the International Group for Europe prepared a report on the implementation of the 11 U.S.-USSR Bilateral Cooperative Agreements for the period January-June 1980 (Tab A). The report gives a fair and comprehensive overview of the subject matter and conveys the impression that the principle of reciprocity in exchanges has been well adhered to. (C)

According to the report, significant cuts were made in official exchange activities following the Soviet invasion of Afghanistan, but existing exchange agreements were not abrogated. Rather, a limited number of selected activities were maintained to preserve a framework of cooperation so that further exchanges could be expanded or curtailed as the political situation warranted. Some highlights of this wide-ranging reduction in exchange activity include:

- Overall, exchanges declined to 25 percent of the level of the first half of 1979.
- Under three of the Agreements -- Energy, Agriculture and Transportation -- activity almost completely ceased.
- All new exchanges and high-level meetings (i.e., three Joint Committee meetings under the Housing, Agricultural and Health Agreements) were indefinitely deferred. The Seventh Meeting of the U.S.-USSR Joint Commission on Science and Technology was also indefinitely postponed.
- Even though activity was drastically reduced under the Science and Technology Agreement, minimal joint research was continued and working level exchanges apparently produced joint research of value and interest to U.S. scientists.

~~CONFIDENTIAL~~
Review May 29, 1987.

DECLASSIFIED
NLRR FD6-114/11 #11767
BY RW NARA DATE 1-5-10

-- There were several agreements in which developments were made and Soviet cooperation actually improved. Activity under the Environmental Agreement was substantially reduced, but some productive sessions were conducted; cooperation in a few longstanding programs continued under the World Ocean Agreement, although overall activity was reduced; under the Space Agreement preparations were still made in the area of space biology and medicine for joint biological experiments to be flown on a Soviet primate mission in 1982; and under the Health and Artificial Heart Agreement research papers and basic data exchanges took place. (C)

Throughout these reduced exchanges all U.S. participants continued to stress the principles of reciprocity and mutual benefit which form the basis of our entire exchange relationship with the Soviet Union. (C)



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DEPARTMENT OF STATE

Washington, D.C. 20520

INTERDEPARTMENTAL GROUP FOR EUROPE

SEMIANNUAL REPORT ON IMPLEMENTATION
OF US-USSR BILATERAL SPECIALIZED
AGREEMENTS

JANUARY - JUNE 1980

DECLASSIFIED

NLRR E06-114/11 # 11772

BY KML NARA DATE 4/21/11

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| Clearance Sheet | |

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EXECUTIVE SUMMARY

This summary collates data and views contained in reports by the various U.S. agencies which administer the 11 US-USSR scientific and technical agreements. Individual agency reports and intelligence community comments are attached.

U.S. Objectives

The reporting period marked a major shift in U.S. Agreement objectives. While careful attention was paid to the basic aim of obtaining information about, and access, to the Soviet Union, deep cuts were made in exchange activity in reaction to the Soviet invasion of Afghanistan. Sharp reductions in exchanges became part of a package of American sanctions ranging from the grain embargo to a boycott of the Moscow Olympics. During the trials of dissidents Orlov and Shcharansky in 1978, the U.S. had also employed a selective, though less stringent, reduction in exchanges to show that Soviet repression was dissipating the cooperative atmosphere necessary for the conduct of exchanges. In the same way, our reductions in official exchanges made clear that Soviet actions would inevitably affect the whole range of our bilateral relations. While communicating this message to the Soviets we made a deliberate decision to focus our restrictive measures against specific activities, not against the framework of the agreements themselves. To preserve this framework and our future flexibility in responding to Soviet actions at least a modicum of activity under each agreement was allowed to go forward.

Progress and Benefit

Government mandated reductions in official exchanges and the negative reaction of the American scientific community to the internal exile of Andrei Sakharov demonstrated the limits to our desire for strengthened scientific contacts with the USSR. Although there is no evidence to suggest that this sharp decline in scientific relations seriously impeded Soviet scientific or technological progress, our reductions represented a setback for Soviet efforts to legitimize and enhance the international prestige of their

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science. Many individual Soviet scientists expressed their dismay over reductions in cooperative activity, in part because Soviet authorities have long employed prestigious trips abroad as a reward to their top scientists. Official Soviet reaction ranged from outrage over U.S. "unreliability" as an exchange partner to defensive boasting about the ability of Soviet science to "go it alone" if need be. Exchange cutbacks emphasized U.S. disapproval of Soviet actions and served as a symbol of the sharp decline in U.S.-Soviet relations brought on by the Soviet invasion of Afghanistan.

U.S. exchange participants almost immediately felt the impact of the Carter Administration's reaction to Afghanistan. All high-level meetings under the bilateral agreements were deferred, starting with three Joint Committee meetings under the Housing, Agricultural, and Health Agreements, scheduled for January and February. All new projects, planning sessions, and exchange initiatives were shelved. The Administration also indefinitely postponed shipment to the USSR of a \$10 million magnetohydrodynamics channel under the Energy Agreement and an exchange of railway cars under the Transportation Agreement. An overall reduction in cooperative activity cut sharply into the exchanges planned under all the agreements, although an effort was made to allow those activities of strong scientific interest to the U.S. and those involved in human health or welfare. Under procedures worked out in the Interagency Committee for U.S.-Soviet Affairs, the various lead agencies, in conjunction with the Department of State and the NSC, decided on a case-by-case basis which exchange activities should go forward and which should be postponed. This procedure caused the cancellation or indefinite postponement of a wide range of exchanges. In part as a consequence of this policy there was a complete halt of activity under the Transportation, Agricultural, and Energy Agreements. (In keeping with our broad goal of preserving the framework of the exchange relationship, however, the National Security Council approved the automatic renewal of the Transportation Agreement in May.) Only the Health and Artificial Heart Agreements, because of their humanitarian aspects, proceeded at relatively normal levels.

Despite Soviet complaints about our cutbacks, they did not interfere with most of the exchanges which we were willing to continue. Exchangees in the Housing, Environmental, and Oceans Agreements actually reported some improvement in Soviet cooperation in certain fields, perhaps intended as an incentive to continued U.S. participation. However, the Soviets responded inflexibly to our cancellation of the Agricultural Agreement's Joint Committee Meeting,

refusing any further exchanges in the absence of a high-level planning session. To date the Soviets have maintained this position despite several U.S. compromise proposals. Generally, however, the Soviets acted to preserve the basis for our official scientific cooperation and seemed concerned about the prospect of a total halt to official exchanges.

U.S. participants continued to stress the principles of reciprocity and mutual benefit which are the basis of our entire exchange relationship with the Soviets. Under the Environmental Agreement Soviet failure to provide data from a U.S. seismograph exchanged for a Soviet model resulted in a U.S. demand for the instrument's return. In Housing the U.S. side refused to consider a reciprocal visit by a Soviet researcher until the Soviets had provided the data requested by an American expert in the same project. Sustained pressure by U.S. participants in the World Oceans Agreement resulted in a significant improvement in Soviet contributions to the database in the POLYMODE project. In May the Soviets were informed that an imbalanced exchange in chemical catalysis under the Science and Technology Agreement would be phased out by mid-summer. U.S. cutbacks in exchanges were accompanied by steady pressure for improved Soviet performance in the remaining activities. Although the Soviets may have confused cutbacks made to maintain reciprocity with our overall exchange reductions, they responded positively to these demands overall, even as exchange activity clearly shifted to those areas of greatest interest to the U.S.

Housing

In response to the Soviet invasion of Afghanistan activity under the agreement was cut back to 30 percent of the level of 1979. The fourth meeting of the US-USSR Joint Committee on Housing, scheduled for early March, was indefinitely postponed. In keeping with the decision to maintain the framework of our bilateral agreements, a minimal number of exchanges were carried out during the reporting period. One U.S. researcher completed an excellent survey of Soviet new towns, reporting access to Soviet experts and institutions unheard of in non-official academic exchanges. Information exchanges continued at a greatly reduced level, although the U.S. side did receive particularly valuable data on concretes and fire resistance. As in several other Agreements, most American participants chose to defer travel to the USSR at least until after the

Moscow Olympics; both project meetings during the reporting period were held in the U.S.

Science and Technology

As compared to the first half of 1979, project level activity during the reporting period was reduced approximately 75 percent. Post Afghanistan policy sanctions also resulted in the indefinite postponement of the seventh meeting of the US-USSR Joint Commission on Science and Technology. Although activity was radically reduced, a minimal level of joint research continued in about half of the 56 project areas under the agreement. The U.S. executive secretariat and American participants were careful to select activities only in areas of strong scientific interest to the U.S. While the Soviets expressed dismay over our selective cuts in the exchange, the joint work that was allowed to go forward was not greatly affected by strained bilateral relations. During the reporting period, the agreement's Science Policy project issued an important study of Science Policy in the U.S. and USSR. Working level exchanges continued to produce joint research of value and interest to U.S. scientists. The U.S. National Academy of Sciences, sponsor of the Physics Working Group, suspended all large scale meetings with Soviet physicists in line with the Academy's resolution following the internal exile of dissident physicist Andrei Sakharov. The Soviets responded to this suspension by completely halting their physics cooperation under the agreement. In May the U.S. side initiated a review of the elctrometallurgy and materials area, continuing a process of internal evaluation of cooperative areas. As a result of an earlier evaluation, the U.S. side informed the Soviets in May of the complete phase out of the chemical catalysis area, a project severely imbalanced in the Soviets' favor.

Environmental

The agreement's normally very active program of exchanges was substantially reduced in response to the Soviet invasion of Afghanistan. Activity was less than 40 percent of the same period in 1979. U.S. participants continued work of particular interest to American researchers under one third of the agreement's projects. Having just held a successful Joint Committee Meeting (December '79), U.S. policy of prohibiting high-level meetings and planning sessions did not preclude a number of useful exchanges early in 1980 in

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fields such as nature conservation, the climatic effects of pollution, and earthquake prediction. The U.S. side used the opportunity to consolidate and review ongoing joint work. Joint research in freshwater pollution and wastewater treatment promised to provide significant savings for U.S. research efforts in these fields. U.S. visitors to the USSR found their hosts extremely cooperative and anxious to safeguard the joint work of the agreement. U.S. insistence on full reciprocity under the agreement resulted in a demand for the return of an American seismograph installed on Sakhalin Island in the Soviet Far East. The Soviets were consistently unable to provide data from the instrument; repeated requests for data by the U.S. side were met by Soviet claims that the seismograph was not functioning properly.

Transportation

No research or information exchanges took place during the reporting period primarily because several working group meetings and the 1980 Joint Committee meeting were indefinitely postponed in early January. The U.S. also postponed a long-planned exchange of railway cars, eliciting a sharp response from the Soviets. The Soviets displayed continuing interest in exchanges in the field of civil aviation, however, issuing several invitations to meetings in mid-1980. The U.S. side, after review of the proposals, agreed to hold some of these meetings in the fall of 1980. In keeping with the Administration's policy of maintaining the basis for official cooperation with the Soviets, the National Security Council formally approved in May the automatic extension of the US-USSR Transportation Agreement for three years.

Agriculture

Joint Committee and Working Group meetings, scheduled for January, were postponed indefinitely as part of the U.S. response to the Soviet invasion of Afghanistan. The U.S. executive secretariat attempted to continue some measure of activity by suggesting alternative means for planning a few working-level exchanges. The Soviets rejected proposals for planning such exchanges through correspondence or by meeting with the U.S. executive secretary, insisting that no joint activity could be undertaken without a high level meeting. In addition the Soviets terminated regularly scheduled

exchanges of statistical data. Soviet inflexibility on this point foreclosed any possible joint activity during the reporting period.

Atomic Energy

Activity under this agreement fell off sharply during the reporting period. The exchanges that did take place were in the working group on the Fundamental Properties of Matter (FPM) and were scaled down considerably from the amounts of previous periods. As before, there is a numerical imbalance in FPM favoring the Soviets, but it is difficult to assess quantitatively the relative intellectual contribution of each side to this speculative branch of physics.

World Ocean

During the reporting period cooperation in a few long-standing programs continued although overall activity was considerably below that of the corresponding period of 1979. Among significant developments was the agreement reached at a POLYMODE meeting in the Soviet Union on joint analyses of several data sets, joint work on regional prediction models and joint publications in the concluding phase of the POLYMODE project. This agreement will have the effect of improving the quality of the Soviet contribution to the POLYMODE effort to study eddies in the western North Atlantic. Planning for cooperative research in the Antarctic crossed a threshold when the U.S. project leader inspected a Soviet polar research vessel in Leningrad scheduled to carry U.S. scientists to the Antarctic and serve as a research platform. Additionally, under the ongoing multilateral Deep Sea Drilling Project, a two-year period of cooperative activity in researching the geology of the sea-floor bore fruit in the issuance of three volumes of studies, some involving a Soviet contribution. There was no notable imbalance in the benefits accruing to either side.

Space

The number of bilateral exchanges that took place under this agreement stood at 30 percent of the level reached during the first six months of the preceding year. Reciprocity, as measured in terms of the total contribution of each side, was substantially adhered to. During the reporting

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period ongoing projects advanced, but there were no critical developments or departures. Among developments most worthy of mention are the preparations made in the area of space biology and medicine for joint biological experiments to be flown on a Soviet primate mission in 1982 and the progress that took place in implementing the multilateral satellite-aided search and rescue (SAR) project.

Energy

During the reporting period cooperative activity dropped to a low level as a result of the disruption of the only active area of exchange, magnetohydrodynamic (MHD) research. The U.S. postponed indefinitely the delivery of a \$10 million MHD channel that was to be installed in a Soviet facility for use in a program of joint testing. MHD is an experimental coal-based process for producing electrical energy. No exchanges of personnel took place under this or under any other of the working groups.

Health and Artificial Heart

The level of activity was substantially lower than during previous reporting periods, in large part because of the indefinite postponement of the Joint Committee Meeting (JCM) planned for February in Washington. Nevertheless, this agreement remains -- because of its humanitarian character -- the most vigorous of our exchange programs with the USSR. Significant developments occurred in the cardiovascular, cancer and arthritis problem areas. In the area of joint heart research there were productive joint symposia on myocardial metabolism, blood transfusion and sudden death. Numerous exchanges of research papers and basic data also took place. In the area of cancer cooperation, the U.S. and the USSR continued joint testing of new antitumor drugs, many of which show promise. A valuable comparative study was published as a result of joint work in the arthritis area. No exchanges took place under the Artificial Heart Agreement.

Intelligence Community Comments

The intelligence community comments listed by agreement below are highly selective and not intended as a comprehensive assessment of the overall balance of programmatic and scientific benefits derived from U.S. participation in the agreements. The absence of detailed comments on the overall implementation of the agreements or specific exchanges

should not be construed as intelligence community concurrence in or approval of such activity.

The Committee on Exchanges (COMEX) reiterated its continuing concern over incomplete reporting of exchange activities. Evaluation efforts have been seriously hampered by a lack of proper trip and host reports and joint research papers. Accurate assessments of technology gain or loss are heavily dependent on access to all data and documentation exchanged. A reduced level of substantive comments by the intelligence community is also attributable to the greatly reduced level of activity under various cooperative programs during the reporting period.

Space Agreement

Analysts noted a net loss of technology during the reporting period due to an imbalance of short term visits and meetings in the Soviets' favor. COMEX also warned of a potential area of U.S. technology loss in the fields of advanced instrumentation and diagnostics. Soviet weakness in high quality instruments may result in efforts to gain access to such technology through the Space Biology and Medicine Working Group.

Housing Agreement

Analysts commented that the work on fire resistant materials and light-weight concretes was probably fruitful for both sides. The Soviet construction industry's reliance on concrete and concrete components provides technical insights of potential value to the U.S. There appears to be a net technological gain for the U.S. in the Building Materials and components Working Group. COMEX cautions that joint work in flame retardant and thermally resistant materials is a potential area of U.S. technology loss in a field with military applications.

Science and Technology Agreement

COMEX commented that a lack of documentation of exchange activities was a particularly troublesome problem for analysts in evaluating this agreement. The Intelligence Community reiterated concerns about the potential loss of military-relevant technology in the Applications of Computers to Management and the Electrometallurgy Working Group. The

consensus evaluation of the reporting period was that there was little technology gain or loss under the agreement because of the drastic curtailment of exchanges. Analysts also found useful the study, "Science Policy: USA-USSR," published by the S&T Agreement's Science Policy Working Group.

Environmental Agreement

According to intelligence analysts a potential for U.S. technology loss arises from a less than reciprocal exchange of information on environmental sensing equipment and geological data. Although U.S. superiority in geological sensing equipment assures the USSR an advantage in such exchanges, these contacts also could enable American specialists to learn of Soviet environmental modification techniques with military applications.

Atomic Energy Agreement

Analysts cited a general trend of man-hour imbalance in the Soviets' favor in areas involving sophisticated equipment and research capabilities. The fact of U.S. superiority in lab facilities, especially in the field of the particle physics, tends to provide the Soviets with advantage in their access to experimental equipment.

Energy Agreement

Analysts believe that both sides probably lost in the technical area because of the cancellation of the U-25 Channel project under the Magnetohydrodynamics (MHD) exchange. One analyst noted that the U.S. lost a consistent source of information on Soviet work in the (Energy/MHD) area because of the drastic reduction in exchange activity.

World Ocean Agreement

COMEX believes that exposure of the Soviets to the sophisticated equipment aboard the research vessel Glomar Challenger, and other advanced instrumentation probably caused the U.S. to incur some loss of technology. However, the degree to which the Soviets have been able to apply such technology to their own research is open to question.

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Analysts noted that the planned Weddell Sea Polynya Expedition would give U.S. scientists access to a Soviet research vessel and that in general, there has been some U.S. intelligence gain from the exchange.

Health and Artificial Heart

Analysts agreed that absolute parity in these exchanges was difficult to achieve given the commanding U.S. lead in health facilities and resources. American advances in the artificial heart area have exacerbated this disparity. However, U.S. specialists have benefited from their access to Soviet clinical data. Soviet work in stress should also be of value to U.S. behavioral scientists. These exchanges continue to provide useful intelligence information.

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Semi-Annual Report
January 1, 1980 - June 30, 1980

PROJECT ACTIVITY LEVEL

| Agreement | Active Projects | Projects Terminated | New Projects Initiated |
|----------------|-----------------|---------------------|------------------------|
| S & T | 56 | 0 | 0 |
| Space | 13 | 1 | 0 |
| Environment | 42 | 0 | 0 |
| Agriculture | 8 | 0 | 0 |
| World Ocean | 7 | 0 | 0 |
| Transportation | 5 | 0 | 0 |
| Housing | 27 | 0 | 0 |
| Health | 62 | 0 | 0 |
| Energy | 10 | 0 | 0 |
| Atomic Energy | 6 | 0 | 0 |
| Totals | 236 | 1 | 0 |

Semi-Annual Report
 January 1, 1980 - June 30, 1980
 PUBLICATIONS ISSUED

| Agreement | Jointly Authored | U.S. Authored | Soviet Authored |
|----------------|------------------|---------------|-----------------|
| S & T | 13 | 27 | 1 |
| Space | 0 | 0 | 0 |
| Environment | 3 | 4 | 2 |
| Agriculture | 0 | 0 | 0 |
| World Ocean | 22 | 158* | 4 |
| Transportation | 0 | 0 | 0 |
| Housing | 0 | 0 | 0 |
| Health | 10 | 12 | 18 |
| Energy | 1 | 0 | 0 |
| Atomic Energy | 6 | 2 | 2 |
| Totals | 55 | 203 | 27 |

* This number represents the publication of two year's research in the ongoing multilateral Deep Sea Drilling Project.

Semi-Annual Report

January 1, 1980 - June 30, 1980

PERSONNEL EXCHANGE (SHORT TERM)

| Agreement | INDIVIDUALS | | | DELEGATIONS | | |
|----------------|-------------|-----------|--------|-------------|-----------|--------|
| | From U.S. | From USSR | Totals | From U.S. | From USSR | Totals |
| S & T | 10 | 11 | 21 | 4 | 3 | 7 |
| Space | 4 | 17 | 21 | 0 | 1 | 1 |
| Environment | 20 | 31 | 51 | 8 | 10 | 18 |
| Agriculture | 0 | 0 | 0 | 0 | 0 | 0 |
| World Ocean | 14 | 16 | 30 | 4 | 12 | 16 |
| Transportation | 0 | 0 | 0 | 0 | 0 | 0 |
| Housing | 1 | 8 | 9 | 1 | 2 | 3 |
| Health | 19 | 30 | 49 | 3 | 4 | 7 |
| Energy, | 0 | 0 | 0 | 0 | 0 | 0 |
| Atomic Energy | 0 | 2 | 2 | 0 | 0 | 0 |
| Totals | 68 | 115 | 183 | 20 | 32 | 52 |

Semi-Annual Report

January 1, 1980 - June 30, 1980

PERSONNEL EXCHANGE (LONG TERM - more than 60 days)

| Agreement | FROM U.S. | | FROM USSR | |
|----------------|-------------|------------|-------------|------------|
| | Individuals | Man Months | Individuals | Man Months |
| S & T | 2 | 8 | 5 | 22.5 |
| Space | 0 | 0 | 0 | 0 |
| Environment | 1 | 3 | 0 | 0 |
| Agriculture | 0 | 0 | 0 | 0 |
| World Ocean | 0 | 0 | 4 | 10 |
| Transportation | 0 | 0 | 0 | 0 |
| Housing | 0 | 0 | 0 | 0 |
| Health | 1 | 6 | 0 | 0 |
| Energy | 0 | 0 | 0 | 0 |
| Atomic Energy | 1 | 5 | 10 | 35 |
| Totals | 5 | 22 | 19 | 67.5 |

Report on Implementation of the
U.S.-U.S.S.R. Agreement on Cooperation in the Field of
Housing and Other Construction

January 1 to June 30, 1980

EVALUATION

HUD Objectives:

- To implement changes in this exchange program according to the policy established by the U.S. administration in response to the Soviet invasion of Afghanistan in late December, 1979;
- To maintain the framework of the Agreement through a minimum level of project activity.

Progress and Benefit:

The above objectives were met by imposing severe cutbacks on activity in all six Working Groups. Based on the number of visits, the level of activity for the first six months of 1980 was 30% of the level of activity for the first half of 1979 (3 visits compared to 9 visits). All high-level meetings were "indefinitely postponed," including the fourth meeting of the Joint Committee, which was to take place in Moscow February 27-March 8, and a preparatory meeting of the Executive Secretariats. No joint meetings took place at the Working Group level. Two technical seminars and the visit of an American scholar to the USSR served to maintain the framework of the Agreement.

Technical benefits to the US were of course limited. A degree of momentum on technical projects was lost, and formal relations with the Soviet Executive Secretariat were weakened. In addition, some misunderstanding of the Administration's policy, both within HUD and in Congress, led to a withdrawal of funds previously allocated for Housing Agreement activities. This made it difficult to plan and coordinate activities on the U.S. side.

Activities -- Research and Information Exchange:

As discussed in the corresponding implementation report for the second half of 1979, joint research under the Housing Agreement thus far has been limited to the preparation of independent reports according to a common outline, with joint revision and approval. The U.S. side of the Working Group on

New Towns continued to revise and edit the two joint reports dealing with the planning and management of new towns. A final meeting with the Soviet authors of the management report was planned for May, 1980. By Soviet request, the meeting was postponed to September, causing further delay in completion of the report.

Technical information exchanges were carried out in two projects under the Working Group on Building Materials and Components (10.03): Project 1.2, Concretes, sponsored a seminar on "The Use of Lightweight Concretes in Bearing and Finishing Components;" Project 1.6, Fire Resistance of Buildings and Components, conducted a seminar on "Mathematical Methods for Estimating the Fire Resistance of Structural Assemblies." Technical presentations were made by Soviet and American specialists, and in both cases the seminars were extremely productive. Soviet presentations were of high quality and contained new data on Soviet research and techniques. The National Bureau of Standards, lead agency for Project 1.6, plans to publish the Fire Resistance seminar papers. There are no plans to publish the concretes seminar papers, but Soviet data on the thermal properties of concretes will be used to conduct tests in the United States.

The number of documents exchanged was sharply reduced from the previous six months due to the overall reduction in joint activity. The few documents received from the Soviet side were of good quality. In one instance, a Soviet project leader responded to a US request for a specific (and difficult to obtain) document by providing what seems to be a personal copy.

The US candidate for the scholar exchange sponsored by the Working Group on New Towns travelled to the USSR in January to study new town planning and development. Shortly after his arrival, the Soviet side received notification from the United States that the Joint Committee meeting would not take place and that future joint activities were uncertain. The scholar's program was interrupted until assurance had been obtained from the U.S. side that a Soviet scholar would be received for one month in the U.S. according to the mutually agreed upon terms of the exchange. Moreover, access to the city of Dushanbe in the Soviet republic of Tadzhik, which had earlier been approved by the Soviets, was deleted from the scholar's itinerary. No explanation was given, but the U.S. side suspected the primary cause lay in Dushanbe's proximity to the Afghanistan border. Alternate visits and additional meetings in Moscow were arranged, and the quality of the Soviet specialists with whom the scholar met was excellent.

Toward the end of the visit, the Soviets promised to transmit by mail a collection of data that was not readily available. The material was promised by the end of February, but at the end of June, 1980 it had still not been received. Measures taken to obtain the data are discussed below in the section on "Reciprocity."

No other activities took place during the reporting period. Fourteen project meetings which had been tentatively scheduled to take place between January and June, 1980 were either cancelled or postponed.

Research and Technology Highlights:

There is nothing to report under this heading.

Reciprocity:

The projects on concretes and fire resistance are of strong interest to both American and Soviet specialists. The seminars were well-planned and were characterized by an acceptable level of reciprocity.

Concerning the specific data that was promised to the American new towns scholar, the U.S. Embassy in Moscow, per HUD request, appealed to the Soviet side on several occasions with no success. In June, U.S. Executive Secretary Hancock wrote to her Soviet counterpart formally stating that the U.S. side expected to receive the data prior to the reciprocal visit to the U.S. by a Soviet new towns scholar. There was no direct response to this letter. In August, a collection of documents was sent by the Soviet side but did not contain the data requested. As of the writing of this report, the Soviets have not proposed to send their scholar to the United States and the matter remains unresolved.

Net Balance and Assessment:

Working Group reactions to the Soviet invasion of Afghanistan varied. The U.S. Executive Secretariat at HUD took care to explain the Administration's policy of allowing for continuation of technical exchanges at the project level. Nevertheless, most Working Group participants preferred to abstain from any activity at least until after the summer Olympics in Moscow. Overall, this did not appear to seriously jeopardize cooperation with the Soviet side during the first six months of 1980.

The Working Group on Building Materials and Components (10.03) and the New Towns Working Group (10.06) benefitted by

the few activities that were held. Particularly valuable exchanges of technical information took place at the two seminars on concretes and fire resistance, with Soviet reports making an important contribution to what is known and practiced in the United States. The American new towns scholar's visit demonstrated not only the value of individual study in the Soviet Union, but also the value of the Agreement itself: upon his return to the United States, the scholar reported access unheard of in non-official academic exchanges.

Report on Implementation of the
U.S.-U.S.S.R. Agreement on Cooperation in the Field of
Housing and Other Construction

Statistical Summary January 1 to June 3, 1980

1. Personnel Exchange

A. Short Term Visits and Meetings

| <u>Working Group</u> | I N D I V I D U A L S | | | D E L E G A T I O N S | | |
|-----------------------|-----------------------|------------------|--------------|-----------------------|------------------|--------------|
| | <u>From US</u> | <u>From USSR</u> | <u>TOTAL</u> | <u>From US</u> | <u>From USSR</u> | <u>TOTAL</u> |
| Design, Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| Utilities | 0 | 0 | 0 | 0 | 0 | 0 |
| Materials, Components | 0 | 8 | 8 | 0 | 2 | 2 |
| Seismic Construction | 0 | 0 | 0 | 0 | 0 | 0 |
| Extreme Climates | 0 | 0 | 0 | 0 | 0 | 0 |
| New Towns | 1 | 0 | 1 | 1 | 0 | 1 |
| | <hr/> | <hr/> | <hr/> | <hr/> | <hr/> | <hr/> |
| TOTAL | 1 | 8 | 9 | 1 | 2 | 3 |

B. Long Term (more than 60 days)

| <u>Working Group</u> | <u>From US</u> | | <u>From USSR</u> | |
|-----------------------|--------------------|-------------------|--------------------|-------------------|
| | <u>Individuals</u> | <u>Man-months</u> | <u>Individuals</u> | <u>Man-months</u> |
| Design, Construction | 0 | 0 | 0 | 0 |
| Utilities | 0 | 0 | 0 | 0 |
| Materials, Components | 0 | 0 | 0 | 0 |
| Seismic Construction | 0 | 0 | 0 | 0 |
| Extreme Climates | 0 | 0 | 0 | 0 |
| New Towns | 0 | 0 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> | <hr/> |
| TOTAL | 0 | 0 | 0 | 0 |

2. Project Activity Level

| <u>Working Group</u> | <u>Active Projects</u> | <u>Projects Terminated</u> | <u>New Projects Initiated</u> |
|-----------------------|------------------------|----------------------------|-------------------------------|
| Design, Construction | 7 | 0 | 0 |
| Utilities | 2 | 0 | 0 |
| Materials, Components | 7 | 0 | 0 |
| Seismic Construction | 5 | 0 | 0 |
| Extreme Climates | 4 | 0 | 0 |
| New Towns | 2 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> |
| TOTAL | 27 | 0 | 0 |

3. Publications Issued

| <u>Working Group</u> | <u>Jointly Authored</u> | <u>US Authored</u> | <u>Soviet Authored</u> |
|-----------------------|-------------------------|--------------------|------------------------|
| Design, Construction | 0 | 0 | 0 |
| Utilities | 0 | 0 | 0 |
| Materials, Components | 0 | 0 | 0 |
| Seismic Construction | 0 | 0 | 0 |
| Extreme Climates | 0 | 0 | 0 |
| New Towns | 0 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> |
| | TOTALS | | |
| | 0 | 0 | 0 |

4. Major Meetings

A. Joint Committee

B. Working Groups

Materials, Components

1.2 June 10-17 Washington, D.C.

1.6 May 13-20 Washington, D.C.

New Towns

U.S. Scholar to USSR January, 1980 Moscow

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Report on Implementation of
US-USSR Agreement on Science and Technology

January 1 - June 30, 1980

EVALUATION

Agency Objectives:

The U.S. side pursued the following principal objectives during the period:

- curtailing exchange activity in accordance with the Administration decision to cut back the level of activity in all official exchanges with the USSR as a result of the Soviet invasion of Afghanistan;
- recommending exchanges only in areas of strong scientific interest to the US in order to maintain the framework of the Agreement so that exchanges can be expanded if the political situation improves; and
- continuing the internal evaluation of cooperative areas.

In response to the Administration decision to cut back exchanges, the seventh meeting of the US-USSR Joint Commission on Scientific and Technical Cooperation, scheduled to convene in March in Washington, was indefinitely postponed. Long-term planning meetings of eight of the fifteen joint supervisory groups were also postponed: microbiology, physics, water resources, corrosion, NBS/Soviet Academy Agreement, heat and mass transfer, earth sciences, and polymer sciences. As compared to the first half of 1979, project-level exchange activity in the first half of 1980 was reduced approximately 75 percent. Although exchange activity was radically reduced, basic joint research continued in about half of the 56 project areas.

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A US expert on time and frequency measurements has concluded that scientific applications for work underway at a Novosibirsk laboratory on stabilized lasers and laser frequency measurements will surpass US accomplishments in several areas within about a year.

In May the US side, in keeping with a procedure established for an internal evaluation of cooperative areas, initiated a review of the electrometallurgy and materials area. Areas previously evaluated under the procedure include chemical catalysis, application of computers to management, and production of substances by microbiological means.

Also in May the US side informed the Soviet side that, as a result of an internal evaluation of the chemical catalysis cooperative area, the US side had concluded that the original objectives of the program set forth in 1974 had been achieved and that the program should be phased out after completion in mid-summer of the research exchange visits agreed to in June 1979.

Despite the sharp cutback in personnel exchange, planning for exchanges in the last half of 1980 and the first half of 1981 continued in all cooperative areas except chemical catalysis, earth sciences and polymer sciences. Work also continued on papers initiated or contemplated as a result of cooperative endeavors. Particularly noteworthy among publications issued are the two-volume US study Science Policy: USA/USSR by the science policy project group on planning and management, and the English language publication of the Soviet-authored book Standardization in the USSR 1925-1975 under the auspices of the US working group on metrology.

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US-USSR Agreement on
Cooperation in Science and Technology
January 1 - June 30, 1980

1. Personnel Exchange

A. Short Term Visits and Meetings

| <u>Joint Group</u> | <u>I N D I V I D U A L S</u> | | | <u>D E L E G A T I O N S</u> | | |
|------------------------------------|------------------------------|------------------|--------------|------------------------------|------------------|--------------|
| | <u>From US</u> | <u>From USSR</u> | <u>Total</u> | <u>From US</u> | <u>From USSR</u> | <u>Total</u> |
| Computer Applications | 1 | 0 | 1 | 1 | 0 | 1 |
| Chemical Catalysis | 0 | 0 | 0 | 0 | 0 | 0 |
| Electrometallurgy and Materials | 0 | 4 | 4 | 0 | 1 | 1 |
| Forestry | 0 | 2 | 2 | 0 | 1 | 1 |
| Metrology | 0 | 0 | 0 | 0 | 0 | 0 |
| Microbiology | 7 | 5 | 12 | 1 | 1 | 2 |
| Physics | 0 | 0 | 0 | 0 | 0 | 0 |
| Science Policy | 0 | 0 | 0 | 0 | 0 | 0 |
| S&T Information | 0 | 0 | 0 | 0 | 0 | 0 |
| Water Resources | 0 | 0 | 0 | 0 | 0 | 0 |
| Corrosion | 0 | 0 | 0 | 0 | 0 | 0 |
| NBS/Soviet Academy of Sciences | 2 | 0 | 2 | 2 | 0 | 2 |
| Heat and Mass Transfer | 0 | 0 | 0 | 0 | 0 | 0 |
| Earth Sciences | 0 | 0 | 0 | 0 | 0 | 0 |
| Polymer Sciences | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 10 | 11 | 21 | 4 | 3 | 7 |

B. Long Term (more than 60 days)

| <u>Joint Group</u> | <u>From US</u> | | <u>From USSR</u> | |
|------------------------------------|--------------------|-------------------|--------------------|-------------------|
| | <u>Individuals</u> | <u>Man-Months</u> | <u>Individuals</u> | <u>Man-Months</u> |
| Computer Applications | 0 | 0 | 0 | 0 |
| Chemical Catalysis | 2 | 8 | 5 | 22-1/2 |
| Electrometallurgy and Materials | 0 | 0 | 0 | 0 |
| Forestry | 0 | 0 | 0 | 0 |
| Metrology | 0 | 0 | 0 | 0 |
| Microbiology | 0 | 0 | 0 | 0 |
| Physics | 0 | 0 | 0 | 0 |
| Science Policy | 0 | 0 | 0 | 0 |
| S&T Information | 0 | 0 | 0 | 0 |
| Water Resources | 0 | 0 | 0 | 0 |
| Corrosion | 0 | 0 | 0 | 0 |
| NBS/Soviet Academy of Sciences | 0 | 0 | 0 | 0 |
| Heat and Mass Transfer | 0 | 0 | 0 | 0 |
| Earth Sciences | 0 | 0 | 0 | 0 |
| Polymer Sciences | 0 | 0 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> | <hr/> |
| TOTAL | 2 | 8 | 5 | 22-1/2 |

2. Project Activity Level

| <u>Joint Group</u> | <u>Active Projects</u> | <u>Projects Terminated</u> | <u>New Projects Initiated</u> |
|------------------------------------|------------------------|----------------------------|-------------------------------|
| Computer Applications | 5 | 0 | 0 |
| Chemical Catalysis | 4 | 0 | 0 |
| Electrometallurgy and Materials | 6 | 0 | 0 |
| Forestry | 5 | 0 | 0 |
| Metrology | 8 | 0 | 0 |
| Microbiology | 5 | 0 | 0 |
| Physics | 6 | 0 | 0 |
| Science Policy | 2 | 0 | 0 |
| S&T Information | 1 | 0 | 0 |
| Water Resources | 3 | 0 | 0 |
| Corrosion | 7 | 0 | 0 |
| NBS/Soviet Academy* of Sciences | 0 | 0 | 0 |
| Heat and Mass Transfer | 4 | 0 | 0 |
| Earth Sciences | 0 | 0 | 0 |
| Polymer Sciences | 0 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> |
| TOTAL | 56 | 0 | 0 |

* open ended, individual exchanges

3. Publications Issued

| <u>Joint Group</u> | <u>Jointly Authored</u> | <u>US Authored</u> | <u>Soviet Authored</u> |
|------------------------------------|-------------------------|--------------------|------------------------|
| Computer Applications | 1 | 1 | 0 |
| Chemical Catalysis | 0 | 5 | 0 |
| Electrometallurgy and Materials | 6 | 13 | 0 |
| Forestry | 0 | 0 | 0 |
| Metrology | 0 | 0 | 1 |
| Microbiology | 2 | 2 | 0 |
| Physics | 4 | 0 | 0 |
| Science Policy | 0 | 5 | 0 |
| S&T Information | 0 | 0 | 0 |
| Water Resources | 0 | 0 | 0 |
| Corrosion | 0 | 1 | 0 |
| NBS/Soviet Academy of Sciences | 0 | 0 | 0 |
| Heat and Mass Transfer | 0 | 0 | 0 |
| Earth Sciences | 0 | 0 | 0 |
| Polymer Sciences | 0 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> |
| TOTAL | 13 | 27 | 1 |

4. Major Meetings

A. Joint Commission - no meeting

B. Joint Groups - no meetings

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Report on Implementation of
US-USSR Agreement on Cooperation in the
Field of Environmental Protection

January 1, 1980 to June 30, 1980

EVALUATION

Agency Objectives:

This Agreement serves the objectives of several U.S. agencies. The U.S. side pursued the following principal objectives during the report period:

--To continue obtaining useful information on scientific and technical work being conducted in the USSR on environmental problems similar to those faced in the USA;

--To work with Soviet specialists in jointly developing solutions to environmental problems of mutual concern, thereby contributing to environmental well-being worldwide;

--To gain further access to, and information on, Soviet techniques and technology applicable to the solution of U.S. environmental problems;

--To take advantage of facilities and natural conditions in the USSR, particularly as they offer the opportunity to collect experimental data;

--To serve as a channel for contact between environmental specialists and organizations in the two countries.

Progress and Benefit:

Activity under the Environmental Agreement, long one of the most active of the US-USSR S&T bilaterals, was substantially reduced as part of the Administration's response to the Soviet invasion of Afghanistan. The two sides exchanged a total of 52 specialists in 19 delegations during the report period, as compared with 139 individuals in some 37 delegations during the first half

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of 1979. This constitutes a reduction of about 63% in the number of exchangees and of just under 50% in the number of delegation visits. Notwithstanding these marked reductions in program activity, the close working relations between project leaders enabled us to maintain the framework of the Agreement intact, and mutually useful cooperation went forward in those areas which have been traditionally most active. Within these constraints, we were able to make limited progress toward the objectives listed above.

Activities - Research and Information Exchange:

Only about a third of the Agreement's 42 projects were active in the report period; much of the ongoing joint research was deferred or was carried on as far as possible by correspondence. On the other hand, a complete program of joint activities for 1980 had been approved at the 8th Joint Committee Meeting, which concluded just a few weeks before the Soviet invasion of Afghanistan. Thus, the Administration's proscription of high-level visits and forward planning sessions did not materially affect the Environmental Agreement. Cooperative work in the areas of nature conservation, climatic effects of pollution, and earthquake prediction was generally least affected (though by no means unaffected) by the Afghan crises. For the first time, the number of Soviet specialists visiting the U.S. under the Environmental Agreement exceeded the number of American specialists traveling to the USSR. Those U.S. delegations which did travel found their Soviet hosts - with one or two exceptions - maximally cooperative and solicitously hospitable. Excluding one instance in early January, when the U.S. Coast Guard canceled the visit of a Soviet delegation the day before their scheduled arrival, the Soviet side accepted the U.S. side's reduction in activity levels with accommodating equanimity.

Research and Technology Highlights:

The first half of 1980 was primarily a period of consolidating earlier joint achievements. A delegation of EPA and academic scientists visited the USSR for further processing of data from two joint experiments

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conducted in 1979 on the modeling and measurement of natural and man-made atmospheric pollutants; they were accompanied on part of their itinerary by the American Consul General. The two sides moved ahead with a joint research program on pollution effects in freshwater ecosystems which is expected to generate 12-15 published papers, each of which will represent a new and important scientific contribution at a small fraction (2-3%) of the cost of implementing such research through domestic contract grants. (I.e., EPA stands to gain \$600,000-\$750,000 in important research for approximately \$15,000 in travel funds.) As part of a proposed exchange of experimental wastewater treatment equipment in 1981, the U.S. side expects to receive designs for a new Soviet clarifier 10% more efficient than models utilized in this country; this is estimated to be worth upwards of \$100 million in savings to EPA's Construction Grants Program. EPA has also encountered substantial interest on the part of industry in papers presented at a US-USSR symposium on treatment of oil-contaminated wastewater. A group of specialists from the Estonian SSR spent a fruitful two weeks in presentations and discussions with U.S. counterparts on environmental health problems associated with the oil shale industry. Two Soviet scientists participated in very successful discussions on tsunami detection instrumentation and on the final report of a 1978 joint research cruise.

The reduction in S&T bilateral activity made as a result of the Afghanistan crisis has affected some promising new joint efforts under the Environmental Agreement. Since the beginning of 1980, EPA program offices have evinced considerable interest in Soviet regulatory practices and standards in the area of toxic substance control; we have had very limited success in obtaining helpful information from Soviet government authorities this year. Also, the U.S. side advised Moscow that adverse developments in overall relations were impeding efforts in a proposed project on environmental education, which had been highly regarded by both sides at the Eighth Joint Committee Meeting.

Reciprocity:

A major issue of reciprocity during the report period concerned U.S. seismographic equipment installed

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in late 1977 on Sakhalin Island as part of a joint project on tsunami warning. Whereas data from a similar Soviet instrument in Hawaii have been transmitted for some time, the Soviets were consistently unable to make the American sesimograph function properly, despite our sending replacement parts. In the Memorandum of the Eighth Joint Committee Meeting, we specified a time limit for effecting the necessary repairs and said we would make a U.S. technician available. When the Soviets refused to permit the U.S. technician to visit the site, the U.S. project leader insisted that the two instruments be dismantled and returned to their respective countries.

Net Balance and Assessment:

Activity under the Environmental Agreement struck an appropriate balance between the opposing goals of conveying the Administration's dissatisfaction with the Soviet role in Afghanistan and maintaining intact the framework of cooperation in an area of endeavor that has proven its value to the U.S. side in both practical and humanitarian terms. Though lacking in major achievements, the report period was a useful time of quiet consolidation of ongoing joint work and careful review of specific projects and activities.

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US-USSR Agreement on Cooperation in the
Field of Environmental Protection
Statistical Summary January 1, 1980 to June 30, 1980

1. Personnel Exchange

A. Short-Term Visits and Meetings

| Working Group/ Project | I N D I V I D U A L S | | | D E L E G A T I O N S | | |
|---------------------------|-----------------------|-----------|-------|-----------------------|-----------|-------|
| | From US | From USSR | TOTAL | From US | From USSR | TOTAL |
| 02.01-11/12 | 7 | 0 | 7 | 1 | 0 | 1 |
| 02.01-21 | 0 | 2 | 2 | 0 | 1 | 1 |
| 02.02-21 | 0 | 3 | 3 | 0 | 1 | 1 |
| 02.03-21 | 2 | 0 | 2 | 1 | 0 | 1 |
| 02.05-11 | 0 | 2 | 2 | 0 | 1 | 1 |
| 02.05-21 | 0 | 3 | 3 | 0 | 1 | 1 |
| 02.05-41 | 0 | 6 | 6 | 0 | 1 | 1 |
| 02.05-61 | 2 | 6 | 8 | 1 | 2 | 3 |
| 02.05-71 | 2 | 0 | 2 | 1 | 0 | 1 |
| 02.07-11 | 0 | 4 | 4 | 0 | 1 | 1 |
| 02.08-11 | 3 | 0 | 3 | 2 | 0 | 2 |
| 02.09-11 | 1 | 3 | 4 | 1 | 1 | 2 |
| 02.09-12 | 3 | 0 | 3 | 1 | 0 | 1 |
| 02.09-21 | 0 | 2 | 2 | 0 | 1 | 1 |
| TOTAL | 20 | 31 | 51 | 8 | 10 | 18 |

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B. Long-Term (More than 60 days)

| <u>Working Group/ Project</u> | <u>From US</u> | | <u>From USSR</u> | |
|-----------------------------------|--------------------|-------------------|--------------------|-------------------|
| | <u>Individuals</u> | <u>Man-months</u> | <u>Individuals</u> | <u>Man-months</u> |
| 02.08-11 | 1 | 3 | 0 | 0 |

2. Project Activity Level

| <u>Area/Working Group/Project</u> | <u>Active Projects</u> | <u>Projects Terminated</u> | <u>New Projects Initiated</u> |
|---------------------------------------|------------------------|----------------------------|-----------------------------------|
| 02.01-10 | 2 | 0 | 0 |
| 02.01-20 | 4 | 0 | 0 |
| 02.01-31* | 1 | 0 | 0 |
| 02.02-10 | 3 | 0 | 0 |
| 02.02-21* | 1 | 0 | 0 |
| III** | 4 | 0 | 0 |
| IV** | 5 | 0 | 0 |
| V** | 8 | 0 | 0 |
| VI** | 2 | 0 | 0 |
| VII** | 2 | 0 | 0 |
| 02.08-10 | 3 | 0 | 0 |
| 02.09-10 | 4 | 0 | 0 |
| 02.09-21 | 1 | 0 | 0 |
| X*** | 0 | 0 | 0 |
| XI** | 2 | 0 | 0 |
| TOTAL | 42 | 0 | 0 |

* Independent project - not part of any Working Group.

** Not subdivided into Working Group.

***Inactive - work subsumed under other Areas.

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3. Publications Issued

| <u>Working Group/ Project</u> | <u>Jointly Authored</u> | <u>US Authored</u> | <u>Soviet Authored</u> |
|-----------------------------------|-------------------------|--------------------|------------------------|
| 02.02-12 | 0 | 1 | 0 |
| 02.02-13 | 2 | 0 | 0 |
| 02.05-1103 | 0 | 0 | 1 |
| 02.05-1107 | 0 | 0 | 1 |
| 02.05-61 | 0 | 1 | 0 |
| 02.06-21 | 1 | 0 | 0 |
| 02.08-11 | 0 | 2 | 0 |

4. Major Meetings

None

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Report on Implementation of
US-USSR Agreement on Transportation

January 1, 1980 to June 30, 1980

EVALUATION

Agency Objectives:

The U.S. side pursued the following principal objectives during the period:

- to gain access to Soviet experience and technology for improving transportation systems, especially to lower construction and operating costs;
- to develop common positions for international organizational activities (e.g., for the establishment of worldwide safety and equipment standards);
- to promote sales of U.S. transportation technology and equipment; and
- to accomplish above within guidelines of USG policy adopted after Soviet invasion of Afghanistan.

Activities - Research and Information Exchange:

No research and information exchanges took place during the reporting period.

On March 31, the U.S. Rail Working Group Leader received a letter from Deputy Minister of Rail in response to a formal DOT letter of complaint which requested an explanation of the failure of the August 1979 U.S. Rail Delegation to be provided certain information and expressed concern that the U.S. Rail community had reacted negatively to the way the Soviets had handled the visit which could affect future support of the cooperative effort by that community. The Deputy Minister pointed out that the visit program for the U.S. Delegation was arranged as requested, and faulted the planning of the June 1979 Soviet Rail Delegation visit to the U.S. Further, he noted his surprise at the relative ease with which the Federal Railroad Administration and the Department of Transportation unilaterally refused to carry out commitments

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recorded in signed protocols. (The latter remark undoubtedly refers to DOT's January notification to the Soviets that the planned exchange of rail cars was indefinitely postponed.)

Despite advice from the Soviet side through the U.S. Embassy that travel in connection with US-USSR bilateral S&T agreements would need to be severely curtailed during the spring and summer of 1980 due to the Olympics, several civil aviation subgroup leaders received proposals early in 1980 from Soviet counterparts to schedule meetings during the early summer. As the subgroup leaders could not at that late date rearrange work and travel schedules, the Soviets were informed of that situation, and counter-proposals were made to hold meetings during the fall of 1980.

Research and Technology Highlights:

On May 21, 1980, the National Security Council formally notified the Department of State that it had approved extension of the US-USSR Transportation Agreement for an additional three years (beyond June 19, 1980).

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Report on Implementation of
U.S.-U.S.S.R. Agreement on Agriculture
January 1, 1980 to June 30, 1980

EVALUATIONAgency Objectives:

The U.S. side tried to pursue the following principal objectives during the period:

- continuation of some cooperative activities, if possible, in spite of cancellation of Joint Committee and Working Group meetings;
- continuation of statistical information exchange and follow-through on previously-agreed activities;
- travel of U.S. teams to study conditions of Soviet winter and spring grain crops as part of any program of activities for 1980.

Progress and Benefit

The Joint Committee and Working Group meetings, scheduled to be held in January, 1980, were postponed indefinitely as part of the U.S. response to Soviet invasion of Afghanistan. In March, USDA proposed development of a limited program of cooperation by correspondence, and in May suggested a meeting of Executive Secretaries to work out a cooperative program. To both suggestions the Soviets responded that no joint activities could be undertaken without a Joint Committee meeting. In addition, the Soviets terminated regularly-scheduled delivery of statistical data, claiming that the schedule had to be established each year by the Joint Committee. Activities which had been planned previously (U.S. forage grass exploration team, U.S. forecasting methodology team, agri-business symposium in the U.S.S.R., workshop on heat flux in soils), and which required Soviet initiative, have not been pursued.

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Consequently, no joint activities have taken place under the Agricultural Agreement in 1980, except for the continued delivery of U.S. statistical information through the USDA Automated Mailing System.

Reduction of exchange activity as a percentage of the first half of 1979 is approximately 100.

Statistical Summary

There were no personnel exchanged, no active projects, no projects initiated or terminated, no publications.

Report on Implementation of US-USSR Agreement
on the Peaceful Uses of Atomic Energy

January 1, 1980 to June 30, 1980

EVALUATION

Agency Objectives:

The US side pursued the following principal objectives during the period:

To implement the revised US Government policy regarding US-USSR exchanges following the Soviet invasion of Afghanistan, namely to pursue only those exchange activities of substantial benefit and of low visibility or that have a direct humanitarian impact, and to avoid abrogating agreements or peremptorily cancelling individual programs.

Progress and Benefit:

Following promulgation of the policy, DOE informed its program managers and field offices that DOE HQ must now clear all visits and assignments of Soviets to DOE and DOE-contractor facilities as well as clear all "official" relationships (but not private communication between individual scientists), such as activities conducted pursuant to US-Soviet intergovernmental agreements, and relationships which in any substantive way involve DOE-funded programs and activities.

DOE reviewed all activity areas under the Atomic Energy Agreements for consistency with the new policy. Cooperation continues under Fundamental Properties of Matter on a number of selected ongoing experimental programs at the Fermi National Accelerator Laboratory (Fermilab). The redefinition of US-Soviet S&T relations caused a temporary cessation in activities in Controlled Thermonuclear Reactions (CTR), and cooperation on Fast Breeder Reactors (FBR) was postponed indefinitely.

Activities:

No new activities under CTR and FBR took place during the first half of 1980, whereas 7 and 3 joint activities respectively were conducted during the preceding 6 months. As a carry-over activity in CTR from 1979, two Soviet scientists completed their work at MIT in the beginning of 1980.

Five exchange activities under FPM, (compared to 13 for the last half of 1979) were all conducted at Fermilab. Four of these activities were continuations of activities carried over from 1979. Two of the activities explored new phenomena; one used the 15 foot bubble chamber at Fermilab to detect anti-neutrinos, and the other aimed to understand the behavior of a beam of sub-atomic particles as they are deflected when passing through certain special types of crystals. The three other activities relate to the 1.0 TeV Tevatron accelerator currently being built at Fermilab. The first phase of this device will be proton-antiproton colliding beam accelerator. The third activity was a workshop held to ascertain the new physics that might be expected as a result of operating at these very high energy ranges. The fourth and fifth activities dealt with the physics and engineering development of proton-antiproton colliding beam facilities and experiments, and covered such topics as the physics of beam-beam interactions, electron cooling of anti-proton beams, US experience with superconducting magnets for TeV-range accelerators, and lithium lenses for focusing protons and antiprotons.

Reciprocity:

No opportunity presented itself at which DOE needed to press for reciprocity.

Net Balance and Assessment:

In keeping with the new policy regarding exchanges, DOE pursued only those activities which were of substantial interest. In FPM, the Soviets benefited because they had access to experimental facilities not available in the USSR and to outstanding scientists with whom they would work and interact. In CTR and FBR, there had been a recent trend to reduce the number of exchange activities in order to concentrate resources on more carefully selected topics and hence to maximize the return to the US program. The new US policy merely accelerated the trend. The most important benefit continues to be access to Soviet research laboratories and facilities and interaction with the Soviet scientists. While technical benefit is modest, the exchanges provide the US with an overview of Soviet efforts, level of progress and priorities in atomic energy, which is useful to energy R&D planning.

The cut-back in contact in the short run has not seriously harmed either the Soviet or US CTR, FBR and FPM programs, since scientists and engineers from both sides can discuss their programs in sufficient detail at conferences, in international workshops, through correspondence, etc. to keep abreast of each other's programs, at least for the time being. However, in the long run, and for the US in particular, close, effective monitoring to obtain an accurate picture of the technology and science in CTR, FBR, and FPM will be hampered, and opportunities to exploit rapidly and successfully scientific breakthroughs or engineering achievements will be missed if some level of exchange activities is not maintained.

Report on Implementation of US-USSR Agreement on Energy

January 1, 1980 to June 30, 1980

Evaluation

Agency Objectives:

The US side pursued the following objective during the period:

To implement the revised US Government policy regarding exchange activities with the USSR following the Soviet invasion of Afghanistan, namely, to pursue only those exchange activities of substantial benefit and of low visibility or that have a direct humanitarian impact, and to avoid abrogating agreements or peremptorily cancelling individual programs.

Programs and Benefits

Following promulgation of the policy, DOE informed its program managers and field offices that DOE HQ must now clear all visits and assignments of Soviets to DOE and DOE-contractor facilities as well as clear all "official" relationships (but not private communication between individual scientists), such as activities conducted pursuant to US Soviet intergovernmental agreements or involving in a substantive way DOE-funded programs and activities.

DOE also reviewed all activity areas under the Energy Agreement for consistency with the new policy. Under the Energy Agreement, eleven areas were postponed indefinitely, and only cooperation in magnetohydrodynamics continues because of the significant benefits accruing to both MHD programs.

Activities - Research and Information Exchange

DOE's only direct contact with the Soviet's during the reporting period was at the Seventh International Conference in MHD Electrical Power Generation, June 16-29, 1980 at the Massachusetts Institute of Technology, Cambridge, Massachusetts. DOE sought to obtain Soviet data from a joint test of the U-25 Bypass and Soviet participation in preparation of a joint paper in time for the International Conference but was unsuccessful due, in part, to the redefining of the cooperative relationship between both Governments, and the establishment of new operating procedures within the US Government.

Research and Technology Highlights:

None.

Reciprocity:

No opportunities presented themselves in which DOE could, or needed to, press for reciprocity.

Net Balance and Assessment:

The Soviet invasion of Afghanistan and resulting modification of US policy could not have come at a worst time for the US part of the MHD cooperative program, for it was about to enter into its most productive year. Preparations for the delivery of the US-built \$10 million channel for testing in the Soviet U-25 pilot plant had commenced in December 1979 but had to be abruptly aborted on grounds of high visibility, thereby disrupting Soviet plans for the utilization of their U-25 pilot plant for 1980 and leaving DOE puzzling over the disposition of a potential white elephant. Because the January meeting of the US-USSR Joint MHD Steering Committee was also cancelled, test plans for the U-25 Bypass (which uses a large, US-loaned superconducting magnet) were not finalized and hence no tests of the U-25 Bypass were conducted during January to July 1980. In general, substantial benefits to both the US and the USSR have resulted from the cooperative program in MHD, in particular from the test program with the U-25B facility. Channel test conditions similar to those of the U-25B facility are not currently available in the US (or the rest of the world) and therefore provide a considerable time advantage for analyzing and incorporating these data in the design of US channels. However, as programs in the US MHD program continue and testing at the CDIF facility gets underway, the value of the U-25 Bypass and the U-25 tests will diminish in importance.

Impact of these postponements and cessation of activities on the Soviet program is difficult to assess since no US team has spent time in Moscow to make comparisons, and since the Soviets are now devoting more time to the development of the U-500 MHD facility outside Moscow.

US-SOVIET AGREEMENT
COOPERATION IN PEACFUL USES OF ATOMIC ENERGY
Statistical Summary

1. Personnel Exchange

A. Short Term visits and meetings;

| <u>Working Group</u> | <u>Individuals</u> | | | <u>Delegations</u> | | |
|----------------------|--------------------|----------------------|--------------|--------------------|----------------------|--------------|
| | <u>From U.S.</u> | <u>From U.S.S.R.</u> | <u>Total</u> | <u>From U.S.</u> | <u>From U.S.S.R.</u> | <u>Total</u> |
| FPM, 7.01 | 0 | 2 | 2 | 0 | 0 | 0 |
| FBR, 7.02 | 0 | 0 | 0 | 0 | 0 | 0 |
| CTR, 7.03 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 20 | 2 | 0 | 0 | 0 |

B. Long Term (more than 60 days);

| <u>Working Group</u> | <u>Project</u> | <u>From</u> | <u>Individuals</u> | <u>Man-Months</u> |
|----------------------|--|-------------|--------------------|-------------------|
| FPM 7.01 | Anti-neutron Experiment (E-180) | USSR | 3 | 17 |
| | Particle channeling in crystals (E-507) | US | 1 | 5 |
| | SC Magnets | USSR | 2 | 6 |
| | Protron-Antiprotron Colliding Beam Studies | USSR | 1 | 6 |
| | Tevatron Physics | USSR | 2 | 2 |
| CTR 7.03 | Tokamak Experiment | USSR | 2 | 6 |

2. Publications Issued During Period

| <u>Working Group</u> | <u>Jointly Authored</u> | <u>U.S. Authored</u> | <u>Soviet Authored</u> |
|----------------------|-------------------------|----------------------|------------------------|
| FPM | 6 | 2 | 2 |

3. Major Meetings

US-USSR Agreement in Cooperation in Energy

1. Personnel Exchange

A. Short Term Visits and Meetings

| | <u>Individuals</u> | <u>Delegations</u> |
|---|--------------------|--------------------|
| International MHD Conference, MIT, Cambridge, Mass. | none | none |

B. Long Term

| <u>From US</u> | <u>From USSR</u> |
|----------------|------------------|
| none | none |

2. Project Activity Level

None.

3. Publication Issued

| <u>Working Group</u> | <u>Jointly Authored</u> | <u>US Authored</u> | <u>Soviet Authored</u> |
|----------------------|-------------------------|--------------------|------------------------|
| MHD | 1 | 0 | 0 |

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REPORT ON IMPLEMENTATION OF THE
US-USSR AGREEMENT ON COOPERATION IN
STUDIES OF THE WORLD OCEAN

January 1, 1980 - June 30, 1980

EVALUATION

(U) AGENCY OBJECTIVES:

The U.S. side continued to pursue the following principal objectives during the period:

1. to augment domestic marine research projects,
2. to promote U.S. declared national marine research efforts (data and results available to all nations of the world),
3. through the exchange of ideas and methods seek to improve knowledge and understanding in selected topics of marine scientific research,
4. increase knowledge and information about the Soviet organizations and institutions that manage ocean research, and
5. improve effectiveness of U.S. and Soviet collaboration in international marine scientific research programs.

(U) PROGRESS AND BENEFIT:

The Deep Sea Drilling Project (DSDP) continued to benefit from Soviet fiscal contributions as well as the participation of their marine geoscientists. The much delayed joint US-USSR POLYMODE meeting was finally held in Terskol, USSR in April 1980, a time considered acceptable by the U.S. side. Useful discussions were held on the U.S. and USSR data sets and the planning for joint analysis, synthesis of results and joint publications. A U.S. scientist visited the Arctic and Antarctic Research Institute and the polar research vessel SOMOV in Leningrad, to discuss a joint experiment involving American scientists and equipment carried to the Antarctic aboard a Soviet research vessel.

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(C) ACTIVITIES - RESEARCH AND INFORMATION EXCHANGE

Three projects - POLYMODE, the Deep Sea Drilling Project and the International Southern Oceans Studies (ISOS), about 40 percent of the total, were primarily involved in basic joint research during the period. In the Deep Sea Drilling Project, Soviet scientists participated in two of four cruise legs (71 and 72) of the GLOMAR CHALLENGER in the South Atlantic and in technical panel meetings. During Leg 71 on which a Soviet scientist served as co-chief scientist, the effect on the Falkland Plateau as a barrier between water masses during the early opening of the South Atlantic was studied. The scientific program of Leg 72 had two principal focal points: paleoceanography and the evolution of the Rio Grande Rise, a mid-plate rise.

Considering the substantial benefits to the United States resulting from Soviet participation in the DSDP, approval was given for opening negotiations with the Soviets for renewal of the MOU which expires September 30, 1980.

Under the International Southern Oceans Studies (ISOS), a U.S. scientist visited the Arctic and Antarctic Research Institute to discuss plans for the US-USSR Weddell Sea Polynya Expedition planned for October 1981. He also inspected the Soviet polar research vessel SOMOV which will carry 13 U.S. scientists and their equipment to Antarctica to study a polynya, an open ice-free area in the pack ice. Two Soviet scientists visited several ISOS laboratories, discussing their computer model of the Southern Ocean. They ran their model on a U.S. computer, and both sides were able to assess the results.

Scientists from the American and Soviet POLYMODE committees met for a week in Terskol, USSR, to discuss the U.S. and Soviet data sets, and to prepare plans for joint analysis, and synthesis of the POLYMODE results, and joint publications. Both sides made presentations on data, analysis and interpretation. Agreements were reached for cooperative work in four major areas: joint analysis of current meter and SOFAR float data; joint analysis of density data; joint work on regional prediction models; and continuation of work on a joint atlas. Prior to the Terskol meeting, two liaison visits by U.S. scientists were made to examine and evaluate the state of the Soviet POLYMODE data bank and their method of data preparation. A Soviet liaison team also visited the United States and another team of Soviet researchers visited a U.S. POLYMODE research center to conduct joint modeling studies.

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The Fifth meeting of the US-USSR Joint Committee scheduled for March 1980 in Washington, D.C. as well as the meetings of the Executive Secretaries and experts which were to precede it were deferred indefinitely by the U.S. side in line with U.S. policy on meetings of high level officials.

(U) RESEARCH AND TECHNOLOGY HIGHLIGHTS

An American and a Soviet scientist served as co-chief scientists on Leg 71 of the Deep Sea Drilling Project in the South Atlantic. Scientists studied the effect of the Falkland Plateau as a barrier between water masses during the early opening of the South Atlantic and the changes that occurred in the bottom water flow through the region based on its transportational, depositional and erosional effects. Samples from Leg 71 will be studied to resolve paleoceanographic and paleoclimatic trends in the South Atlantic from its inception 135 million years ago, to the present. Additional studies are planned on the geochemistry and mineralogy of the sediments and the petroleum potential of the thick section of "black shales" encountered at about 50 meters below the seafloor.

(C) RECIPROCITY

After standing up to the bizarre bullying tactics of the Soviet POLYMODE leader, the U.S. POLYMODE scientists achieved their objective in the Terskol meeting; i.e., a meeting held at a time and in a manner satisfactory to U.S. interests. The U.S. scientists set milestones for the exchange of POLYMODE data, and they will hold their Soviet counterparts to them.

(C) NET BALANCE AND ASSESSMENT

In this reporting period, the cooperative activities have been in balance with respect to benefits and reciprocity. Soviet marine scientists continued to have access to and use of a sophisticated oceanographic facility, the research drilling vessel GLOMAR CHALLENGER. In return, the yield to U.S. domestic oceanographic research has been increased by the addition of Soviet personnel, equipment, financial support and theoretical expertise.

Joint ocean modeling research has provided each side with the benefit of the extensive theoretical expertise of the other in the ISOS and POLYMODE projects. The successful preliminary planning under ISOS for a joint US-USSR Weddell Sea Polynya Expedition offers the promise of significant benefit to U.S. scientists from the use of an expensive

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Antarctic research vessel to carry U.S. scientists and equipment to Antarctica to carry out an extensive oceanographic program in the Southern Ocean sea ice and Weddell Polynya at the time of the seasonal sea ice maximum.

DISSENTING VIEWS

None

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US/USSR AGREEMENT ON
COOPERATION IN WORLD
OCEAN STUDIES

STATISTICAL SUMMARY JANUARY 1 to JUNE 30, 1980

(1) PERSONNEL EXCHANGE

A. Short Term Visits and Meetings

| <u>WORKING GROUP</u> | <u>Individuals</u> | | | <u>Delegations</u> | | |
|------------------------|--------------------|------------------|--------------|--------------------|------------------|--------------|
| | <u>FROM U.S.</u> | <u>FROM USSR</u> | <u>TOTAL</u> | <u>FROM U.S.</u> | <u>FROM USSR</u> | <u>TOTAL</u> |
| Air/Sea Interaction | 1 | 0 | 1 | 1 | 0 | 1 |
| Ocean Dynamics | 13 | 3 | 16 | 3 | 1 | 4 |
| Geology | 0 | 13 | 13 | 0 | 11 | 11 |
| Instrumentation | 0 | 0 | 0 | 0 | 0 | 0 |
| Biology | 0 | 0 | 0 | 0 | 0 | 0 |
| Data | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 14 | 16 | 30 | 4 | 12 | 16 |

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B. Long Term

| <u>WORKING GROUP</u> | <u>Individuals</u> | | | <u>Delegations</u> | | |
|----------------------|--------------------|------------------|--------------|--------------------|-------------|--------------|
| | <u>FROM U.S.</u> | <u>FROM USSR</u> | <u>TOTAL</u> | <u>FROM U.S.</u> | <u>USSR</u> | <u>TOTAL</u> |
| Air/Sea Interaction | 0 | 2 | 2 | 0 | 1 | 1 |
| Ocean Dynamics | 0 | 2 | 2 | 0 | 1 | 1 |
| TOTAL | 0 | 4 | 4 | 0 | 2 | 2 |

(2) PROJECT ACTIVITY LEVEL DURING PERIOD

| <u>WORKING GROUP</u> | <u>ACTIVE PROJECTS</u> | <u>PROJECTS TERMINATED</u> | <u>NEW PROJECTS INITIATIVES</u> |
|----------------------|------------------------|----------------------------|---------------------------------|
| Air/Sea Interaction | 1 | 0 | 0 |
| Ocean Dynamics | 1 | 0 | 0 |
| Geology | 1 | 0 | 0 |
| Instrumentation | 1 | 0 | 0 |
| Biology | 3 | 0 | 0 |
| Data | 0 | 0 | 0 |
| TOTAL | 7 | 0 | 0 |

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(3) PUBLICATIONS ISSUED DURING PERIOD

| <u>WORKING GROUP</u> | <u>JOINTLY AUTHORED</u> | <u>U.S. AUTHORED</u> | <u>SOVIET AUTHORED</u> |
|----------------------|-------------------------|----------------------|------------------------|
| Geology | 22 | 150 | 4 |
| Ocean Dynamics | <u>0</u> | <u>8</u> | <u>0</u> |
| TOTAL | 22 | 158 | 4 |

(4) MAJOR MEETINGS

None

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Report on Implementation of
US-USSR Agreement on Space Cooperation

January 1, 1980 to June 30, 1980

EVALUATION

Agency Objectives:

The US side pursued the following principal objectives during the period:

- support US policy with respect to the situation in Afghanistan
- strengthen cooperation
- expand access and interaction
- encourage constructive Soviet space policies
- identify science and applications projects which contribute technically and economically to US space objectives
- tap complementing Soviet space capabilities without incurring US technology loss
- exploit cost-sharing potentials

Progress and Benefit:

Progress was made toward these objectives principally in three of the six areas of US-USSR space cooperation. In space biology and medicine, the US continues to benefit from data obtained from experiments flown on Soviet biosatellites and preparations are being made for the continued benefit from a future mission. In planetary exploration, the US benefits from the exchange of US and USSR Venus data and a number of joint studies which have begun. In the satellite-aided search and rescue area, agreement was reached on technical issues and an

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 Declassify Review for
 Declassification on 12/22/86
 Extended by _____
 Reason for extension _____

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Implementation Plan. The inclusion of the Soviet system will significantly broaden the scope and the experimental value of the project. Exchange activities during the period were curtailed significantly as a result of cutbacks imposed by the US in response to the Soviet invasion of Afghanistan. Bilateral exchanges conducted under the Space Agreement during the first six months of 1980 operated at only about 30% of the level experienced during the first six months of 1979.

Activities - Research and Information Exchange:

Under the Space Agreement, our joint activities generally have not been in the nature of "basic joint research." Rather, we have sought to focus the NASA/Soviet Academy bilateral cooperation on activities, preferably projects, having particular scientific interest and which cannot be accommodated within the framework of existing international scientific bodies. Specific projects are undertaken in which US and Soviet contributions are either of approximately equal weight or complement one another in mutually beneficial ways and their implementation is carefully phased to ensure comparable contributions and mutual benefit. Of the fourteen (14) active projects, only one (7%) may be characterized as coordinated basic research, twelve (86%) involve data exchange, and one (7%) is in space applications.

The one basic research activity is in the area of space biology and medicine. US and Soviet contributions have been balanced and US access to required Soviet facilities has been fairly routine. The US has benefited from data obtained from US experiments flown on a Soviet biosatellite in September - October 1979 and will participate in a 1982 Soviet primate mission.

In the planetary area, the sides are continuing to implement several joint studies in specific disciplines using the US Pioneer-Venus and Soviet Venera 11 and 12 spacecraft data. These studies are intended to maximize the scientific return on the available data and add to each side's data base. This work has, however, fallen behind schedule. A Working Group meeting planned to be held in the US in March was postponed indefinitely by the US because of the situation in Afghanistan. This has had a negative impact on activities in this area and appears to have reduced Soviet interest in cooperation with the US in planetary research.

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In search and rescue, Soviet participation in the US-Canadian-French experimental satellite-aided system (SARSAT) with their own compatible satellite and ground terminals (COSPAS) will significantly expand the scope of the experiment and give us greater confidence in the world-wide application of these techniques in a future operational system.

Research and Technology Highlights:

Space cooperation with the Soviet Union is carefully structured to ensure that there is no export of advanced technology. Commercial sales are not involved in these projects.

Reciprocity:

Visits of Soviet scientists to the US are balanced by visits of US scientists to the Soviet Union that are comparable in duration and deal with similar or related subjects. Papers are presented at conferences in alternating fashion. Requests by Soviet scientists for data or reprints of papers by US scientists are answered with requests for similar data or reprints of papers.

Net Balance and Assessment:

In scientific and technical terms, the benefits gained by the US and the Soviet Union in cooperative space activities during this period would appear to be about equal. We benefit directly from the flight opportunities on Soviet biological satellites and from access to information on Soviet planetary exploration.

Our Soviet counterparts benefit from access to results of biological experiments conducted by the US and to US plans for planetary exploration. Both sides have acquired expanded data bases and have benefited from greater opportunities for discussions among space scientists of the two countries.

Dissenting Views:

Activities under the US-USSR Space Agreement are managed solely by NASA, with some technical support from other agencies. We are unaware of any dissatisfaction on the part of the other agencies with any of these activities.

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US-USSR Agreement on Space Cooperation
Statistical Summary: January 1, 1980 to June 30, 1980

1. Personnel Exchange

A. Short Term Visits and Meetings

| <u>Working Group</u> | <u>I N D I V I D U A L S</u> | | | <u>D E L E G A T I O N S</u> | | |
|---|------------------------------|------------------|--------------|------------------------------|------------------|--------------|
| | <u>From US</u> | <u>From USSR</u> | <u>TOTAL</u> | <u>From US</u> | <u>From USSR</u> | <u>TOTAL</u> |
| Near-Earth Space, the Moon and Planets | 1 | 3 | 4 | 0 | 0 | 0 |
| Space Biology and Medicine | 3 | 6 | 9 | 0 | 0 | 0 |
| Search and Rescue* | <u>1</u> | <u>8</u> | <u>8</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| TOTAL | 4 | 17 | 21 | 0 | 1 | 1 |

B. Long Term (more than 60 days)

None.

*Search and Rescue is a four-party activity involving citizens of Canada and France as well as Americans and Soviets. One Working Group Meeting was held during this period in Lanham, Maryland.

2. Project Activity Level

59

| <u>Working Group</u> | <u>Active Projects</u> | <u>Projects Terminated</u> | <u>Initiated</u> |
|---|------------------------|----------------------------|------------------|
| Space Biology and Medicine | 4 | 0 | 0 |
| Near-Earth Space, the Moon and Planets | 2 | 0 | 0 |
| Search and Rescue | 1 | 0 | 0 |
| Space Meteorology | 1 | 1 | 0 |
| Natural Environment | 5 | 0 | 0 |
| Shuttle/Salyut | <u>0</u> | <u>0</u> | <u>0</u> |
| TOTAL | 13 | 1 | 0 |

3. Publications Issued

None.

4. Major Meetings

A. Joint Committee -- N/A

B. Working Groups:

Search and Rescue

May 19-22

Lanham, Maryland

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Report on Implementation of the
US-USSR Agreement on Cooperation in
the Field of Medical Science and Public
Health and US-USSR Agreement on
Artificial Heart Research and Development

January 1, 1980 to June 30, 1980

EVALUATION

Agency Objectives:

During this reporting period, the U.S. side pursued the following principal objectives of the actively cooperative areas:

(Cardiovascular Disease) To continue joint basic, clinical and epidemiologic studies regarding the etiology, prophylaxis and treatment of cardiovascular diseases (including hypertension, hyperlipoproteinemia, coronary artery disease, congenital cardio-abnormalities, and arrhythmias) and in blood resources management (including hepatitis secondary to blood transfusions);

(Artificial Heart) To continue joint endeavors in the development and testing of an artificial circulatory device;

(Malignant Neoplasia) To continue joint efforts in the areas of cancer etiology (including genetic analyses, viral induction, mutagen agents and precancerous changes), cancer epidemiology (especially relative to gynecologic and breast cancers), anticancer therapeutic protocols (especially for cancers of the breast, lung and ovary), anticancer drug testing (relative to their pharmacologic actions as well as usage in single and combined modalities of treatment) and patient education;

(Environmental Health) To review the progress of all active joint projects of the past three years and determine the research protocols of joint projects worthwhile continuing;

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(Arthritides) To continue joint studies on the nature and treatment of rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE);

(Influenza and Acute Respiratory Diseases) To continue joint studies on the basic properties and epidemiologic aspects of influenza viruses, vaccine production, antiviral drugs, epizootology of animal influenza viruses and joint studies on hepatitis;

(Eye Diseases) To continue the development and implementation of joint studies on the assessment of optic nerve function, treatment of glaucoma with the Soviet Q-switched ruby laser as compared to the U.S. Argon laser, and the etiology and therapy of retinitis pigmentosa.

(Individual Specialist Health Exchange Program) To facilitate direct collaboration of American and Soviet health professionals representing a diversity of biomedical specialities in order to provide opportunities for exploring new areas with the potential of evolving into long-term collaborative/cooperative projects.

Progress and Benefit:

During the first half of 1980, the level of activity on both sides has been roughly equal. However, the overall activity was reduced in comparison to previous reporting periods. This reduction was influenced by the Soviet activities in Afghanistan and some specifics are mentioned below under their appropriate topic areas. In this regard, several U.S. scientists (both federal and private), for personal concerns over the political tensions between the U.S. and Soviet sides and/or for reasons of conscience over the Soviet dissident problem, terminated their participation in the collaborative activities. However, other U.S. scientists, particularly those participating in the cardiovascular, cancer and eye disease areas, chose to continue their participation on the premise that the conduct of humanitarian exchanges was critically important especially in times of political tensions. These latter scientists continue to hold to the premise that activities of a humanitarian or medical nature can serve to temper the logger-head nature of the tensions. In these latter areas, programs and exchanges were accomplished on time and to the satisfaction of both sides.

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Activities - Research and Information Exchange

The cooperative health projects exist at an interface between information exchange and basic, collaborative research. On the whole, the contributions of the U.S. and USSR to the joint activities were roughly equal. Notable developments during this period are mentioned herein.

A. In the Malignant Neoplasia area, the American-Soviet exchange of drugs for preclinical and clinical testing continues to be mutually beneficial. Since the inception of the Health Agreement, 175 preparations have been studied jointly -- 65 from the United States and 110 from the Soviet Union. Of these, 43 American drugs and 28 of Soviet origin have demonstrated significant antitumor activity. Additionally, studies of various RNA viruses and their role in leukemogenesis in baboons continue to be progressive and the findings also significant.

B. All seven project areas under the Cardio-vascular area involve exchanges of laboratory, clinical, and epidemiological data on specific disease problems. The proceedings of three joint scientific symposia held during the second half of 1979 were translated and prepared for joint publication in English and Russian. The titles of these proceedings are: The Proceedings of the Fourth US-USSR Symposium on Myocardial Metabolism (Area 3), Tashkent, (USSR; The Proceedings of the Second Joint US-USSR Symposium on Blood Transfusion (Area 6), Bethesda, Md; and the Proceedings of the Second Joint Symposium on Sudden Death (Area 5), Indianapolis, Indiana. The Soviet side has cooperated fully in these informational activities. All together a total of 67 manuscripts were prepared for publication.

Additionally, the Soviets forwarded to the U.S. side a collection of papers, "Emotional Stress and Arterial Hypertension". Some of the papers in this collection are of considerable interest to US scientists working on behavioral aspects of hypertension.

C. Under the Arthritis area, the major events for this period included the U.S. publication of a comparative study of Russian and American patients with juvenile rheumatoid arthritis, the completion of a first

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draft report of the Moscow-New York cooperative study of d-penicillamine for rheumatoid arthritis, and, the resignation of two of our US participants from the program on the grounds of conscience. The flow of visitors from the USSR has been steady and effective; however, the U.S. side sent no one there. Communication from the USSR on scientific issues or problems has dropped from a normally very low level to zero. This has delayed the progress of some of the comparative studies and analyses.

D. In the Influenza area, no exchange visits had been planned because of the limited travel and accommodations in the Soviet Union because of the Olympics. However, exchange of viral strains and epidemiologic information continued as usual. Because of reduced travel, joint research was at a low level and limited primarily to the areas of viral characterization, antivirals, and hepatitis.

E. During the reporting period, no exchange visits were conducted in the Environmental Health area. In light of the U.S.-Soviet tensions, U.S. scientists in this area preferred not to travel to the U.S.S.R.

F. In the area on Eye Diseases, the activities focused primarily upon developing research protocols for comparative studies on glaucoma and retinitis pigmentosa. The studies will include clinical trials in humans with glaucoma, animal studies in retinitis pigmentosa, and protocols for evaluating U.S. citizens with retinitis pigmentosa who go to the Soviet Union for treatment.

Research and Technology Highlights:

The joint activities in the Cardiovascular area continued to promote sales of U.S. laboratory supplies to the USSR in relevant research areas. Also, the activities under the exchange have led to interest on the part of commercial publishers to undertake the arduous task of translating, editing, and publishing manuscripts on Soviet research for dissemination to the scientific community at large. One such effort is the Journal of Soviet Cardiovascular Research recently published by Plenum Press.

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Reciprocity:

The Soviet side is still not in a position to yield an exact, one to one exchange, scientifically or technologically. The non-availability of adequate resources and modern facilities preclude such parity in effort. Nevertheless, the theme of reciprocity and mutual benefits was advocated by the U.S. side through informal and formal conversations with the Soviets.

Net Balance and Assessment:

The net balance of this program continues to be roughly equal. In the exchange of information on technologic advances, the Soviet Union, or any other country, gains the greater. However, in the compilation of scientific data from joint activities, both sides equally gain by enlarging upon their respective data bases for analyses and evaluation.

In accordance with the 1979 guidelines for the Executive Branch, no new program areas were initiated during 1980. Rather, we continued to develop the program areas approved by the US-USSR Joint Committee at its last meeting in 1978. Some areas have been more successful than others depending upon factors such as opportunities for cooperation, the length of cooperation, the subject matter, whether basic, clinical, or epidemiological research, and, the resources of funds and personnel available to the program area coordinators. Some of the programs have only just started whereas others have gone on for almost seven years. While all of the programs have resulted in moderate to extensive exchanges of data, exchanges of scientists, joint working meetings, and joint publications, some have been particularly successful in the development of joint research projects.

What makes the US-USSR program unique is the willingness of scientists from two politically dissimilar countries to sit down together and (a) jointly plan long-range medical activities in a spirit of cooperation and (b) focus on the science rather than on our political differences - to the benefit of mankind. We currently have a number of truly cooperative efforts which are beginning to yield meaningful data. Some of these, e.g.

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the US-USSR cooperation in cardiovascular epidemiology, are quite extensive and involve tens of thousands of individuals in carefully monitored studies conducted jointly by our two countries.

We expect that these efforts will prove valuable in the further understanding and control of disease in the United States and throughout the world. As we discover new differences in the distribution and pattern of disease we cannot help but develop new clues for further joint investigation and resolution of disease problems.

Dissenting Views:

Other than decisions not to participate (aforementioned), none were expressed during this period.

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Report on Implementation of the
US-USSR Agreement on Cooperation in
the Field of Medical Science and Public
Health and US-USSR Agreement on
Artificial Heart Research and Development

January 1, 1980 to June 30, 1980

STATISTICAL SUMMARY

US-USSR Agreements on
 Cooperation in Medical Science and Public Health
 and
 Artificial Heart Research and Development
 Statistical Summary January 1, 1980 to June 30, 1980

1. Personnel Exchange

A. Short Term Visits and Meetings

| <u>Working Group</u> | I N D I V I D U A L S | | | D E L E G A T I O N S | | |
|----------------------|-----------------------|------------------|--------------|-----------------------|------------------|--------------|
| | <u>From US</u> | <u>From USSR</u> | <u>TOTAL</u> | <u>From US</u> | <u>From USSR</u> | <u>TOTAL</u> |
| Oncology | 13 | 16 | 29 | 2 | 2 | 4 |
| Heart | 4 | 2 | 6 | 1 | 2 | 3 |
| Artificial Heart | 0 | 0 | 0 | 0 | 0 | 0 |
| Environmental Health | 0 | 0 | 0 | 0 | 0 | 0 |
| Arthritis | 0 | 4 | 4 | 0 | 0 | 0 |
| Influenza | 0 | 0 | 0 | 0 | 0 | 0 |
| Eye Disease | 0 | 2 | 2 | 0 | 0 | 0 |
| Schizophrenia | 0 | 0 | 0 | 0 | 0 | 0 |
| Individual Exchanges | 2 | 6 | 8 | 0 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> | <hr/> | <hr/> | <hr/> |
| TOTAL | 19 | 30 | 49 | 3 | 4 | 7 |

B. Long Term (more than 60 days)

| <u>Working Group</u> | <u>From US</u> | | <u>From USSR</u> | |
|----------------------|--------------------|-------------------|--------------------|-------------------|
| | <u>Individuals</u> | <u>Man-Months</u> | <u>Individuals</u> | <u>Man-Months</u> |
| Oncology | 0 | 0 | 0 | 0 |
| Heart | 1 | 6 | 0 | 0 |
| Artificial Heart | 0 | 0 | 0 | 0 |
| Environmental Health | 0 | 0 | 0 | 0 |
| Arthritis | 0 | 0 | 0 | 0 |
| Influenza | 0 | 0 | 0 | 0 |
| Eye Disease | 0 | 0 | 0 | 0 |
| Schizophrenia | 0 | 0 | 0 | 0 |
| Individual Exchanges | 0 | 0 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> | <hr/> |
| TOTAL | 1 | 6 | 0 | 0 |

2. Project Activity Level

| <u>Working Group</u> | <u>Active Projects</u> | <u>Projects Terminated</u> | <u>New Projects Initiated</u> |
|----------------------|------------------------|----------------------------|-------------------------------|
| Oncology | 25 | 0 | 0 |
| Heart | 7 | 0 | 0 |
| Artificial Heart | 1 | 0 | 0 |
| Environmental Health | 9 | 0 | 0 |
| Arthritis | 12 | 0 | 0 |
| Influenza | 6 | 0 | 0 |
| Eye Disease | 2 | 0 | 0 |
| Schizophrenia | 0 | 0 | 0 |
| Individual Exchanges | 0 | 0 | 0 |
| TOTAL | <u>62</u> | <u>0</u> | <u>0</u> |

3. Publications Issued

| <u>Working Group</u> | <u>Jointly Authored</u> | <u>US Authored</u> | <u>Soviet Authored</u> |
|----------------------|-------------------------|--------------------|------------------------|
| Oncology | 0 | 0 | 0 |
| Heart | 6 | 12 | 18 |
| Artificial Heart | 0 | 0 | 0 |
| Environmental Health | 0 | 0 | 0 |
| Arthritis | 1 | 0 | 0 |
| Influenza | 3 | 0 | 0 |
| Eye Disease | 0 | 0 | 0 |
| Schizophrenia | 0 | 0 | 0 |
| Individual Exchanges | 0 | 0 | 0 |
| | <hr/> | <hr/> | <hr/> |
| TOTAL | 10 | 12 | 18 |

4. Major Meetings

A. Joint Committee - none

B. Working Groups:

Oncology

| | | | |
|---------|---|------------------|---------------------|
| 03.0301 | "Lung Cancer" | March 30-April 4 | Moscow |
| | "Treatment of Breast Cancer" | May 20-June 3 | Bethesda, San Diego |
| | "Evaluation of Testing of Clinical and Preclinical Drugs" | May 20-June 3 | Bethesda, San Diego |
| 03.0303 | "Cancer Virology" | May 20-29 | Bethesda, New York |
| 03.0304 | "Mammalian Somatic Cell Genetics Related to Neoplasia" | April 20-29 | Moscow, Novoibirsk |
| 03.0306 | "Adjuvant Chemotherapy in Resectable Breast Cancer" | March 30-April 4 | Moscow |

Cardiovascular

| | | | |
|---------|---------------|-------------|-------------------|
| 03.0101 | Joint Meeting | March 16-25 | Moscow, Leningrad |
| 03.0106 | Joint Meeting | May 6 | Bethesda |
| 03.0107 | Joint Meeting | May 27 | Bethesda |

INTERDEPARTMENTAL GROUP FOR EUROPE

SEMIANNUAL REPORT FOR IMPLEMENTATION
OF US-USSR BILATERAL SPECIALIZED
AGREEMENTS

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January-June 1980

BY CW NARA DATE 7/15/08

CLEARANCE SHEET

- The Assistant Secretary for International Security Affairs, Department of Defense D. Herspring
- The Director of Central Intelligence R. Gates
- The Assistant Secretary for International Affairs, Department of Agriculture. D. Freeman
- The Administrator, National Oceanic and Atomospheric Administration N. Ostenso
- The Assistant to the Secretary for International Affairs, Department of Housing and Urban Development. N. Shafran
- The Assistant Secretary for Health, Department of Health and Human Services S. Lin
- The Assistant Secretary for International Affairs, Department of Transportation M. Allen
- The Secretary of the Interior. S. Kohl
- The Assistant Secretary for International Affairs, Department of Energy A. Iafrate
- The Administrator, Environmental Protection Agency. L. Starbird
- The Deputy Administrator, National Aeronautics and Space Administration. E. Ifft
- The Director, National Science Foundation. G. Sher
- The Science Advisor to the President E. McGaffigan
- The National Security Council. W. Stearman
- The Director, International Communications Agency. J. Aldriedge
- The Deputy Assistant Secretary of Commerce for East-West Trade J. Young
- The Director of the Office of Scientific and Technical Cooperation (OES/SCT), Department of State J. Mendelsohn